

VEGETABLES

COMMERCIAL VEGETABLE INSECT CONTROL

Alton N. Sparks, Jr., Extension Entomologist and David G. Riley, Research Entomologist

Statement on generic products: For brevity, generic products typically are not listed within this section. The trade names listed are intended to aid in identification of products and are not intended to promote use of specific trade name products nor to discourage use of generic products. When a generic product is selected for use and is a different formulation than indicated in the table, the label should be consulted for proper product use rate. Pounds active ingredient per acre should be similar.

PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Bean (snap, lima, pole)						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
Soil Insects	phorate (Thimet) 20G	4.5 to 7 oz. per 1,000 ft. of row		60	1B	
	diazinon (Diazinon) 4E 50W	2-4 qt. 4-8 lb.	2-4 2-4	** **	1B 1B	
	chlorpyrifos (Lorsban) 4E, Advanced	1.8 oz.. per 1,000 ft. of row		**	1B	Also labeled for broadcast application.
aphid, whitefly	imidacloprid (Admire Pro) 4.6F	7-10.5 oz..	0.25-0.375	21	4A	
FOLIAR TREATMENTS						
Pre-mixes for multiple pests	bifenthrin + imidacloprid (Brigadier)	3.8-5.5 oz. Rate varies with targeted pests		7	3 4A	
	flubendiamide+ buprofezin (Vetica)	12-17 oz.	0.03-0.044 + 0.22-0.31	14	28 16	Use on snap beans only.
	lambda-cyhalothrin + chlorantraniliprole (Voliam xpress)	5-9 oz.. Rate varies with targeted pests		7	3 28	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz..	0.01-0.025 + 0.03-0.075	3	3 3	
aphid	acephate (Orthene) 97	0.5-1 lb.	0.5-1	varies	1B	PHI: Lima=1, Snap and Pole=14
	acetamiprid (Assail 30SG)	2.5-5.3 oz.	0.047-0.1	7	4A	
	bifenthrin (Brigade) 2EC	2.1-6.4 oz..	0.033-0.10	3	3	Also in a pre-mix for multiple pests.
	dimethoate 4EC 2.67EC	0.5-1 pt. 0.75-1.5 pt.	0.25-0.5 0.25-0.5	0 0	1B 1B	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz..	0.03-0.05	3	3	Use on snap beans only.
	imidacloprid (Admire Pro) 4.6F	1.2 oz..	0.04	7	4A	Also in a pre-mix for multiple pests.
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz..	0.02-0.03	7	3	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	1.5 pt. 2 pt.	1.5 1.25	1 1	1B 1B	
	naled (Dibrom) 8EC	1 pt.	0.94	1	1B	
	spirotetramat (Movento) 2SC	4.0-5.0 oz..	0.063-0.08	1	23	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz..	0.02-0.025	1	3	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Bean (snap, lima, pole) (continued)						
beet armyworms	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Also in a pre-mix for multiple pests.
	flubendiamide (Belt) 4SC	2.0-3.0 oz.	0.062-0.094	1	28	Also in a pre-mix for multiple pests.
	methoxyfenozide (Intrepid) 2F	4-16 oz.	0.06-0.25	7	18A	
	novaluron (Rimon) 0.83EC	6-12 oz.	0.039-0.078	1	15	Use on snap beans only.
	spinetoram (Radiant) 1SC	4-8 oz.	0.03-0.063	3	5	
fall armyworms	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Also in a pre-mix for multiple pests.
	flubendiamide (Belt) 4SC	2.0-3.0 oz.	0.062-0.094	1	28	Also in a pre-mix for multiple pests.
	methomyl (Lannate) 2.4 LV	1.5 pt.	0.45	1-3	1A	90 SP formulation also registered..
	methoxyfenozide (Intrepid) 2F	4-16 oz.	0.06-0.25	7	18A	
	novaluron (Rimon) 0.83EC	6-12 oz.	0.039-0.078	1	15	Use on snap beans only.
	spinetoram (Radiant) 1SC	4-8 oz.	0.03-0.063	3	5	
bean leaf beetle	acephate (Orthene) 97	0.5-1 lb.	0.5-1	varies	1B	PHI: Lima=1, Snap and Pole=14
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	3	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	0.625-1.25 lb.	0.5-1	3	1	
	dimethoate 4EC	0.5-1 pt.	0.25-0.5	0	1B	
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	7		Also in a pre-mix for multiple pests.
	zeta-cypermethrin (Mustang Max) 0.8EC	2.72-4 oz.	0.017-0.025	1	3	Also in a pre-mix for multiple pests.
corn earworm	acephate (Orthene) 97	0.75-1 lb.	0.75-1	varies	1B	PHI: Lima=1, Snap and Pole=14
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	3	3	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Also in a pre-mix for multiple pests.
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	flubendiamide (Belt) 4SC	2.0-3.0 oz.	0.062-0.094	1	28	Also in a pre-mix for multiple pests.
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	7	3	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Bean (snap, lima, pole) (continued)						
corn earworm (continued)	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	1-3	1A	90 SP formulation also registered.
	spinetoram (Radiant) 1SC	4-8 oz.	0.03-0.063	3	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.72-4 oz.	0.017-0.025	1	3	Also in a pre-mix for multiple pests.
cowpea curculio	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.1	3	3	Also registered as Hero (pre-mix with zeta-cypermethrin).
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	7	3	Also in a pre-mix for multiple pests.
	malathion (Fyfanon) ULV	8 oz.	0.6	1	1B	Applied undiluted as ultra low volume.
	zeta-cypermethrin (Mustang Max) 0.8EC	2.72-4 oz.	0.017-0.025	1	3	Also in a pre-mix for multiple pests.
NOTE: bifenthrin (Brigade) or acephate (Orthene) as applied for corn earworms gives good control. Methomyl (Lannate) gives some control. Field failures have occurred with all registered insecticides. Insecticide resistance can be severe with this pest.						
cutworm	acephate (Orthene) 97	0.5-1.0 lb.	0.5-1.0	varies	1B	PHI: Lima=1, Snap and Pole=14
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	3	3	Also in a pre-mix for multiple pests.
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	gamma-cyhalothrin (Proaxis) 0.5 EC	1.92-3.20 oz.	0.0075-0.0125	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	0.96-1.60 oz.	0.015-0.025	7	3	Also in a pre-mix for multiple pests.
	zeta-cypermethrin (Mustang Max) 0.8EC	2.72-4 oz.	0.017-0.025	1	3	Also in a pre-mix for multiple pests.
European corn borer	acephate (Orthene) 97	0.75-1.0	0.75-1.0	varies	1B	PHI: Lima=1, Snap and Pole=14
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.1	3	3	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Also in a pre-mix for multiple pests.
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	flubendiamide (Belt) 4SC	2.0-3.0 oz.	0.062-0.094	1	28	Also in a pre-mix for multiple pests.
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	7	3	Also in a pre-mix for multiple pests.
	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	1-3	1A	90 SP formulation also registered.
	methoxyfenozide (Intrepid) 2F	4-16 oz.	0.06-0.25	7	18A	

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Bean (snap, lima, pole) (continued)						
European corn borer (continued)	spinetoram (Radiant) 1SC	3-8 oz.	0.023-0.063	3	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.72-4 oz.	0.017-0.025	1	3	Also in a pre-mix for multiple pests.
leafminer	cyromazine (Trigard) 75WP	2.66 oz..	0.125	7	17	Use on lima beans only.
	spinetoram (Radiant) 1SC	5-8 oz.	0.039-0.063	3	5	
NOTE: Avoid over use of broad spectrum insecticides that may encourage leafminer infestations.						
lygus bug	acephate (Orthene) 97	0.5-1 lb.	0.5-1	varies	1B	PHI: Lima=1, Snap and Pole=14
	bifenthrin (Brigade) 2EC	5.12-6.4 oz.	0.08-0.10	3	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	1.25- 1.87 lb.	1-1.5	3	1A	
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	7	3	Also in a pre-mix for multiple pests.
	naled (Dibrom) 8EC	1 pt.	0.94	1	1B	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.72-4 oz.	0.017-0.025	1	3	Also in a pre-mix for multiple pests.
Mexican bean beetle	acephate (Orthene) 97	0.5-1 lb.	0.5-1	varies	1B	PHI: Lima=1, Snap and Pole=14
	carbaryl (Sevin) 80S	0.625-1.25 lb.	0.5-1	3	1A	
	esfenvalerate (Asana) 0.66EC	2.9-5.8 oz.	0.015-0.03	3	3	
	gamma-cyhalothrin (Proaxis) 0.5 EC	1.92-3.20 oz.	0.0075-0.0125	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	0.96-1.60 oz.	0.015-0.025	7	3	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	1.5 pt. 2 pt.	1.5 1.25	1 1	1B 1B	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.72-4 oz.	0.017-0.025	1	3	Also in a pre-mix for multiple pests.
loopers	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B	
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	3	3	Also in a pre-mix for multiple pests.
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz..	0.03-0.05	3	3	
	flubendiamide (Belt) 4SC	2.0-3.0 oz..	0.062-0.094	1	28	Also in a pre-mix for multiple pests.
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.92 oz..	0.03	7	3	Also in a pre-mix for multiple pests.

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Bean (snap, lima, pole) (continued)						
looper (continued)	methoxyfenozide (Intrepid) 2F	4-16 oz.	0.06-0.25	7	18A	
	naled (Dibrom) 8EC	1-1.5 pt.	0.94-1.4	1	1B	
	novaluron (Rimon) 0.83EC	6-12 oz.	0.039-0.078	1	15	Use on snap beans only.
	spinetoram (Radiant) 1SC	4-8 oz.	0.03-0.063	3	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
spider mite	bifenazate (Acramite) 4SC	16-24 oz.	0.5-0.75	3	25	Good coverage is essential.
	dicofol (Dicofol) 4EC	1-3 pt.	0.5-1.5	21	un	Reentry interval is 33 days.
	NOTE: Brigade at highest labeled rates may provide some control.					
stink bug	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	3	3	Also in a pre-mix for multiple pests.
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	7	3	Also in a pre-mix for multiple pests.
	naled (Dibrom) 8EC	1.5 pt.	1.4	1	1B	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
PRE-BLOOM TREATMENTS						
thrips	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	3	3	Also in a pre-mix for multiple pests.
	acephate (Orthene) 97	0.5-1 lb.	0.5-1	varies	1B	PHI: Lima = 0, Snap and Pole = 14.
	acetamiprid (Assail) 30SG	4.5-5.3 oz.	0.085-0.1	7	4A	
	carbaryl (Sevin) 80S	1.25 lb.	1	3	1A	
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	7	3	Also in a pre-mix for multiple pests.
	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	1-3	1A	90 SP formulation also registered.
	spinetoram (Radiant) 1SC	5-8 oz.	0.039-0.063	3	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.

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Bean (snap, lima, pole) (continued)						
thrips (continued)	BLOOM STAGE TREATMENTS					
	acephate (Orthene) 97	0.5-1 lb.	0.5-1	varies	1B	PHI: Lima = 1, Snap and Pole = 14.
	acetamiprid (Assail) 30SG	4.5-5.3 oz.	0.085-0.1	7	4A	
	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	1-3	1A	90 SP formulation also registered.
	spinetoram (Radiant) 1SC	5-8 oz.	0.039-0.063		5	
banded-wing whitefly	acephate (Orthene) 97	0.5-1 lb.	0.5-1	varies	1B	PHI: Lima = 1, Snap and Pole = 14.
silverleaf whitefly	acetamiprid (Assail) 30SG	4-5.3 oz.	0.075-0.1	7	4A	
	buprofezin (Courier) 40SC	9-13.6 oz.	0.25-0.38	14	16	Use on snap beans only. Activity on nymphs.
	pyriproxyfen (Knack) 0.86EC	8-10 oz.	0.054-0.067	7	7C	Activity on eggs and last instar nymphs.
	spirotetramat (Movento) 2SC	4.0-5.0 oz.	0.063-0.08	1	23	
	NOTE: Reduced residual activity has been noted with all Group 4A insecticides. NOTE: Pyrethroid insecticides (Group 3) tank mixed with organophosphate insecticides (Group 1) may provide good control. Group 4A insecticides should not be used for foliar applications if a Group 4A was applied in the soil.					
Broccoli						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
Pre-mixes for multiple pests	thiamethoxam + chlorantraniliprole (Durivo)	10-13 oz.	0.13-0.17 + 0.065-0.085	30	4A 28	
aphid, whitefly	clothianidin (Belay) 2.13SC	9-12 oz.	0.15-0.2	AP	4A	
	dinotefuran (Venom) 70SG	5-6 oz.	0.226-0.268	21	4A	
	imidacloprid (Admire Pro) 4.6F	4.4-10.5 oz.	0.158-0.375	21	4A	
	thiamethoxam (Platinum) 75SG	1.66-3.67 oz.	0.078-0.17	30	4A	Also in a pre-mix for multiple pests.
Caterpillar pests	chlorantraniliprole (Coragen) 1.67SC	3.5-5 oz.	0.045-0.065	3	28	Also has activity against leafminers and whiteflies. Also in a pre-mix for multiple pests.
Soil insects	chlorpyrifos (Lorsban) 15G	4.6-9.2 oz. per 1,000 ft. of row 1.1-1.8 oz. per 1000 ft. of row 1.6-2.75 oz. per 1,000 ft. of row		**	1B	Also labeled for broadcast application.
	75WG			**	1B	
	4EC, Advanced			**	1B	
	diazinon (Diazinon) 4E	2-4 qt.	2-4	**	1B	
	50W	4-8 lb.	2-4	**	1B	

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Broccoli (continued)						
FOLIAR TREATMENTS						
Pre-mixes for multiple pests	bifenthrin + imidacloprid (Brigadier)	3.8-6.1 oz. Rate varies with targeted pests		7	3 4A	
	lambda-cyhalothrin + thiamethoxam (Endigo ZC)	4-4.5 oz.	0.028-0.03 + 0.037-0.04	1	3 4A	
	lambda-cyhalothrin + chlorantraniliprole (Voliam xpress)	5-9 oz. Rate varies with targeted pests.		3	3 28	
	flubendiamide+ buprofezin (Vetica)	10-20 oz.	0.026-0.05 0.18-0.36	1	28 16	Primarily for caterpillar pests and whitefly.
	imidacloprid + beta-cyfluthrin (Leverage) 360	3 oz.	0.047 + 0.023	7	4A 3	Also in a pre-mix for multiple pests.
	thiamethoxam+ chlorantraniliprole (Voliam flexi) WDG	4-7 oz.	0.05-0.0875 + 0.05-0.0875	3	4A 28	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025 + 0.03-0.075	7	3 3	
aphid	acetamiprid (Assail) 30SG	2-4 oz.	0.038-0.075	7	4A	
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	clothianidin (Belay) 2.13SC	3-4 oz.	0.05-0.067	21	4A	

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Broccoli (continued)						
aphid (continued)	dimethoate 4E 2.67EC	0.5-1 pt. 0.75-1.5 pt.	0.25-0.5 0.25-0.5	7	1 1B	
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	flonicamid (Beleaf) 50SG	2.0-2.8 oz.	0.062-0.089	0	9C	
	imidacloprid (Admire Pro) 4.6F	1.3 oz.	0.047	7	4A	Also in a pre-mix for multiple pests.
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	1.5-2.5 pt. 1.5-2 pt.	1.5-2.5 0.94-1.25	varies	1B 1B	PHI: Broccoli = 3, Cauliflower = 7
	pymetrozine (Fulfill) 50WDG	2.75 oz.	0.086	7	9B	
	spirotetramat (Movento) 2SC	4-5 oz.	0.0625-0.078	1	23	Use of an adjuvant is necessary.
	thiamethoxam (Actara) 25WDG	1.5-3 oz.	0.023-0.0468	0	4A	Also in a pre-mix for multiple pests.
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
beet armyworm	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	emamectin benzoate (Proclaim) 5% WDG	2.4-4.8 oz.	0.0075-0.015	7	6	
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	indoxacarb (Avaunt) 30WDG	3.5 oz.	0.065	3	22A	
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	1	18A	
	novaluron (Rimon) 0.83EC	6-12 oz.	0.039-0.078	7	15	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
cabbage looper	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B	
	beta-cyfluthrin (Baythroid XL) 1EC	1.6 - 2.4 oz.	0.0125-0.019	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6 - 2.4 oz.	0.025-0.038	0	3	
	cypermethrin (Ammo) 2.5EC	3.8-5 oz.	0.075-0.1	1	3	
	emamectin benzoate (Proclaim) 5% WDG	3.2-4.8 oz.	0.01-0.015	7	6	
	esfenvalerate (Asana) 0.66 EC	5.8-9.6 oz.	0.03-0.05	3	3	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

Statement on generic products: For brevity, generic products typically are not listed within this section. The trade names listed are intended to aid in identification of products and are not intended to promote use of specific trade name products nor to discourage use of generic products. When a generic product is selected for use and is a different formulation than indicated in the table, the label should be consulted for proper product use rate. Pounds active ingredient per acre should be similar.

PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Broccoli (continued)						
cabbage looper (continued)	fenpropathrin (Danitol) 2.4EC	10.66-16 oz.	0.2-0.3	7	3	
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	gamma-cyhalothrin (Proaxis) 0.5 EC	1.92-3.20 oz	0.0075-0.0125	1	3	
	indoxacarb (Avaunt) 30WDG	2.5-3.5 oz.	0.045-0.065	3	22A	
	lambda-cyhalothrin (Karate) 2.08CS	0.96-1.60 oz.	0.015-0.025	1	3	Also in a pre-mix for multiple pests.
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	1	18A	
	novaluron (Rimon) 0.83EC	6-12 oz.	0.039-0.078	7	15	
	permethrin (Permethrin) 3.2EC	4 oz.	0.1	1	3	Also available as 25WP formulation.
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
	cabbage webworm, imported cabbageworm, cross-striped cabbageworm	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B
beta-cyfluthrin (Baythroid XL) 1EC		1.6 - 2.4 oz.	0.0125-0.019	0	3	Also in a pre-mix for multiple pests.
bifenthrin (Brigade) 2EC		2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
carbaryl (Sevin) 80S		1.25-2.5 oz.	1.0-2.0	3	1A	
cyfluthrin (Tombstone) 2EC		1.6 - 2.4 oz.	0.025-0.038	0	3	
chlorantraniliprole (Coragen) 1.67SC		3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
cypermethrin (Ammo) 2.5EC		2.5-5 oz.	0.05-0.1	1	3	
emamectin benzoate (Proclaim) 5% WDG		2.4-4.8 oz.	0.0075-0.15	7	6	
esfenvalerate (Asana) 0.66EC		2.9-5.8 oz.	0.015-0.03	3	3	
fenpropathrin (Danitol) 2.4EC		10.66-16 oz.	0.2-0.3	7	3	
flubendiamide (Synapse) 24WG		3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
gamma-cyhalothrin (Proaxis) 0.5 EC		1.92-3.20 oz.	0.0075-0.0125	1	3	
indoxacarb (Avaunt) 30WDG		2.5-3.5 oz.	0.045-0.065	3	22A	
lambda-cyhalothrin (Karate) 2.08CS		0.96-1.60 oz.	0.015-0.025	1	3	Also in a pre-mix for multiple pests.
malathion 8EC 5EC		1.5-2.5 pt. 2 pt.	1.5-2.5 1.25	varies	1B 1B	PHI: Broccoli = 3, Cauliflower = 7

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks	
Broccoli (continued)							
cabbage webworm, imported cabbageworm, cross-striped cabbageworm (continued)	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	3	1A	90 SP formulation also registered.	
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	1	18A		
	naled (Dibrom) 8EC	1 pt.	0.95	1	1B		
	novaluron (Rimon) 0.83EC	6-12 oz.	0.039-0.078	7	15		
	permethrin (Permethrin) 3.2EC	4 oz.	0.1	1	3	Also available as 25WP formulation.	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5		
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.	
corn earworm	beta-cyfluthrin (Baythroid XL) 1EC	2.4-3.2 oz.	0.019-0.025	0	3	Also in a pre-mix for multiple pests.	
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.	
	cyfluthrin (Tombstone) 2EC	2.4 - 3.2 oz.	0.038-0.050	0	3		
	cypermethrin (Ammo) 2.5EC	2.5-5 oz.	0.05-0.1	1	3		
	emamectin benzoate (Proclaim) 5% WDG	2.4-4.8 oz.	0.0075-0.015	7	6		
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28		
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	1	3		
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.	
	novaluron (Rimon) 0.83EC	6-12 oz.	0.039-0.078	7	15		
	zeta-cypermethrin (Mustang Max) 0.8EC	2.4-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.	
	NOTE: Danitol, Asana, Lannate, and Permethrin give adequate control.						
	cutworm	beta-cyfluthrin (Baythroid XL) 1EC	0.8-1.6 oz.	0.0065-0.0125	0	3	Also in a pre-mix for multiple pests.
bifenthrin (Brigade) 2EC		2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.	
cyfluthrin (Tombstone) 2EC		0.8-1.6 oz.	0.013-0.025	0	3		
cypermethrin (Ammo) 2.5EC		2.5-5 oz.	0.05-0.1	1	3		
esfenvalerate (Asana) 0.66EC		5.8-9.6 oz.	0.03-0.05	3	3		
gamma-cyhalothrin (Proaxis) 0.5 EC		1.92-3.20 oz.	0.0075-0.0125	1	3	Also in a pre-mix for multiple pests.	
lambda-cyhalothrin (Karate) 2.08CS		0.96-1.60 oz.	0.015-0.025	1	3	Also in a pre-mix for multiple pests.	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

Statement on generic products: For brevity, generic products typically are not listed within this section. The trade names listed are intended to aid in identification of products and are not intended to promote use of specific trade name products nor to discourage use of generic products. When a generic product is selected for use and is a different formulation than indicated in the table, the label should be consulted for proper product use rate. Pounds active ingredient per acre should be similar.

PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Broccoli (continued)						
cutworm (continued)	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.
	NOTE: Chlorpyrifos (Lorsban) as applied for soil insects gives good control of cutworms present at time of planting.					
diamondback moth caterpillar	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	emamectin benzoate (Proclaim) 5% WDG	2.4-4.8 oz.	0.0075-0.015	7	6	
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	indoxacarb (Avaunt) 30WDG	3.5 oz.	0.065	3	22A	
	novaluron (Rimon) 0.83EC	6-12 oz.	0.039-0.078	7	15	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
	NOTE: Lannate, Naled, and pyrethroid insecticides (Warrior, Mustang Max) can provide good control of non-resistant caterpillars; however, resistance to any registered insecticide is a potential in Georgia. Resistance management programs for this pest should be strictly followed.					
stink bug	beta-cyfluthrin (Baythroid XL) 1EC	2.4-3.2 oz.	0.019-0.025	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	2.4-3.2 oz.	0.038-0.050	0	3	
	cypermethrin (Ammo) 2.5EC	3.8-5 oz.	0.075-0.1	1	3	
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	1	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
silverleaf whitefly	acetamiprid (Assail) 30SG	2.5-4 oz.	0.05-0.075	7	4A	
	burofezin (Courier) 40SC	9-13.6 oz.	0.25-0.38	1	16	Primarily active against nymphs. Also in a pre-mix for multiple pests.
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	pyriproxyfen (Knack) 0.86EC	8 - 10 oz.	0.054-0.067	7	7C	Activity on eggs and last instar nymphs.
	spiromesifen (Oberon) 2SC	7 - 8.5 oz.	0.11-0.13	7	23	
	spirotetramat (Movento) 2SC	4-5 oz.	0.0625-0.078	1	23	Use of an adjuvant is necessary. Activity on early instar nymphs.
	thiamethoxam (Actara) 25WDG	3-5.5 oz.	0.0468-0.086	0	4A	Also in a pre-mix for multiple pests.
	NOTE: Reduced residual activity has been noted with all Group 4A insecticides. NOTE: Pyrethroid insecticides (Group 3) tank mixed with organophosphate insecticides (Group 1) may provide good control. Group 4A insecticides should not be used for foliar applications if a Group 4A was applied in the soil.					

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Cabbage						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
Pre-mixes for multiple pests	thiamethoxam + chlorantraniliprole (Durivo)	10-13 oz.	0.13-0.17 + 0.065-0.085	30	4A 28	
aphid, whitefly	clothianidin (Belay) 2.13SC	9-12 oz.	0.15-0.2	AP	4A	
	imidacloprid (Admire Pro) 4.6F	4.4-10.5 oz.	0.158-0.375	21	4A	
	dinotefuran (Venom) 70SG	5-6 oz.	0.226-0.268	21	4A	
	thiamethoxam (Platinum) 75SG	1.66-3.67 oz.	0.078-0.17	30	4A	Also in a pre-mix for multiple pests.
caterpillar pests	chlorantraniliprole (Coragen) 1.67SC	3.5-5 oz.	0.045-0.065	3	28	Also has activity against leafminers and whiteflies. Also in a pre-mix for multiple pests.
soil insects	chlorpyrifos (Lorsban) 15G 75WG 4E, Advanced	4.6-9.2 oz. per 1,000 ft. of row 1.1-1.8 oz. per 1,000 ft. of row 1.6-2.75 oz. per 1,000 ft. of row		**	1B 1B 1B	Also labeled for broadcast application.
	diazinon 4E 50W	2-4 qt. 4-8 lbs.	2-4 2-4	**	1B 1B	
FOLIAR TREATMENTS						
Pre-mixes for multiple pests	bifenthrin + imidacloprid (Brigadier)	3.8-6.1 oz. Rate varies with targeted pests		7	3 4A	
	lambda-cyhalothrin + chlorantraniliprole (Voliam xpress)	5-9 oz. Rate varies with targeted pests.		3	3 28	
	flubendiamide+ buprofezin (Vetica)	10-20 oz.	0.026-0.05 + 0.18-0.36	1	28 16	Primarily for caterpillar pests and whitefly.
	imidacloprid + beta-cyfluthrin (Leverage) 360	3.0 oz.	0.047 + 0.023	7	4A 3	
	lambda-cyhalothrin + thiamethoxam (Endigo ZC)	4-4.5 oz.	0.028-0.03 + 0.037-0.04	1	3 4A	
	thiamethoxam+ chlorantraniliprole (Voliam flexi) WDG	4-7 oz.	0.05-0.0875 + 0.05-0.0875	3	4A 28	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025 + 0.03-0.075	7	3 3	
aphid	acetamiprid (Assail) 30SG	2-4 oz.	0.038-0.075	7	4A	
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	clothianidin (Belay) 2.13SC	3-4 oz.	0.05-0.067	21	4A	
	dimethoate 4EC 2.67EC	0.5-1 pt. 0.75-1.5 pt.	0.25-0.5 0.25-0.5	7 7	1B 1B	
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Cabbage (continued)						
aphid (continued)	endosulfan (Thionex) 3EC	1-1.33 qt.	0.75-1	17	2A	Unlawful to use after July 31, 2012.
	flonicamid (Beleaf) 50SG	2.0-2.8 oz.	0.062-0.089	0	0	
	imidacloprid (Admire Pro) 4.6F	1.3 oz.	0.047	7	4A	Also in a pre-mix for multiple pests.
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	1.5- 2.5 pt. 1.5-2 pt.	1.5-2.5 0.94-1.25	7 7	1B 1B	
	pymetrozine (Fulfill) 50WDG	2.75 oz.	0.086	7	9B	
	spirotetramat (Movento) 2SC	4-5 oz.	0.0625-0.078	1	23	Use of an adjuvant is necessary.
	thiamethoxam (Actara) 25WDG	1.5-3 oz.	0.023-0.0468	0	4A	Also in a pre-mix for multiple pests.
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
beet armyworms	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a premix for multiple pests.
	emamectin benzoate (Proclaim) 5% WDG	2.4-4.8 oz.	0.0075-0.015	7	6	
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	indoxacarb (Avaunt) 30WD	3.5 oz.	0.065	3	22A	
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	1	18A	
	novaluron (Rimon) 0.83EC	6-12 oz.	0.039-0.078	7	15	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
cabbage looper	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label		0	11B	
	beta-cyfluthrin (Baythroid XL) 1EC	1.6 - 2.4 oz.	0.0125-0.019	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6 - 2.4 oz.	0.025-0.038	0	3	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	emamectin benzoate (Proclaim) 5% WDG	3.2-4.8 oz.	0.01-0.015	7	6	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03 -0.05	3	3	
	fenpropathin (Danitol) 2.4EC	10.66-16 oz.	0.2-0.3	7	3	
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	1	3	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Cabbage (continued)						
cabbage looper (continued)	indoxacarb (Avaunt) 30WDG	2.5-3.5 oz.	0.045-0.065	3	22A	
	lambda-cyhalothrin (Karate) 2.08CS	0.96-1.60 oz.	0.015-0.025	1	3	Also in a pre-mix for multiple pests.
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	1	18A	
	novaluron (Rimon) 0.83EC	6-12 oz.	0.039-0.078	7	15	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	1	3	Also available as 25WP formulation.
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
cabbage webworm, imported cabbageworm, cross-striped cabbageworm	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label		0	11B	
	beta-cyfluthrin (Baythroid XL) 1EC	1.6 - 2.4 oz.	0.0125-0.019	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	1.25-2.5	1.0-2.0	3	1A	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6 - 2.4 oz.	0.025-0.038	0	3	
	cypermethrin (Ammo) 2.5EC	2.5-5 oz.	0.05-0.1	1	3	
	emamectin benzoate (Proclaim) 5% WDG	2.4-4.8 oz.	0.0075-0.015	7	6	
	endosulfan (Thionex) 3EC	1-1.33 qt.	0.75-1	17	2A	Unlawful to use after July 31, 2012.
	esfenvalerate (Asana) 0.66EC	2.9-5.8 oz.	0.15-0.03	3	3	
	fenpropathin (Danitol) 2.4EC	10.66-16 oz.	0.2-0.3	7	3	
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	1	3	
	indoxacarb (Avaunt) 30WDG	2.5-3.5 oz.	0.045-0.065	3	22A	
	lambda-cyhalothrin (Karate) 2.08CS	0.96-1.60 oz.	0.015-0.025	1	3	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	1.5-2.5 pt. 2 pt.	1.5-2.5 1.25	7 7	1B 1B	
	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	1	1A	90 SP formulation also registered.
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	1	18A	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Cabbage (continued)						
cabbage webworm, imported cabbageworm, cross-striped cabbageworm (continued)	naled (Dibrom) 8EC	1 pt.	0.95	1	1B	
	novaluron (Rimon) 0.83EC	6-12 oz.	0.039-0.078	7	15	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	1	3	Also available as 25WP formulation.
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.
corn earworm	beta-cyfluthrin (Baythroid XL) 1EC	2.4-3.2 oz.	0.019-0.025	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	2.4-3.2 oz.	0.038-0.050	0	3	
	cypermethrin (Ammo) 2.5EC	2.5-5 oz.	0.05-0.1	1	3	
	emamectin benzoate (Proclaim) 5% WDG	2.4-4.8 oz.	0.0075-0.015	7	6	
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28	
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	1	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	novaluron (Rimon) 0.83EC	6-12 oz.	0.039-0.078	7	15	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.
	NOTE: Danitol, Asana, Lannate, and Permethrin give adequate control.					
cutworm	beta-cyfluthrin (Baythroid XL) 1EC	0.8-1.6 oz.	0.0065-0.0125	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	0.8 - 1.6 oz.	0.013-0.025	0	3	
	cypermethrin (Ammo) 2.5EC	2.5-5 oz.	0.05-0.1	1	3	
	endosulfan (Thionex) 3EC	1.33 qt.	1	17	2A	Unlawful to use after July 31, 2012.
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	1	3	
	lambda-cyhalothrin (Karate) 2.08CS	0.96-1.60 oz.	0.015-0.025	1	3	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Cabbage (continued)						
cutworm (continued)	permethrin (Permethrin) 3.2 EC	4-8 oz.	0.1-0.2	1	3	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.
	NOTE: Chlorpyrifos (Lorsban) as applied for root maggots gives good control of cutworms present at time of planting.					
diamondback moth caterpillar	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label		0	11B	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	emamectin benzoate (Proclaim) 5% WDG	2.4-4.8 oz.	0.0075-0.015	7	6	
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	indoxacarb (Avaunt) 30WDG	3.5 oz.	0.065	3	22A	
	novaluron (Rimon) 0.83EC	6-12 oz.	0.039-0.078	7	15	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
NOTE: Lannate, Naled, and pyrethroid insecticides (Warrior, Danitol, Mustang Max, etc.) can provide good control of non-resistant caterpillars; however, resistance to any registered insecticides is a potential problem in Georgia. Resistance management programs for this pest should be strictly followed.						
harlequin bug	beta-cyfluthrin (Baythroid XL) 1EC	2.4-3.2 oz.	0.019-0.025	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.1	7	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	2.4-3.2 oz.	0.038-0.050	0	3	
	endosulfan (Thionex) 3EC	1-1.33 qt.	0.75-1	17	2A	Unlawful to use after July 31, 2012.
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	1	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
silverleaf whitefly	acetamiprid (Assail) 30SG	2.5-4 oz.	0.05-0.075	7	4A	
	burofezin (Courier) 40SC	9-13.6 oz.	0.25-0.38	1	16	Primarily active against nymphs. Also in a pre-mix for multiple pests.
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	pyriproxyfen (Knack) 0.86EC	8-10 oz.	0.054-0.067	7	7C	Activity on eggs and last instar nymphs.
	spiromesifen (Oberon) 2SC	7 - 8.5 oz.	0.11-0.13	7	23	
	spirotetramat (Movento) 2SC	4-5 oz.	0.0625-0.078	1	23	Use of an adjuvant is necessary. Activity on early instar nymphs.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Cabbage (continued)						
silverleaf whitefly (continued)	thiamethoxam (Actara) 25WDG	3-5.5 oz.	0.0468-0.086	0	4A	Also in a pre-mix for multiple pests.
	NOTE: Reduced residual activity has been noted with all Group 4A insecticides. NOTE: Pyrethroid insecticides (Group 3) tank mixed with organophosphate insecticides (Group 1) may provide good control. Group 4A insecticides should not be used for foliar applications if a Group 4A was applied in the soil.					
Cantaloupe						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
aphids, whitefly	imidacloprid (Admire Pro) 4.6F	Planthouse: 0.44 oz./10,000 plants			4A	
Pre-mixes for multiple pests	thiamethoxam + chlorantraniliprole (Durivo)	10-13 oz.	0.13-0.17 + 0.065-0.085	30	4A 28	
aphid, whitefly, cucumber beetles	clothianidin (Belay) 2.13SC	9-12 oz.	0.15-0.2	AP	4A	
	imidacloprid (Admire Pro) 4.6F	7-10.5 oz.	0.25-0.375	21	4A	
	dinotefuran (Venom) 70SG	5-6 oz.	0.226-0.268	21	4A	
	thiamethoxam (Platinum) 75SG	1.66-3.67 oz.	0.078-0.17	30	4A	Also in a pre-mix for multiple pests.
caterpillar pests	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	See label for application timing. Also in a pre-mix for multiple pests.
soil insects	diazinon 4E (diazinon) 50W	2-4 qt.	2-4	**	1B	
		4-8 lb.	2-4	**	1B	
whitefly	chlorantraniliprole (Coragen) 1.67SC	5.0-7.5 oz.	0.065-0.098	1	28	Best control has been obtained with applications at or shortly after planting. Also in a pre-mix for multiple pests.
FOLIAR TREATMENTS						
Pre-mixes for multiple pests	bifenthrin + avermectin (Athena)	7-17 oz.	0.04-0.1 + 0.006-0.015	7	3 6	
	lambda-cyhalothrin + chlorantraniliprole (Voliam xpress)	6-9 oz.	0.02-0.029 + 0.039-0.059	1	3 28	
	lambda-cyhalothrin + thiamethoxam (Endigo ZC)	4-4.5 oz.	0.028-0.03 + 0.037-0.04	1	3 4A	
	flubendiamide+ buprofezin (Vetica)	12-17 oz.	0.03-0.044 + 0.22-0.31	7	28 16	Primarily for caterpillar pests and whitefly.
	thiamethoxam+ chlorantraniliprole (Voliam flexi) WDG	4-7 oz.	0.05-0.0875 + 0.05-0.0875	1	4A 28	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025 + 0.03-0.075	3	3 3	
aphid	acetamiprid (Assail) 30SG	2.5-4 oz.	0.047-0.075	0	4A	
	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	clothianidin (Belay) 2.13SC	3-4 oz.	0.05-0.067	21	4A	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Cantaloupe (continued)						
FOLIAR TREATMENTS						
aphid (continued)	dimethoate 4EC 2.67EC	1 pt. 1.5 pt.	0.5 0.5	3 3	1B 1B	
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	endosulfan (Thionex) 3EC	0.66-1.33 qt.	0.5-1	4	2A	Unlawful to use after July 31, 2012.
	flonicamid (Beleaf) 50SG	2.0-2.8 oz.	0.062-0.089	1	9C	
	malathion 5EC	1.5-2 pt.	0.94-1.25	1	1B	
	oxamyl (Vydate) 2L	2-4 pt.	0.5-1	1	1A	
	pymetrozine (Fulfill) 50 WDG	2.75 oz.	0.086	0	9B	
	thiamethoxam (Actara) 25WDG	1.5-3 oz.	0.023-0.0468	0	4A	Also in a pre-mix for multiple pests.
cucumber beetle	beta-cyfluthrin (Baythroid XL) 1EC	2.4-2.8 oz.	0.019-0.022	0	3	
	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	
	carbaryl (Sevin) 80S	1.25 lb.	1	3	1A	
	cyfluthrin (Tombstone) 2EC	2.4-2.8 oz.	0.038-0.044	0	3	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	fenpropathrin (Danitol) 2.4EC	10.66-16 oz.	0.2-0.3	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.92 oz.	0.03	1	3	Also in a pre-mix for multiple pests
	malathion 5EC	2 pt.	1.25	1	1B	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.018-0.025	1	3	Also in a pre-mix for multiple pests.
leafhopper	beta-cyfluthrin (Baythroid XL) 1EC	0.8-1.6 oz.	0.0065-0.0125	0	3	
	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	1.25 lb.	1	3	1A	
	cyfluthrin (Tombstone) 2EC	0.8-1.6 oz.	0.013-0.025	0	3	
	dimethoate 4EC 2.67EC	1 pt. 1.5 pt.	0.5 0.5	3 3	1B 1B	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	malathion 5EC	2.5-2.75 pt.	1.56-1.7	1	1B	
	naled (dibrom) 8EC	1 pt.	0.94	1	1B	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Cantaloupe (continued)						
leafhopper (continued)	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.018-0.025	1	3	Also in a pre-mix for multiple pests.
leafminer	abamectin (Agri-Mek) 0.15EC	0.5-1 pt.	0.01-0.02	7	6	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	5-7 oz	0.065-0.09	1	28	Also in a pre-mix for multiple pests.
	cyromazine (Trigard)	2.66 oz.	0.125	0	17	
	spinetoram (Radiant)	6-10 oz.	0.047-0.078	3	5	
pickleworm and melonworm	beta-cyfluthrin (Baythroid XL) 1EC	1.6 - 2.4 oz.	0.0125-0.019	0	3	
	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	0.625-1.25 lb.	0.5-1	3	1A	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6-2.4 oz.	0.025-0.038	0	3	
	endosulfan (Thionex) 3EC	1.33-2.66 pt.	0.5-1	4	2A	Unlawful to use after July 31, 2012.
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	indoxacarb (Avaunt) 30WDG	2.5-6 oz.	0.045-0.11	3	22A	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	3	18A	
	malathion 5EC	2.5-2.75 pt.	1.56-1.7	1	1B	
	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	1-3	1A	90 SP formulation also registered.
	novaluron (Rimon) 0.83EC	12 oz.	0.078	1	15	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	Also available as 25WP formulation.
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	3	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.018-0.025	1	3	Also in a pre-mix for multiple pests.
	spider mite	abamectin (Agri-Mek) 0.15EC	0.5-1 pt.	0.01-0.02	7	6
bifenazate (Acramite) 50WS		0.75 - 1 lb.	0.375-0.5	3	25	Good coverage is essential.
etoxazole (Zeal) 72WG		2-3 oz.	0.09-0.135	7	10B	Predominately an ovicide/larvicide.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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spider mite (continued)	fenpyroximate (Portal) 0.4EC	2 pt.	0.1	3	21A	
	spiromesifen (Oberon) 2SC	7 - 8.5 oz.	0.11-0.13	7	23	
	NOTE: Brigade and Danitol at highest labeled rates may provide some control.					
silverleaf whitefly	acetamiprid (Assail) 30SG	2.5-5.3 oz.	0.047-0.1	0	4A	
	buprofezin (Courier) 40SC	9-13.6 oz.	0.25-0.38	7	16	Activity on nymphs. Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen)	5-7 oz.	0.065-0.09	1	28	Activity on nymphs. Addition of an adjuvant has shown increased efficacy. Also in a pre-mix for multiple pests.
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	pyriproxyfen (Knack) 0.86EC	8 - 10 oz.	0.054-0.067	7	7C	Activity on eggs and last instar nymphs.
	spiromesifen (Oberon) 2SC	7-8.5 oz.	0.11-0.13	7	23	
	thiamethoxam (Actara) 25WDG	3-5.5 oz.	0.0468-0.086	0	4A	Also in a pre-mix for multiple pests.
NOTE: Reduced residual activity has been noted with all Group 4A insecticides. NOTE: Pyrethroid insecticides (Group 3) tank mixed with organophosphate insecticides (Group 1) may provide good control. Group 4A insecticides should not be used for foliar applications if a Group 4A was applied in the soil.						
Carrot						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
aphids, flea beetle, leafhopper	imidacloprid (Admire Pro) 4.6F	4.4-10.5 oz.	0.156-0.375	21	4A	
	thiamethoxam (Platinum) 75SG	1.7-4.01 oz.	0.078-0.1875		4A	
soil insects	diazinon 4E	2-4 qt.	2-4	**	1B	
	(diazinon) 50W	4-8 lb.	2-4	**	1B	
FOLIAR TREATMENTS						
Pre-mixes for multiple pests	imidacloprid + beta-cyfluthrin (Leverage) 360	2.4-2.8 oz.	0.038-0.044 + 0.019-0.022	7	4A 3	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025 + 0.03-0.075	21	3 3	
aphids	bifenthrin (Brigade) 2EC	5.12-6.4 oz.	0.08-0.1	21	3	Also in a pre-mix for multiple pests.
	flonicamid (Beleaf) 50SG	2.0-2.8 oz.	0.062-0.089	3	9C	
	imidacloprid (Admire Pro) 4.6F	1.2 oz.	0.043	7	4A	Also in a pre-mix for multiple pests.
	thiamethoxam (Actara) 25WP	1.5-3 oz.	0.023-0.047	7	4A	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
armyworms	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	
	methoxyfenozide (Intrepid) 2F	6-16 oz.	0.09-0.25	14	18A	
	spinetoram (Radiant) 1SC	6-8 oz.	0.047-0.063	3	5	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Carrot (continued)						
carrot weevil	beta-cyfluthrin (Baythroid XL) 1EC	2.8 oz.	0.022	0	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2E	2.8 oz.	0.044.	0	3	
	esfenvalerate (Asana) 0.66EC	9.6 oz.	0.05	7	3	
	oxamyl (Vydate) 2L	2-4 pt.	0.5-1	14	1A	
cutworm	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	5.12-6.4 oz.	0.08-0.1	21	3	
	cyfluthrin (Tombstone) 2E	1.6-2.8 ozs	0.025-0.044	0	3	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	7	3	
	zeta-cypermethrin (Mustang Max) 0.8 EC	1.28-4 oz.	0.008-0.025	1	3	Also in a pre-mix for multiple pests.
flea beetles	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	5.12-6.4 oz.	0.033-0.1	21	3	
	carbaryl (Sevin) 80S	0.625-1.25 pt.	0.5-1	7	1A	
	cyfluthrin (Tombstone) 2EC	1.6-2.8 oz.	0.025-0.044	0	3	
	imidacloprid (Admire Pro) 4.6F	1.2 oz.	0.04	7	4A	Also in a pre-mix for multiple pests.
	thiamethoxam (Actara) 25WP	1.5-3 oz.	0.023-0.047	7	4A	
	zeta-cypermethrin (Mustang Max) 0.8 EC	1.76-4 oz.	0.011-0.025	1	3	Also in a pre-mix for multiple pests.
leafhoppers	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	0	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	0.625-1.25 pt.	0.5-1	7	1A	
	cyfluthrin (Tombstone) 2EC	1.6-2.8 oz.	0.025-0.044	0	3	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	7	3	
	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	1	1A	90 SP formulation also registered.
	thiamethoxam (Actara) 25WP	1.5-3 oz.	0.023-0.047	7	4A	
	zeta-cypermethrin (Mustang Max) 0.8 EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
vegetable weevil	NOTE: Group 3 insecticides (pyrethroids), Diazinon, Thionex or Sevin as applied for other pests will give helpful control.					
Cauliflower ***SEE BROCCOLI SECTION***						

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

Statement on generic products: For brevity, generic products typically are not listed within this section. The trade names listed are intended to aid in identification of products and are not intended to promote use of specific trade name products nor to discourage use of generic products. When a generic product is selected for use and is a different formulation than indicated in the table, the label should be consulted for proper product use rate. Pounds active ingredient per acre should be similar.

PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Collard						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
Pre-mixes for multiple pests	thiamethoxam + chlorantraniliprole (Durivo)	10-13 oz.	0.13-0.17 + 0.065-0.085	30	4A 28	
aphid, whitefly	clothianidin (Belay) 2.13SC	9-12 oz.	0.15-0.2	AP	4A	
	imidacloprid (Admire Pro) 4.6F	4.4-10.5 oz.	0.156-0.375	21	4A	
	thiamethoxam (Platinum) 75SG	1.66-3.67 oz.	0.078-0.17	30	4A	Also in a pre-mix for multiple pests.
caterpillar pests	chlorantraniliprole (Coragen) 1.67SC	3.5-5 oz.	0.045-0.065	3	28	Also has activity against leafminers and whiteflies. Also in a pre-mix for multiple pests.
soil insects	chlorpyrifos (Lorsban) 15G 75WG 4E, Advanced	4.6-9.2 oz. per 1000 ft. of row 1.1-1.8 oz. per 1000 ft. of row 1.6-2.75 oz. per 1000 ft. of row		** ** **	1B 1B 1B	Also labeled for broadcast application.
	diazinon 4E 50W	2-4 qt. 4-8 lbs	2-4 2-4	** **	1B 1B	
FOLIAR TREATMENTS						
Pre-mixes for multiple pests	bifenthrin + imidacloprid (Brigadier)	3.8-6.1 oz. Rate varies with targeted pests		7	3 4A	
	imidacloprid + beta-cyfluthrin (Leverage) 360	3 oz.	0.047 + 0.023	7	4A 3	
	thiamethoxam+ chlorantraniliprole (Voliam flexi) WDG	4-7 oz.	0.05-0.0875 + 0.05-0.0875	7	4A 28	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025 + 0.03-0.075	7	3 3	
aphid	acetamiprid (Assail) 30SG	2-4 oz.	0.038-0.075	7	4A	
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	clothianidin (Belay) 2.13SC	3-4 oz.	0.05-0.067	21	4A	
	flonicamid (Beleaf) 50SG	2.0-2.8 oz.	0.062-0.089	0	9C	
	imidacloprid (Admire Pro) 4.6F	1.3 oz.	0.047	7	4A	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	1.5-2.5 pt. 1.5-2 pt.	1.5-2.5 0.94-1.25	7 7	1B 1B	
	pymetrozine (Fulfill) 50WDG	2.75 oz.	0.086	7	9B	
	thiamethoxam (Actara) 25WDG	1.5-3 oz.	0.023-0.0468	7	4A	Also in a pre-mix for multiple pests.
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
cabbage looper	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B	
	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.4 oz.	0.013-0.019	0	3	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Collard (continued)						
cabbage looper (continued)	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6-2.4 oz.	0.025-0.038	0	3	
	cypermethrin (Ammo) 2.5EC	3.75-5 oz.	0.075-0.1	1	3	
	emamectin benzoate (Proclaim) 5WDG	3.2 - 4.8 oz.	0.01-0.015	14	6	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	7	3	
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy.
	indoxacarb (Avaunt) 30WDG	2.5-3.5 oz.	0.045-0.065	3	22A	
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	1	18A	
	permethrin (Permethrin) 3.2EC	4 oz.	0.1	1	3	Also available as 25WP formulation.
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
cabbage webworm, imported cabbageworm, cross-striped cabbageworm	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B	
	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.4 oz.	0.013-0.019	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	1.25-2.5 lb.	1.0-2.0	14	1A	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6-2.4 oz.	0.025-0.038	0	3	
	cypermethrin (Ammo) 2.5EC	2.5-5 oz.	0.05-0.1	1	3	
	emamectin benzoate (Proclaim) 5WDG	2.4 - 4.8 oz.	0.0075-0.015	14	6	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	7	3	
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy.
	indoxacarb (Avaunt) 30WDG	2.5-3.5 oz.	0.045-0.065	3	22A	
	malathion 8EC 5EC	1.5-2.5 pt. 2 pt.	1.5-2.5 1.25	7 7	1B 1B	
	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	1	1A	90 SP formulation also registered.
methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	1	18A		

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Collard (continued)						
cabbage webworm, imported cabbageworm, cross-striped cabbageworm (continued)	naled (Dibrom) 8EC	1 pt.	0.95	1	1B	Also in a pre-mix for multiple pests.
	permethrin (Permethrin) 3.2EC	4 oz.	0.1	1	3	Also available as 25WP formulation.
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.
cutworm	beta-cyfluthrin (Baythroid XL) 1EC	0.8-1.6 oz.	0.007-0.013	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	0.8-1.6 oz.	0.013-0.025	0	3	
	cypermethrin (Ammo) 2.5EC	2.5-5 oz.	0.05-0.1	1	3	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	7	3	
	permethrin (Permethrin) 3.2EC	4 oz.	0.1	1	3	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.
	Note: Lorsban as applied for root maggots at-planting give good control of overwintering cutworms present at time of planting.					
diamondback moth caterpillar	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label		0	11B	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	emamectin benzoate (Proclaim) 5WDG	2.4 - 4.8 oz.	0.0075-0.015	14	6	
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy.
	indoxacarb (Avaunt) 30WDG	3.5 oz.	0.065	3	22A	
NOTE: Lannate, Naled, and pyrethroid insecticides (Mustang Max, etc.) can provide good control of non-resistant caterpillars; however, resistance to any registered insecticides is a possibility in Georgia. Resistance management programs for this pest should be strictly followed.						
flea beetle	beta-cyfluthrin (Baythroid XL) 1EC	2.4-3.2 oz.	0.019-0.025	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	0.625-1.25 lb.	0.5-1	14	1A	
	cyfluthrin (Tombstone) 2EC	2.4-3.2 oz.	0.038-0.05	0	3	
	cypermethrin (Ammo) 2.5EC	2.5-5 oz.	0.05-0.1	1	3	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	7	3	
	imidacloprid (Admire Pro) 4.6F	1.3 oz.	0.047	7	4A	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	1.5-2.5 pt. 1.5-2 pt.	1.5-2.5 0.94-1.25	7 7	1B 1B	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Collard (continued)						
harlequin bug, stink bug	beta-cyfluthrin (Baythroid XL) 1EC	2.4-3.2 oz.	0.019-0.025	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	2.4-3.2 oz.	0.038-0.05	0	3	
	cypermethrin (Ammo)	3.75-1.0 oz.	0.075-0.1	1	3	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2 -4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
silverleaf whitefly	acetamiprid (Assail) 30SG	2.5-4 oz.	0.05-0.075	7	4A	
	pyriproxyfen (Knack) 0.86EC	8 - 10 oz.	0.054-0.067	7	7C	Activity on eggs and last instar nymphs.
	thiamethoxam (Actara) 25WDG	3-5.5 oz.	0.0468-0.086	7	4A	Also in a pre-mix for multiple pests.
	NOTE: Reduced residual activity has been noted with all Group 4A insecticides. NOTE: Pyrethroid insecticides (Group 3) tank mixed with organophosphate insecticides (Group 1) may provide good control. Group 4A insecticides should not be used for foliar applications if a Group 4A was applied in the soil.					
Corn (Sweet)						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
cutworm, soil insects	bifenthrin (Brigade) 2EC	0.15-0.3 oz. per 1000 ft. of row		30	3	
	chlorethoxyfos (Fortress) 5G	3-3.75 oz. per 1,000 ft. of row		**	1B	
	cyfluthrin (Aztec) 2.1G 4.67G	6.7 oz. per 1000 ft. of row			3	
		3 oz. per 1000 ft. of row			3	
	ethoprop (Mocap) 15G	8 oz. per 1000 ft. of row			1B	Also labeled for broadcast application.
	phorate (Thimet) 20G	4-5.6 oz. per 1,00 ft. of row			1B	Also registered for application at cultivation.
tefluthrin (Force) 3G	4-5 oz. per 1,000 ft. of row			3		
billbugs, cutworm, soil insects	terbufos (Counter) 20G	4.5-6 oz. per 1,000 ft. of row		**	1B	
fall armyworm, southern armyworm	chlorantraniliprole (Coragen) 1.67SC	5.0 oz.	0.065	AP	28	See label for application instructions.
lesser cornstalk borer, cutworm, soil insects	chlorpyrifos (Lorsban) 4E, 15G, 75WG, Advanced	See label		**	1B	
		NOTE: Rates for Lorsban vary with timing, see label for instructions.				

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Corn (Sweet) (continued)						
FOLIAR TREATMENTS						
pre-mixes for multiple pests	lambda-cyhalothrin + chlorantraniliprole (Voliam xpress)	6-9 ozs. Rate varies with targeted pests		1	3 28	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025 + 0.03-0.075	3	3 3	
aphid	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	1	3	Also in a pre-mix for multiple pests.
	endosulfan (Thionex) 3EC	1.33 qt.	1	17	2A	
	methyl parathion (PennCap-M) 2FM	2-3 pt.	0.5-0.75	4	1B	
corn earworm	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	0	3	
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	1	3	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6-2.8 oz.	0.025-0.044	0	3	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	1	3	
	flubendiamide (Belt) 4SC	2-3 oz	0.06-0.094	1	28	Adjuvants have been shown to increase efficacy.
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz	0.01-0.015	1	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	methomyl (Lannate) 2.4LV	0.75-1.5 pt.	0.225-0.45	0	1A	90 SP formulation also registered.
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	1	3	Also available as 25WP formulation.
	spinetoram (Radiant) 1SC	3-6 oz.	0.023-0.047	1	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.0175-0.025	3	3	Also in a pre-mix for multiple pests.
	European corn borer	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	0	3
bifenthrin (Brigade) 2EC		2.1-6.4 oz.	0.033-0.1	1	3	Also in a pre-mix for multiple pests.
chlorantraniliprole (Coragen) 1.67SC		3.5-5.0 oz.	0.045-0.065	1	28	Also in a pre-mix for multiple pests.
cyfluthrin (Tombstone) 2EC		1.6-2.8 oz.	0.025-0.044	0	3	
esfenvalerate (Asana) 0.66EC		5.8-9.6 oz.	0.03-0.05	1	3	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Corn (Sweet) (continued)						
European corn borer (continued)	flubendiamide (Belt) 4SC	2-3 oz.	0.06-0.094	1	28	Adjuvants have been shown to increase efficacy.
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.06-0.094	1	3	
	indoxacarb (Avaunt) 30WDG	2.5-3.5 oz.	0.045-0.065	3	22A	For application through tassel push only.
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	methomyl (Lannate) 2.4LV	0.75-1.5 pt.	0.225-0.45	0	1A	90 SP formulation also registered.
	methoxyfenozide (Intrepid) 2F	4-16 oz.	0.06-0.25	3	18A	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	1	3	Also available as 25WP formulation.
	spinetoram (Radiant) 1SC	3-6 oz.	0.023-0.047	1	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8 - 4 oz.	0.0175-0.025	3	3	Also in a pre-mix for multiple pests.
fall armyworm	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Also in a pre-mix for multiple pests.
	methomyl (Lannate) 2.4LV	1.5 pt.	0.45	0	1A	90 SP formulation also registered.
	flubendiamide (Belt) 4SC	2-3 oz.	0.06-0.094	1	28	Adjuvants have been shown to increase efficacy.
	indoxacarb (Avaunt) 30WDG	2.5-3.5 oz.	0.045-0.065	3	22A	For application through tassel push only.
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	1	15	If used after tassel push, tank mix with a knock-down product.
	spinetoram (Radiant) 1SC	3-6 oz.	0.023-0.047	1	5	
spider mites	propargite (Comite) 6.55EC	32-48 oz.	1.64-2.45	30	12C	Apply when mite populations are low. Apply only when corn leaves are dry.
	spinomesifen (Oberon) 4SC (Oberon) 2SC	2.85-8.0 5.7-16.0	0.089-0.25 0.089-0.25	5 5	23 23	
stinkbugs	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	0	3	
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	1	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6-2.8 oz.	0.025-0.044	0	3	
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	1	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	methyl parathion (PennCap-M) 2FM	1-3 pt.	0.25-0.75	4	1B	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Cucumber						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
aphid, whitefly	imidacloprid (Admire Pro) 4.6F	Planthouse: 0.44 oz./10,000 plants			4A	
Pre-mixes for multiple pests	thiamethoxam + chlorantraniliprole (Durivo)	10-13 oz.	0.13-0.17 + 0.065-0.085	30	4A 28	
aphid, cucumber beetle, whitefly	clothianidin (Belay) 2.13SC	9-12 oz.	0.15-0.2	AP	4A	
	imidacloprid (Admire Pro) 4.6F	7-10.5 oz.	0.25-0.375	21	4A	
	dinotefuran (Venom) 70SG	5-6 oz.	0.226-0.268	21	4A	
	thiamethoxam (Platinum) 75SG	1.66-3.67 oz.	0.078-0.17	30	4A	Also in a pre-mix for multiple pests.
caterpillar pests	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	See label for application timing. Also in a pre-mix for multiple pests.
whitefly	chlorantraniliprole (Coragen) 1.67SC	5.0-7.5 oz.	0.065-0.098	1	28	The best control has been obtained with applications at or shortly after planting. Also in a pre-mix for multiple pests.
FOLIAR TREATMENTS						
Pre-mix for multiple pests	bifenthrin + avermectin (Athena)	7-17 oz.	0.04-0.1 + 0.006-0.015	7	3 6	
	lambda-cyhalothrin + chlorantraniliprole (Voliam xpress)	6-9 oz.	0.02-0.029 + 0.039-0.059	1	3 28	
	lambda-cyhalothrin + thiamethoxam (Endigo ZC)	4-4.5 oz.	0.028-0.03 + 0.037-0.04	1	3 4A	
	flubendiamide+ buprofezin (Vetiva)	12-17 oz.	0.03-0.044 + 0.22-0.31	7	28 16	Primarily for control of caterpillar pests and whiteflies.
	thiamethoxam+ chlorantraniliprole (Voliam flexi) WDG	4-7 oz.	0.05-0.0875 + 0.05-0.0875	1	4A 28	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025 + 0.03-0.075	3	3 3	
aphid	acetamiprid (Assail) 30SG	2.5-4 oz.	0.047-0.075	0	4A	
	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	clothianidin (Belay) 2.13SC	3-4 oz.	0.05-0.067	21	4A	
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	endosulfan (Thionex) 3EC	0.66-1.33 qt.	0.5-1	11	2A	Unlawful to use after July 31, 2012.
	flonicamid (Beleaf) 50SG	2.0-2.8 oz.	0.062-0.089	0	9C	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Cucumber (continued)						
aphid (continued)	malathion 8EC 5EC	1.75 pt. 1.5 pt.	1.75 0.94	1 1	1B 1B	
	oxamyl (Vydate) 2L	2-4 pt.	0.5-1	1	1A	
	pymetrozine (Fulfill) 50 WDG	2.75 oz..	0.086	0	9B	
	thiamethoxam (Actara) 25WDG	1.5-3 oz.	0.023-0.0468	0	4A	Also in a pre-mix for multiple pests.
beet armyworms	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	indoxacarb (Avaunt) 30WDG	3.5-6 oz.	0.065-0.11	3	22A	
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	3	18A	
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	1	15	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
cucumber beetle	beta-cyfluthrin (Baythroid XL) 1EC	2.4-2.8 oz.	0.019-0.022	0	3	
	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	1.25 lb.	1	3	1A	
	cyfluthrin (Tombstone) 2EC	2.4-2.8 oz.	0.038-0.044	0	3	
	endosulfan (Thionex) 3EC	0.66-1.33 qt.	0.5-1	11	2A	Unlawful to use after July 31, 2012.
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	fenpropathrin (Danitol) 2.4EC	10.66-16 oz.	0.2-0.3	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	1.75 pt. 3 pt.	1.75 1.88	1 1	1B 1B	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	Also available as 25WP formulation.
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.018-0.025	1	3	Also in a pre-mix for multiple pests.
	leafminer	abamectin (Agri-Mek) 0.15EC	0.5 -1 pt.	0.01-0.02	7	6
chlorantraniliprole (Coragen) 1.67SC		5-7 oz.	0.065-0.09	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
cyromazine (Trigard) 75WP		2.66 oz.	0.125	0	17	
spinetoram (Radiant) 1SC		6-10 oz.	0.047-0.078	1	5	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Cucumber (continued)						
pickleworm and melonworm	beta-cyfluthrin (Baythroid XL) 1EC	1.6 - 2.4 oz.	0.0125-0.019	0	3	
	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	.625-1.25 lb.	0.5-1	3	1A	
	cyfluthrin (Tombstone) 2EC	1.6-2.4 oz.	0.025-0.038	0	3	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	endosulfan (Thionex) 3EC	0.66-1.33 qt.	0.5-1	11	2A	Unlawful to use after July 31, 2012.
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	indoxacarb (Avaunt) 30WDG	2.5-6 oz.	0.045-0.11	3	22A	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	1.75 pt. 1.5 pt.	1.75 0.94	1 1	1B 1B	
	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	1-3	1A	90 SP formulation also registered.
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	3	18A	
	novaluron (Rimon) 0.83EC	12 oz.	0.078	1	15	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	Also available as 25WP formulation.
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.018-0.025	1	3	Also in a pre-mix for multiple pests.	
spider mite	abamectin (Agri-Mek) 0.15EC	0.5-1 pt.	0.01-0.02	7	6	Also in a pre-mix for multiple pests.
	bifenazate (Acramite) 50WS	0.75 - 1 lb.	0.375-0.5	3	25	Good coverage is essential.
	dicofol (Dicofol) 4EC	1.25 oz.	0.625	2	un	Reentry interval is 21 days.
	etoxazole (Zeal) 72WG	2-3 oz.	0.09-0.135	7	10B	Predominately an ovicide/larvicide.
	spiromesifen (Oberon) 2SC	7 - 8.5 oz.	0.11-0.13	7	23	
NOTE: Brigade and Danitol at highest labeled rates may provide some control.						

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Cucumber (continued)						
silverleaf whitefly	acetamiprid (Assail) 30SG	2.5-5.3 oz.	0.047-0.1	0	4A	
	buprofezin (Courier) 40SC	9-13.6 oz.	0.25-0.38	7	16	Activity on nymphs. Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	5.0-7.0 oz.	0.065-0.09	1	28	Activity on nymphs. Addition of an adjuvant has shown increased efficacy. Also in a pre-mix for multiple pests.
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	pyriproxyfen (Knack) 0.86EC	8 - 10 oz.	0.054-0.067	7	7C	Activity on eggs and last instar nymphs.
	spiromesifen (Oberon) 2SC	7 - 8.5 oz.	0.11-0.13	7	23	
	thiamethoxam (Actara) 25WDG	3-5.5 oz.	0.0468-0.086	0	4A	Also in a pre-mix for multiple pests.
NOTE: Reduced residual activity has been noted with all Group 4A insecticides. NOTE: Pyrethroid insecticides (Group 3) tank mixed with organophosphate insecticides (Group 1) may provide good control. Group 4A insecticides should not be used for foliar applications if a Group 4A was applied in the soil.						
Eggplant						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
aphids, whitefly	imidacloprid (Admire Pro) 4.6F	Planthouse: 0.44 oz./10,000 plants			4A	
Pre-mixes for multiple pests	thiamethoxam + chlorantraniliprole (Durivo)	10-13 oz.	0.13-0.17 + 0.065-0.085	30	4A 28	
aphid, Colorado potato beetle, fleabeetle, whitefly	clothianidin (Belay) 2.13SC	9-12 oz.	0.15-0.2	AP	4A	
	imidacloprid (Admire Pro) 4.6F	7-10.5 oz.	0.25-0.375	21	4A	
	dinotefuran (Venom) 70SG	5-6 oz.	0.226-0.268	21	4A	
	thiamethoxam (Platinum) 75SG	1.66-3.67 oz.	0.078-0.17	30	4A	Also in a pre-mix for multiple pests.
caterpillar pests	chlorantraniliprole (Coragen) 1.67S	3.5-5.0 oz.	0.045-0.065	1	28	Coragen is registered at higher rates for suppression of whitefly. Also in a pre-mix for multiple pests.
FOLIAR TREATMENTS						
Pre-mixes for multiple pests	bifenthrin + avermectin (Athena)	7-17 oz.	0.04-0.1 + 0.006-0.015	7	3 6	
	bifenthrin + imidacloprid (Brigadier)	3.8-9.85 oz. Rate varies with targeted pests		7	3 4A	
	flubendiamide+ buprofezin (Vetica)	12-17 oz.	0.03-0.044 + 0.22-0.31	1	28 16	Primarily for caterpillar pests and whitefly.
	imidacloprid + beta-cyfluthrin (Leverage) 360	3.8-4.1 oz.	0.059-0.064 + 0.03-0.032	7	4A 3	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Eggplant (continued)						
FOLIAR TREATMENTS (continued)						
Pre-mixes for multiple pests (continued)	lambda-cyhalothrin + chlorantraniliprole (Voliam xpress)	5-9 oz. Rate varies with targeted pests.		5	3 28	
	lambda-cyhalothrin + thiamethoxam (Endigo ZC)	4-4.5 oz.	0.028-0.03 + 0.037-0.04	5	3 4A	
	thiamethoxam+ chlorantraniliprole (Voliam flexi) WDG	4-7 oz.	0.05-0.0875 + 0.05-0.0875	1	4A 28	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025 + 0.03-0.075	7	3 3	
aphid	acetamiprid (Assail) 30SG	2-4 oz.	0.038-0.075	7	4A	
	clothianidin (Belay) 2.13SC	3-4 oz.	0.05-0.067	21	4A	
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	flonicamid (Beleaf) 50SG	2.0-2.8 oz.	0.062-0.089	0	9C	
	imidacloprid (Admire Pro) 4.6F	1.3-2.2 oz.	0.047-0.079	0	4A	Also in a pre-mix for multiple pests.
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	5	3	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	0.75-3.5 pt. 1 pt.	0.75-0.35 0.625	3 3	1B 1B	
	oxamyl (Vydate) 2L	2-4 pt.	0.5-1	1	1A	
	pymetrozine (Fulfill) 50WDG	2.75 oz.	0.086	0	9B	
	spirotetramat (Movento) 2SC	4-5 oz.	0.0625-0.078	1	23	Use of an adjuvant is necessary.
	thiamethoxam (Actara) 25WDG	2-3 oz.	0.03-0.0468	0	4A	Also in a pre-mix for multiple pests.
corn earworm	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	7	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6-2.8 oz.	0.025-0.044	7	3	
	emamectin benzoate (Proclaim) 5WDG	2.4 - 4.8 oz	0.0075-0.015	7	6	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	7	3	
	flubendiamide (Synapse) 2SC	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	5	3	
	indoxacarb (Avaunt) 30WDG	3.5 oz..	0.065	3	22A	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Eggplant (continued)						
corn earworm (continued)	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	5	3	Also in a pre-mix for multiple pests.
	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	5	1A	90 SP formulation also registered.
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	1	15	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.
	NOTE: Permethrin as applied for flea beetles gives good control. Lannate as applied for tomato pinworm gives good control.					
Colorado potato beetle	acetamiprid (Assail) 30SG	1.5-2.5 oz.	0.028-0.047	7	4A	
	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	7	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	1.25-2.5 lb.	1-2	3	1A	
	cyfluthrin (Tombstone) 2EC	1.6-2.8 oz.	0.025-0.044	7	3	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	7	3	
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	5	3	
	imidacloprid (Admire Pro) 4.6F	1.3-2.2 oz.	0.047-0.079	0	4A	Also in a pre-mix for multiple pests.
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	5	3	Also in a pre-mix for multiple pests.
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	1	15	
	oxamyl (Vydate) 2L	2-4 pt.	0.5-1	1	1A	
	permethrin (Permethrin) 3.2EC	8 oz.	0.2	3	3	Also available as 25WP formulation.
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.07	1	5	
	thiamethoxam (Actara) 25WDG	2-3 oz.	0.03-0.0468	0	4A	Also in a pre-mix for multiple pests.
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.
	European corn borer	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	7	3
bifenthrin (Brigade) 2EC		2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
chlorantraniliprole (Coragen) 1.67SC		3.5-5.0 oz.	0.045-0.065	1	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
cyfluthrin (Tombstone) 2EC		1.6-2.8 oz.	0.025-0.044	7	3	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Eggplant (continued)						
European corn borer (continued)	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	7	3	
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	5	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	5	3	Also in a pre-mix for multiple pests.
	methoxyfenozide (Intrepid) 2F	4-16 oz.	0.06-0.25	1	18A	
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	1	15	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.
NOTE: Permethrin as applied for flea beetles should give adequate control. Lannate as applied for tomato pinworm gives good control.						
flea beetle	beta-cyfluthrin (Baythroid XL) 1EC	2.8 oz.	0.022	7	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	0.625-1.25 lb.	0.5-1	3	1A	
	clothianidin (Belay) 2.13SC	3-4 oz.	0.05-0.067	21	4A	
	cyfluthrin (Tombstone) 2EC	2.8 oz.	0.044	7	3	
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	7	3	
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	5	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	5	3	Also in a pre-mix for multiple pests.
	naled (Dibrom) 8EC	1-2 pt.	0.94-1.8	1	1B	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	3	3	Also available as 25WP formulation.
	thiamethoxam (Actara) 25WDG	2-3 oz.	0.03-0.0468	0	4A	Also in a pre-mix for multiple pests.
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Eggplant (continued)						
hornworm	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	7	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	0.625-2.5 lb.	1-2	3	1A	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6-2.8 oz.	0.025-0.044	7	3	
	emamectin benzoate (Proclaim) 5WDG	2.4 - 4.8 oz..	0.0075-0.015	7	6	
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	gamma-cyhalothrin (Proaxis) 0.5 EC	1.92-3.20 oz.	0.0075-0.0125	5	3	
	indoxacarb (Avaunt) 30WDG	2.5-3.5 oz.	0.045-0.065	3	22A	
	lambda-cyhalothrin (Karate) 2.08CS	0.96-1.60 oz.	0.015-0.025	5	3	Also in a pre-mix for multiple pests.
	methoxyfenozide (Intrepid) 2F	4 - 16 oz.	0.06 - 0.25	1	18A	
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	1	15	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.
NOTE: Asana, or Permethrin as applied for flea beetles gives good control. Lannate as applied for tomato pinworm gives good control.						
lacebug	malathion 8	2-3.5 pt.	2-3.5	3	1B	
	NOTE: Asana, or Permethrin as applied for flea beetles gives good control.					
leafminer	abamectin (Agri-Mek) 0.15EC	0.5-1 pt.	0.01-0.02	7	7	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	5-7.5 oz.	0.065-0.098	1	28	
	spinetoram (Radiant) 1SC	6-10 oz.	0.047-0.078	1	5	
spider mite (for broad mite, see notes)	abamectin (Agri-Mek) 0.15EC	0.5-1 pt.	0.01-0.02	7	6	Provides good control of broad mite. Also in a pre-mix for multiple pests.
	bifenazate (Acramite) 50WS	0.75 - 1 lb.	0.375-0.5	3	25	Good coverage is essential.
	etoxazole (Zeal) 72WG	2-3 oz.	0.09-0.135	7	10B	Predominately an ovicide/larvicide.
	fenpyroximate (Portal) 0.4EC	2 pt	0.1	1	21A	Provides good control of broad mite.
	hexakis (Vendex) 50WP	2-3 lb.	1-1.5	3	12B	
	spiromesifen (Oberon) 2SC	7 - 8.5 oz.	0.11-0.13	1	23	Provides control of broad mite but must be used preventively.
	NOTE: Brigade at highest labeled rate may provide some control.					

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Eggplant (continued)						
tomato pinworm	abamectin (Agri-Mek) 0.15EC	1 pt.	0.02	7	6	Also in a pre-mix for multiple pests.
	beta-cyfluthrin (Baythroid XL) 1EC	2.1-2.8 oz.	0.0165-0.022	7	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.1	7	3	Also in a pre-mix for multiple pests.
	chlordantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	2.1-2.8 oz.	0.033-0.044	7	3	
	emamectin benzoate (Proclaim) 5WDG	2.4 - 4.8 oz.	0.0075-0.015	7	6	
	flubendiamide (Synapse) 2SC	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	5	3	
	indoxacarb (Avaunt) 30WDG	3.5 oz.	0.065	3	22A	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	5	3	Also in a pre-mix for multiple pests.
	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	5	1A	90 SP formulation also registered.
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	1	15	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.
western flower thrips	acetamiprid (Assail) 30SG	4 oz.	0.075	7	4A	
	spinetoram (Radiant) 1SC	6-10 oz.	0.047-0.078	1	5	
silverleaf whitefly	acetamiprid (Assail) 30SG	2.5-4 oz.	0.05-0.075	7	4A	
	buprofezin (Courier) 40SC	9-13.6 oz.	0.25-0.38	1	16	Primarily active against nymphs. Also in a pre-mix for multiple pests.
	chlordantraniliprole (Coragen) 1.67SC	5.0-7.5 oz.	0.065-0.098	1	28	Activity on nymphs. Addition of an adjuvant has shown increased efficacy. Also in a pre-mix for multiple pests.
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	pyriproxyfen (Knack) 0.86EC	8-10 oz.	0.054-0.067	1	7C	Activity on eggs and last instar nymphs.
	spiromesifen (Oberon) 2SC	7 - 8.5 oz.	0.11-0.13	1	23	
	spirotetramat (Movento) 2SC	4-5 oz.	0.0625-0.078	1	23	Use of an adjuvant is necessary. Activity on early instar nymphs.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Eggplant (continued)						
silverleaf whitefly (continued)	thiamethoxam (Actara) 25WDG	3-5.5 oz.	0.0468-0.086	0	4A	Also in a pre-mix for multiple pests.
	NOTE: Reduced residual activity has been noted with all Group 4A insecticides. NOTE: Pyrethroid insecticides (Group 3) tank mixed with organophosphate insecticides (Group 1) may provide good control. Group 4A insecticides should not be used for foliar applications if a Group 4A was applied in the soil.					
Kale						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
Pre-mix for multiple pests	thiamethoxam + chlorantraniliprole (Durivo)	10-13 oz.	0.13-0.17 + 0.065-0.085	30	4A 28	
aphids, whitefly	clothianidin (Belay) 2.13SC	9-12 oz.	0.15-0.2	AP	4A	
	imidacloprid (Admire Pro) 4.6 F	4.4-10.5 oz.	0.156-0.375	21	4A	
	thiamethoxam (Platinum) 75SG	1.66-3.67 oz.	0.078-0.17	30	4A	Also in a pre-mix for multiple pests.
caterpillar pests	chlorantraniliprole (Coragen) 1.67SC	3.5-5 oz.	0.045-0.065	3	28	Also in a pre-mix for multiple pests.
soil insects	chlorpyrifos (Lorsban) 15G 75WG 4E, Advanced	4.6-9.2 ozs. per 1000 ft. of row 1.1-1.8 oz. per 1000 ft. of row 1.6-2.75 ozs. per 1000 ft. of row		** **	1B 1B 1B	Also labeled for broadcast application.
	diazinon 4E 50W	2-4 qt. 4-8 lb.	2-4 2-4	**	1B 1B	
FOLIAR TREATMENTS						
Pre-mix for multiple pests	bifenthrin + imidacloprid (Brigadier)	3.8-6.1 ozs. Rate varies with targeted pests		7	3 4A	
	imidacloprid + beta-cyfluthrin (Leverage) 360	3 oz.	0.047 + 0.023	7	4A 3	
	thiamethoxam+ chlorantraniliprole (Voliam flexi) WDG	4-7 oz.	0.05-0.0875 + 0.05-0.0875	7	4A 28	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025 + 0.03-0.075	7	3 3	
aphids	acetamiprid (Assail) 30SG	2-4 oz.	0.038-0.075	7	4A	
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	clothianidin (Belay)	3-4 ozs.	0.05-0.067	21	4A	
	dimethoate 4EC 2.67EC	0.5 pt. 0.75 pt.	0.25 0.25	14 14	1B	
	flonicamid (Beleaf) 50SG	2.0-2.8 oz.	0.062-0.089	0	9C	
	imidacloprid (Admire Pro) 4.6F	1.3 oz.	0.047	7	4A	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	1.5-2.5 pt. 1.5-2 pt.	1.5-2.5 0.94-1.25	7 7	1B 1B	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

Statement on generic products: For brevity, generic products typically are not listed within this section. The trade names listed are intended to aid in identification of products and are not intended to promote use of specific trade name products nor to discourage use of generic products. When a generic product is selected for use and is a different formulation than indicated in the table, the label should be consulted for proper product use rate. Pounds active ingredient per acre should be similar.

PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Kale (continued)						
aphids (continued)	pymetrozine (Fulfill) 50WDG	2.75 oz.	0.086	7	9B	
	thiamethoxam (Actara) 25WDG	1.5-3 oz.	0.023-0.0468	7	4A	Also in a pre-mix for multiple pests.
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2 - 4 oz.	0.02-0.025	7	3	Also in a pre-mix for multiple pests.
cabbage looper	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B	
	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.4 oz.	0.013-0.019	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6-2.4 oz.	0.025-0.038	0	3	
	cypermethrin (Ammo) 2.5EC	3.8-5 oz.	0.075-0.1	1	3	
	emamectin benzoate (Proclaim) 5WDG	3.2 - 4.8 oz.	0.01-0.015	14	6	
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy.
	indoxacarb (Avaunt) 30WDG	2.5-3.5 oz.	0.045-0.065	3	22A	
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	1	18A	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
	cabbage webworm, imported cabbageworm, cross-striped cabbageworm	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B
beta-cyfluthrin (Baythroid XL) 1EC		1.6-2.4 oz.	0.013-0.019	0	3	Also in a pre-mix for multiple pests.
bifenthrin (Brigade) 2EC		2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
carbaryl (Sevin) 80S		1.25-2.5 lb.	1.0-2.0	14	1A	
chlorantraniliprole (Coragen) 1.67SC		3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
cyfluthrin (Tombstone) 2EC		1.6-2.4 oz.	0.025-0.038	0	3	
cypermethrin (Ammo) 2.5EC		2.5-5 oz.	0.05-0.1	1	3	
emamectin benzoate (Proclaim) 5WDG		2.4 - 4.8 oz.	0.0075-0.015	14	6	
flubendiamide (Synapse) 24WG		3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy.
indoxacarb (Avaunt) 30WDG		2.5-3.5 oz.	0.045-0.065	3	22A	
malathion 8EC 5EC		1.5-2.5 pt. 2 pt.	1.5-2.5 1.25	7 7	1B 1B	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Kale (continued)						
cabbage webworm, imported cabbageworm, cross-striped cabbageworm (continued)	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	10	10	90 SP formulation also registered.
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	1	18A	
	naled (Dibrom) 8EC	1 pt.	0.95	1	3	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1		Also in a pre-mix for multiple pests.
cutworm	beta-cyfluthrin (Baythroid XL) 1EC	0.8-1.6 oz.	0.007-0.013	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	0.8-1.6 oz.	0.013-0.025	0	3	
	cypermethrin (Ammo) 2.5EC	2.5-5.0 oz.	0.05-0.1	1	3	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.
diamondback moth caterpillar	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	emamectin benzoate (Proclaim) 5WDG	2.4 - 4.8 oz.	0.0075-0.015	14	6	
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy.
	indoxacarb (Avaunt) 30WDG	3.5 oz.	0.065	3	22A	
NOTE: Lannate, Naled, and pyrethroid insecticides (Mustang Max, etc.) can provide good control of non-resistant caterpillars; however, resistance to any registered insecticide is a possibility in Georgia. Resistance management programs for this pest should be strictly followed.						
silverleaf whitefly	acetamiprid (Assail) 30SG	2.5-4 oz.	0.05-0.075	7	4A	
	pyriproxyfen (Knack) 0.86EC	8 - 10 oz.	0.054-0.067	7	7C	Activity on eggs and last instar nymphs.
	thiamethoxam (Actara) 25WDG	3-5.5 oz.	0.0468-0.086	7	4A	Also in a pre-mix for multiple pests.
NOTE: Reduced residual activity has been noted with all Group 4A insecticides. NOTE: Pyrethroid insecticides (Group 3) tank mixed with organophosphate insecticides (Group 1) may provide good control. Group 4A insecticides should not be used for foliar applications if a Group 4A was applied in the soil.						
Mustard						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
Pre-mix for multiple pests	thiamethoxam + chlorantraniliprole (Durivo)	10-13 oz.	0.13-0.17 + 0.065-0.085	30	4A 28	
aphids, whitefly	clothianidin (Belay) 2.13SC	9-12 oz.	0.15-0.2	AP	4A	
	imidacloprid (Admire Pro) 4.6F	4.4-10.5 oz.	0.156-0.375	21	4A	
	thiamethoxam (Platinum) 75SG	1.66-3.67 oz.	0.078-0.17	30	4A	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Mustard (continued)						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS (continued)						
caterpillar pests	chlorantraniliprole (Coragen) 1.67SC	3.5-5 oz.	0.045-0.065	3	28	Also in a pre-mix for multiple pests.
soil insects	Diazinon 4E 50W	2-4 qt.	2-4	**	1B	
		4-8 lb.	2-4	**	1B	
FOLIAR TREATMENTS						
Pre-mix for multiple pests	bifenthrin + imidacloprid (Brigadier)	3.8-6.1 oz. Rate varies with targeted pests		7	3 4A	
	imidacloprid + beta-cyfluthrin (Leverage) 360	3 oz.	0.047 + 0.023	7	4A 3	
	thiamethoxam+ chlorantraniliprole (Voliam flexi) WDG	4-7 oz.	0.05-0.0875 + 0.05-0.0875	7	4A 28	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025 + 0.03-0.075	7	3 3	
aphids	acetamiprid (Assail) 30SG	2-4 oz.	0.038-0.075	7	4A	
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	clothianidin (Belay) 2.13SC	3-4 oz.	0.05-0.067	21	4A	
	dimethoate 4EC 2.67EC	0.5 pt.	0.25	14	1B	
		0.75 pt.	0.25	14	1B	
	flonicamid (Beleaf) 50SG	2.0-2.8 oz.	0.062-0.089	0	9C	
	imidacloprid (Admire Pro) 4.6F	1.3 oz.	0.047	7	4A	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	1.5-2.5 pt.	1.5-2.5	7	1B	
		1.5-2 pt.	0.94-1.25	7	1B	
	pymetrozine (Fulfill) 50WDG	2.75 oz.	0.086	7	9B	
thiamethoxam (Actara) 25WDG	1.5-3 oz.	0.023-0.0468	7	4A	Also in a pre-mix for multiple pests.	
zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.	
cabbage looper	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B	
	beta-cyfluthrin (Baythroid XL) 1EC	1.6 - 2.4 oz.	0.0125-0.019	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6-2.4 oz.	0.025-0.038	0	3	
	cypermethrin (Ammo) 2.5EC	3.8-5 oz.	0.075-0.1	1	3	
	emamectin benzoate (Proclaim) 5WDG	3.2-4.8 oz.	0.01-0.015	14	6	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Mustard (continued)						
cabbage looper (continued)	esfenvalerate (Asana) 0.66EC	9.6 oz.	0.05	7	3	
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy.
	indoxacarb (Avaunt) 30WDG	2.5-3.5 oz.	0.045-0.065	3	22A	
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	1	18A	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
cabbage webworm, imported cabbageworm, cross-striped cabbageworm	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B	
	beta-cyfluthrin (Baythroid XL) 1EC	1.6 - 2.4 oz.	0.0125-0.019	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	1.25-2.5 lb.	1.0-2.0	14	1A	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6-2.4 oz.	0.025-0.038	0	3	
	cypermethrin (Ammo) 2.5EC	2.5-5 oz.	0.05-0.1	1	3	
	emamectin benzoate (Proclaim) 5WDG	2.4-4.8 oz	0.0075-0.015	14	6	
	esfenvalerate (Asana) 0.66EC	9.6 oz.	0.05	7	3	
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy.
	indoxacarb (Avaunt) 30WDG	2.5-3.5 oz.	0.045-0.065	3	22A	
	malathion 8EC 5EC	1.5-2.5 pt. 2 pt.	1.5-2.5 1.25	7 7	1B 1B	
	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	10	1A	90 SP formulation also registered.
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	1	18A	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.
diamondback moth caterpillar	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	3	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	emamectin benzoate (Proclaim) 5WDG	2.4 - 4.8 oz.	0.0075-0.015	14	6	
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy.
	indoxacarb (Avaunt) 30WDG	3.5 oz.	0.065	3	22A	
NOTE: Lannate and pyrethroid insecticides (Mustang Max, etc.) can provide good control of non-resistant caterpillars; however, resistance to any registered insecticides is a possibility in Georgia. Resistance management programs for this pest should be strictly followed.						

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Mustard (continued)						
flea beetles	beta-cyfluthrin (Baythroid XL) 1EC	2.4-3.2 oz.	0.019-0.025	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	0.625-1.25 lb.	0.5-1	14	1A	
	clothianidin (Belay) 2.13SC	3-4 oz.	0.05-0.067	21	4A	
	cyfluthrin (Tombstone) 2EC	2.4-3.2 oz.	0.038-0.050	0	3	
	cypermethrin (Ammo) 2.5EC	2.5-5 oz.	0.05-0.1	1	3	
	imidacloprid (Admire Pro) 4.6F	1.3 oz.	0.047	7	4A	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	1.5-2.5 pt. 1.5-2 pt.	1.5-2.5 0.94-1.25	7 7	1B 1B	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.
vegetable weevil	NOTE: Asana, Diazinon, Thionex or Sevin applied for other pests will give helpful control.					
silverleaf whitefly	acetamiprid (Assail) 30SG	2.5-4 oz.	0.05-0.075	7	4A	
	pyriproxyfen (Knack) 0.86EC	8 - 10 oz.	0.054-0.067	7	7C	Activity on eggs and last instar nymphs.
	thiamethoxam (Actara) 25WDG	3-5.5 oz.	0.0468-0.086	7	4A	Also in a pre-mix for multiple pests.
	NOTE: Reduced residual activity has been noted with all Group 4A insecticides. NOTE: Pyrethroid insecticides (Group 3) tank mixed with organophosphate insecticides (Group 1) may provide good control. Group 4A insecticides should not be used for foliar applications if a Group 4A was applied in the soil.					
yellowmargined leaf beetle	NOTE: Ammo, Sevin or Thionex give good control of yellowmargined leaf beetle.					
Okra						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
aphids, whitefly	imidacloprid (Admire Pro) 4.6F	Planthouse: 0.44 oz./10,000 plants			4A	
	imidacloprid (Admire Pro) 4.6F	7-14 oz.	0.25-0.5	21	4A	
caterpillar pests, whitefly	chlorantraniliprole (Coragen) 1.67SC	3.5-7.5 oz.	0.045-0.098	1	28	
FOLIAR TREATMENTS						
Pre-mix for multiple pests	bifenthrin + imidacloprid (Brigadier)	3.8-9.85 oz. Rate varies with targeted pests		7	3 4A	
	flubendiamide+ buprofezin (Vetica)	12-17 oz	0.03-0.044 + 0.22-0.31	1	28 16	Primarily for caterpillar pests and whitefly.
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025 + 0.03-0.075	7	3 3	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Okra (continued)						
aphids	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	imidacloprid (Admire Pro) 4.6F	1.3-2.2 oz.	0.047-0.079	0	4A	Also in a pre-mix for multiple pests.
	flonicamid (Beleaf) 50SG	2.0-2.8 oz.	0.062-0.089	0	9C	
	malathion 8EC 5EC	1.5 pt. 1.5 pt.	10.5 0.94	1 1	1B 1B	
	spirotetramat (Movento) 2SC	4.0-5.0 oz.	0.063-0.08	1	23	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
corn earworm	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	1.25-1.9 lb.	1-1.5	3	1A	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	
	flubendiamide (Synapse) 2SC	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	indoxacarb (Avaunt) 30WDG	3.5 oz.	0.065	3	22A	
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	1	15	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.14-0.025	1	3	Also in a pre-mix for multiple pests.
	spider mite	bifenazate (Acrامة) 50WS	0.75 - 1 lb.	0.375-0.5	3	25
etoxazole (Zeal) 72WG		2-3 oz.	0.09-0.135	7	10B	Predominately an ovicide/larvicide.
fenpyroximate (Portal) 0.4EC		2 pt.	0.1	1	21A	
stinkbug	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	7	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	1.25-1.9 lb.	1-1.5	3	1A	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
whitefly	burofezin (Courier) 40SC	9-13.6 oz.	0.25-0.38	1	16	Primarily active against nymphs. Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	5.0-7.5 oz.	0.065-0.098	1	28	
	pyriproxyfen (Knack) 0.86EC	8-10 oz.	0.054-0.067	1	7C	Activity on eggs and last instar nymphs.
	spirotetramat (Movento) 2SC	4.0-5.0 oz.	0.063-0.08	1	23	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Onion						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
soil insects	chlorpyrifos (Lorsban) 4E, Advanced 15G 75WG	See label. 3.7 oz. per 1,000 ft. of row. See label.		** **	1B 1B 1B	
	diazinon 4E 50W	2-4 qt. 6-8 lb.	2-4 2-4	** **	1B 1B	
FOLIAR TREATMENTS						
cutworms	cypermethrin (Ammo) 2.5EC	2-5 oz.	0.04-0.1	7	3	
	gamma-cyhalothrin (Proaxis) 0.5 EC	1.92-3.20 oz.	0.0075-0.0125	14	3	
	lambda-cyhalothrin (Karate) 2.08CS	0.96-1.60 oz.	0.015-0.025	14	3	
	permethrin (Permethrin) 3.2EC	6-12 oz.	0.15-0.3	1	3	Also available as 25WP formulation.
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	7	3	
seedcorn maggot adults	cypermethrin (Ammo) 2.5EC	2 - 5 oz.	0.04 - 0.1	7	3	
	gamma-cyhalothrin (Proaxis) 0.5 EC	1.92-3.20 oz.	0.0075-0.0125	14	3	
	lambda-cyhalothrin (Karate) 2.08CS	0.96-1.60 oz.	0.015-0.025	14	3	
	malathion 8EC 5EC	2 pt. 1.5-2.5 pt.	2 0.94-1.56	3 3	1B 1B	
	permethrin (Permethrin) 3.2EC	6-12 oz.	0.1-0.3	1	3	Also available as 25WP formulation.
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24 - 4 oz.	0.014-0.025	7	3	
thrips	acetamiprid (Assail) 30SG	5-8 oz.	0.097-0.15	7	4A	
	cypermethrin (Ammo) 2.5EC	4-5 oz.	0.08-0.1	7	3	
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	14	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	14	3	
	malathion 8EC 5EC	1-2 pt. 1.5-2 pt.	1-2 0.94-1.25	3 3	1B 1B	
	methomyl (Lannate) 2.4LV	3 pt.	0.9	7	1A	90 SP formulation also registered.
	methyl parathion (PennCap-M)	2 pt.	0.5	15	1B	
	permethrin (Permethrin) 3.2EC	6-12 oz.	0.15-0.3	1	3	Also available as 25WP formulation.
	spinetoram (Radiant) 1SC	6-10 oz.	0.047-0.078	1	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.88-4 oz.	0.018-0.025	7	3	
	NOTE: Reduced efficacy of IRAC group 1B and group 3 insecticides has been noted in the past few years. Reliance on any single chemistry can result in rapid development of resistance in thrips.					

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Peas (southern or blackeye)						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
soil insects	diazinon (Diazinon) 4E 50W	2-4 qt. 4-8 lbs.	2-4 2-4	** **	1B 1B	
	chlorpyrifos (Lorsban) 4E, Advanced	1.8 oz. per 1,000 ft. of row		**	1B	Also labeled for broadcast application.
aphid, whitefly	imidacloprid (Admire Pro) 4.6F	7-10.5 oz.	0.25-0.375	21	4A	
FOLIAR TREATMENTS						
premixes for multiple pests	bifenthrin + imidacloprid (Brigadier)	3.8-5.5 oz. Rate varies with targeted pests		7	3 4A	
	lambda-cyhalothrin + chlorantraniliprole (Voliam xpress)	5-9 oz. Rate varies with targeted pests.		7	3 28	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025+ 0.03-0.075	3	3 3	
aphid	acetamiprid (Assail) 30SG	2.5-5.3 oz	0.047-0.1	7	4A	
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	3	3	Also in a pre-mix for multiple pests.
	dimethoate 2.67 EC 4EC	0.5 pt. 0.33-1 pt.	0.25 0.17-0.5	0 0	1B	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.015-0.03	3	3	
	imidacloprid (Admire Pro) 4.6F	1.2 oz.	0.047	7	4A	Also in a pre-mix for multiple pests.
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	7	3	Also in a pre-mix for multiple pests.
	malathion 8	1-2.5 pt.	1-2.5	3	1B	
	spirotetramat (Movento) 2SC	4.0-5.0 oz.	0.063-0.08	1	23	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
beet armyworms	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Also in a pre-mix for multiple pests.
	flubendiamide (Belt) 4SC	2.0-3.0 oz.	0.062-0.094	1	28	
	methoxyfenozide (Intrepid) 2F	4-16 oz.	0.06-0.25	7	18A	
	spinetoram (Radiant) 1SC	4-8 oz.	0.03-0.063	3	5	
fall armyworms	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Also in a pre-mix for multiple pests.
	flubendiamide (Belt) 4SC	2.0-3.0 oz.	0.062-0.094	1	28	
	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	1	1A	90 SP formulation also registered.
	methoxyfenozide (Intrepid) 2F	4-16 oz.	0.06-0.25	7	18A	
	spinetoram (Radiant) 1SC	4-8 oz.	0.03-0.063	3	5	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Peas (southern or blackeye) (continued)						
cowpea curculio	beta-cyfluthrin (Baythroid XL) 1EC	2.1 oz.	0.0165	3	3	
	bifenthrin (Brigade) 2EC	1.6-6.4 oz.	0.025-0.1	3	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	2.1 oz.	0.033	3	3	
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	7	3	Also in a pre-mix for multiple pests.
	malathion (Fyfanon) ULV	8 oz.	0.6	1	1B	Applied undiluted as ultra low volume.
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.0175-0.025	1	3	Also in a pre-mix for multiple pests.
NOTE: Bifenthrin (Brigade) as applied for corn earworm gives good control of CPC. Methomyl (Lannate) gives some control. NOTE: A preventive program starting prior to curculio reproduction is necessary for good control. NOTE: Field failures have occurred with all registered insecticides. Insecticide resistance can be severe with this pest.						
corn earworm	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.1 oz.	0.0125-0.0165	3	3	
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	3	3	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6-2.1 oz.	0.025-0.033	3	3	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	flubendiamide (Belt) 4SC	2.0-3.0 oz.	0.062-0.094	1	28	
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	7	3	
	spinetoram (Radiant) 1SC	4-8 oz.	0.03-0.063	3	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.0175-0.025	1	3	Also in a pre-mix for multiple pests.
cutworms	beta-cyfluthrin (Baythroid XL) 1EC	0.8-1.6 oz.	0.0065-0.0125	3	3	
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	3	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	0.8-1.6 oz.	0.013-0.025	3	3	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	gamma-cyhalothrin (Proaxis) 0.5 EC	1.92-3.20 oz.	0.0075-0.0125	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	0.96-1.60 oz.	0.015-0.025	7	3	
	zeta-cypermethrin (Mustang Max) 0.8EC	1.28 - 4 oz.	0.008-0.025	1	3	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Peas (southern or blackeye) (continued)						
leafminer	spinetoram (Radiant) 1SC	5-8 oz.	0.039-0.063	3	5	
	NOTE: Avoid over use of broad spectrum insecticides that may encourage leafminer infestations.					
looper	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B	
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.1	3	3	Also in a pre-mix for multiple pests.
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	flubendiamide (Belt) 4SC	2.0-3.0 oz.	0.062-0.094	1	28	
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.92 oz.	0.03	71	3	
	methoxyfenozide (Intrepid) 2F	4-16 oz.	0.06-0.25	7	18A	
	spinetoram (Radiant) 1SC	4-8 oz.	0.03-0.063	3	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
spider mite	bifenazate (Acramite) 50WS	1.0-1.5 lb.	0.5-0.75	3	un	
stink bugs	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.1 oz.	0.0125-0.0165	3	3	
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	3	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6-2.1 oz.	0.025-0.033	3	3	
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	7	3	
	naled (Dibrom) 8EC	1.5 pt.	1.4	1	1B	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
thrips	acetamiprid (Assail) 30SG	4.5-5.3 oz.	0.085-0.1	7	4A	
	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.1 oz.	0.0125-0.0165	3	3	
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.10	3	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6-2.1 oz.	0.025-0.033	3	3	
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	7	3	
	spinetoram (Radiant) 1SC	5-8 oz.	0.039-0.063	3	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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Pepper						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
aphid, whitefly	imidacloprid (Admire Pro) 4.6F	Planthouse: 0.44 oz./10,000 plants			4A	
Pre-mix for multiple pests	thiamethoxam + chlorantraniliprole (Durivo)	10-13 oz.	0.13-0.17 + 0.065-0.085	30	4A 28	
aphid, Colorado potato beetle, flea beetle, whitefly	clothianidin (Belay) 2.13SC	9-12 oz.	0.15-0.2	AP	4A	
	imidacloprid (Amire Pro) 4.6F	7-14 oz.	0.25-0.5	21	4A	
	dinotefuran (Venom) 70SG	5-6 oz.	0.226-0.268	21	4A	
	thiamethoxam (Platinum) 75SG	1.66-3.67 oz.	0.078-0.17	30	4A	Also in a pre-mix for multiple pests.
caterpillar pests	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Coragen is labeled at higher rates for suppression of whitefly. Also in a pre-mix for multiple pests.
FOLIAR TREATMENTS						
Pre-mix for multiple pests	bifenthrin + avermectin (Athena)	7-17 oz.	0.04-0.1+ 0.006-0.015	7	3 6	
	bifenthrin + imidacloprid (Brigadier)	3.8-9.85 oz. Rate varies with targeted pests		7	3 4A	
	flubendiamide+ buprofezin (Vetica)	12-17 oz.	0.03-0.044 + 0.22-0.31	1	28 16	Primarily for caterpillar pests and whitefly
	imidacloprid + beta-cyfluthrin (Leverage) 360	3.8-4.1 oz.	0.059-0.064 + 0.03-0.032	7	4A 3	
	lambda-cyhalothrin + chlorantraniliprole (Voliam xpress)	5-9 oz. Rate varies with targeted pests.		5	3 28	
	lambda-cyhalothrin + thiamethoxam (Endigo ZC)	4-4.5 oz.	0.028-0.03 + 0.037-0.04	5	3 4A	
	thiamethoxam+ chlorantraniliprole (Voliam flexi) WDG	4-7 oz.	0.05-0.0875+ 0.05-0.0875	1	4A 28	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025 + 0.03-0.075	7	3 3	
aphid	acephate (Orthene 97)	0.5-1.0 lb.	0.5-1.0	7	1B	
	acetamiprid (Assail) 30SG	2-4 oz.	0.038-0.075	7	4A	
	clothianidin (Belay) 2.13SC	3-4 oz.	0.05-0.067	21	4A	
	dimethoate 4EC 2.67EC	0.5-.66 pt. 0.75-1 pt.	0.25-0.33 0.25-0.33	0 0	1B 1B	
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	endosulfan (Thionex) 3EC	0.66-1.33 qt.	0.5-1	4	2A	
	flonicamid (Beleaf) 50SG	2.0-2.8 oz.	0.062-0.089	0	9C	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Pepper (continued)						
aphid (continued)	imidacloprid (Admire Pro) 4.6F	1.3-2.2 oz.	0.047-0.079	0	4A	Also in a pre-mix for multiple pests.
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	5	3	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	1.5 pt. 1 pt.	1.5 0.625	3 3	1B 1B	
	oxamyl (Vydate) 2L	2-4 pt.	0.5-1	7	1A	
	pymetrozine (Fulfill) 50WDG	2.75 oz.	0.086	0	9B	
	spirotetramat (Movento) 2SC	4-5 oz.	0.0625-0.078	1	023	Use of an adjuvant is necessary.
	thiamethoxam (Actara) 25WG	2-3 oz.	0.03-0.047	0	4A	Also in a pre-mix for multiple pests.
beet armyworms	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	emamectin benzoate (Proclaim) 5WDG	2.4-4.8 oz.	0.0075-0.015	7	6	
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	indoxacarb (Avaunt) 30WDG	3.5 oz.	0.065	3	22A	
	methoxyfenozide (Intrepid) 2F	4-16 oz.	0.06-0.25	1	18A	
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	1	15	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
fall armyworms	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	emamectin benzoate (Proclaim) 5WDG	2.4-4.8 oz.	0.0075-0.015	7	6	
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	methomyl (Lannate) 2.4LV	1.5 pt.	0.45	3	1A	90 SP formulation also registered.
	methoxyfenozide (Intrepid) 2F	4-16 oz.	0.06-0.25	1	18A	
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	1	15	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
blister beetles, Colorado potato beetles, flea beetles	acetamiprid (Assail) 30SG	1.5-2.5 oz.	0.028-0.05	7	4A	
	beta-cyfluthrin (Baythroid XL) 1EC	2.8 oz.	0.022	7	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	1.25-2.5 lb.	1-2	3	1A	
	clothianidin (Belay) 2.13SC	3-4 oz.	0.05-0.067	21	4A	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Pepper (continued)						
blister beetles, Colorado potato beetles, flea beetles (continued)	cyfluthrin (Tombstone) 2EC	2.8 oz.	0.044	7	3	
	dinotefuran (Venom) 20SG	0.44-0.895 lb.	0.088-0.179	1	4A	
	endosulfan (Thionex) 3EC	0.66-1.33 qt.	0.5-1	4	2A	(flea beetle)
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	7	3	
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	5	3	
	imidacloprid (Admire Pro) 4.6	1.3-2.2 oz.	0.047-0.079	0	4A	Also in a pre-mix for multiple pests.
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	5	3	Also in a pre-mix for multiple pests.
	naled (Dibrom) 8EC	1-2 pt.	0.94-1.875	1	1B	
	thiamethoxam (Actara) 25WG	2 - 3 oz.	0.03-0.047	0	4A	Also in a pre-mix for multiple pests.
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
corn earworm (tomato fruitworm)	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	7	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.1	7	3	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2E	1.6-2.8 oz.	0.025-0.044	7	3	
	emamectin benzoate (Proclaim) 5WDG	2.4 - 4.8 oz.	0.0075-0.015	7	6	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	7	3	
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	5	3	
	indoxacarb (Avaunt) 30WDG	3.5 oz.	0.065	3	22A	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	5	3	Also in a pre-mix for multiple pests.
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	1	15	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	3	3	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Pepper (continued)						
cutworms	beta-cyfluthrin (Baythroid XL) 1EC	2.1-2.8 oz.	0.0165-0.022	7	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.1	7	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	2.1-2.8 oz.	0.033-0.044	7	3	
	gamma-cyhalothrin (Proaxis) 0.5 EC	1.92-3.20 oz.	0.0075-0.0125	5	3	
	lambda-cyhalothrin (Karate) 2.08CS	0.96-1.60 oz.	0.015-0.025	5	3	Also in a pre-mix for multiple pests
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	3	3	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.
NOTE: acephate (Orthene 75S) as applied at the high rate for European corn borer gives good control.						
European corn borer, hornworm	acephate (Orthene) 97	0.75-1 lb.	0.75-1	7	1B	
	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	7	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.1	7	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	1.25-2.5 lb.	1-2	3	1A	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2E	1.6-2.8 oz.	0.025-0.044	7	3	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	7	3	
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	5	3	
	indoxacarb (Avaunt) 30WDG	3.5 oz.	0.065	3	22A	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	5	3	Also in a pre-mix for multiple pests.
	methomyl (Lannate) 2.4LV	3 pt.	0.9	3	1A	90 SP formulation also registered.
	methoxyfenozide (Intrepid) 2F	4-16 oz.	0.06-0.25	1	18A	
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	1	15	
	permethrin (Permethrin) 3.2EC	8 oz.	0.2	3	3	Also available as 25WP formulation.
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Pepper (continued)						
leafminers	abamectin (Agri-Mek) 0.15EC	0.5-1 pt.	0.01-0.02	7	6	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	5-7.5 oz.	0.065-0.098	1	28	Also in a pre-mix for multiple pests.
	cyromazine (Trigard) 75WP	2.66 oz.	0.125	0	17	
	spinetoram (Radiant) 1SC	6-10 oz.	0.047-0.078	1	5	
lygus bugs, stink bugs	beta-cyfluthrin (Baythroid XL) 1EC	2.1-2.8 oz.	0.0165-0.022	7	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	5.12-6.4 oz.	0.08-0.1	7	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	2.1-2.8 oz.	0.033-0.044	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	5	3	Also in a pre-mix for multiple pests.
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
NOTE: dimethoate as used for aphids gives good control.						
pepper maggots	dimethoate 4EC 2.67EC	0.5-0.66 pt. 0.75-1 pt.	0.25-0.33 0.25-0.33	0 0	 1B	
	endosulfan (Thionex) 3EC	0.66-1.33 qt.	0.5-1	4	2A	
	malathion 8EC 5EC	1.5 pt. 2.5 pt.	1.5 1.56	3 3	1B 1B	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	
pepper weevil	acetamiprid (Assail) 30SG	4 oz.	0.075	7	4A	
	beta-cyfluthrin (Baythroid XL) 1EC	2.8 oz.	0.022	7	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.1	7	3	Also registered as Hero (pre-mix with zeta-cypermethrin).
	cyfluthrin (Tombstone) 2E	2.8 oz.	0.044	7	3	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	7	3	
	oxamyl (Vydate) 2L	2-4 pt.	0.5-1	7	1A	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	3	3	Also available as 25WP formulation.
	thiamethoxam (Actara) 25WG	3-5.5 oz.	0.047-0.086	0	4A	Also in a pre-mix for multiple pests.
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24 - 4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Pepper (continued)						
spider mites (for broad mite see notes)	abamectin (Agri-Mek) 0.15EC	0.5-1 pt.	0.01-0.02	7	6	Provides good control of Broad mite. Also in a pre-mix for multiple pests.
	bifenazate (Acramite) 50WS	0.75 - 1 lb.	0.375-0.5	3	25	Good coverage is essential.
	dicofol (Dicofol) 4EC	0.75-1.5 pt.	0.375-0.75	2	un	Reentry interval is 25 days.
	etoxazole (Zeal) 72WG	2-3 oz.	0.09-0.135	7	10B	Predominately an ovicide/larvicide.
	fenpyroximate (Portal) 0.4EC	2 pt.	0.1	1	21A	Provides good control of broad mite.
	spiromesifen (Oberon) 2SC	7 - 8.5 oz.	0.11-0.13	1	23	Provides control of Broad mite but must be used preventively.
NOTE: Brigade at highest labeled rate may provide some control.						
western flower thrips	acetamiprid (Assail) 30SG	4 oz.	0.075	7	4A	
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	spinetoram (Radiant) 1SC	6-10 oz.	0.047-0.078	1	5	
NOTE: Orthene or Lannate as applied for European corn borer gives fair to good control.						
silverleaf whitefly	acetamiprid (Assail) 30SG	2.5-4 oz..	0.05-0.075	7	4A	
	burofezin (Courier) 40SC	9-13.6 oz.	0.25-0.38	1	16	Primarily active against nymphs. Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	5.0-7.5 oz.	0.065-0.098	1	28	Activity on nymphs. Addition of an adjuvant has shown increased efficacy. Also in a pre-mix for multiple pests.
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	pyriproxyfen (Knack) 0.86EC	8-10 oz.	0.054-0.067	1	7C	Activity on eggs and last instar nymphs.
	spiromesifen (Oberon) 2SC	7 - 8.5 oz.	0.11-0.13	1	23	
	spirotriamat (Movento) 2SC	4-5 oz.	0.0625-0.078	1	23	Use of an adjuvant is necessary. Activity on early instar nymphs.
	thiamethoxam (Actara) 25WG	5.5 oz.	0.047-0.086	0	4A	Also in a pre-mix for multiple pests.
NOTE: Reduced residual activity has been noted with all Group 4A insecticides. NOTE: Endosulfan (Thionex) will give good control of adults. Pyrethroid insecticides (Group 3) tank mixed with organophosphate insecticides (Group 1) may provide good control. Group 4A insecticides should not be used for foliar applications if a Group 4A was applied in the soil.						

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Potato, Irish						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
soil insects	bifenthrin (Brigade) 2EC	9.6-19.2 oz. 3.2-9.6 oz.	0.15-0.3 0.05-0.15		3 3	(at planting) (lay-by)
	phorate (Thimet) 20G	11.3-17.3 oz. per 1,000 ft. of row		90	1B	Also labeled for post-emergence application.
aphid, Colorado potato beetle, flea beetle, leafhopper, whitefly	clothianidin (Belay) 2.13 SC	9-12 oz.	0.15-0.2		4A	See label for timing.
	imidacloprid (Admire Pro) 4.6F	5.7-8.7 oz.	0.2-0.312	21	4A	
	dinotefuran (Venom) 70SG	6.5-7.5 oz.	0.28-0.33		4A	PHI: see label.
	thiamethoxam (Platinum) 75SG	1.66-2.67 oz.	0.078-0.125		4A	PHI: see label.
wireworms	ethoprop (Mocap) 15G	2.7 oz. per 100 ft. of row			1B	
	fipronil (Regent) 4SC	See label. Rate varies with row spacing.		90	2B	
FOLIAR TREATMENTS						
Pre-mix for multiple pests	bifenthrin + avermectin (Athena)	7-17 oz.	0.04-0.1 0.006-0.015	21	3 6	
	bifenthrin + imidacloprid (Brigadier)	3.8-6.14 oz. Rate varies with targeted pests		21	3 4A	
	imidacloprid + beta-cyfluthrin (Leverage) 360	2.8 oz.	0.044 + 0.022	7	4A 3	
	lambda-cyhalothrin + chlorantraniliprole (Voliam xpress)	5-9 oz. Rate varies with targeted pests.		14	3 28	
	thiamethoxam + chlorantraniliprole (Voliam flexi)	4 oz.	0.05 + 0.05	14	4A 28	
	lambda-cyhalothrin + thiamethoxam (Endigo)	Rate varies with pest targeted.		14	3 4A	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025 + 0.03-0.075	21	3 3	
aphid	acetamiprid (Assail) 30SG	2.5-.4 oz.	0.047-0.075	7	4A	
	clothianidin (Belay) 2.13 SC	2-3 oz.	0.033-0.05	14	4A	
	dimethoate 4EC 2.67EC	0.5-1 pt. 0.75-1.5 pt.	0.25-0.5 0.25-0.5	0 0	1B 1B	
	dinotefuran (Venom) 70SG	1-1.5 oz.	0.05-0.066	7	4A	
	endosulfan (Thionex) 3EC	1.33-2.66 pt.	0.5-1	7	2A	
	flonicamid (Beleaf) 50SG	2.0-2.8 oz.	0.062-0.089	7	9C	
	imidacloprid (Admire Pro) 4.6F	1.3 oz.	0.047	7	4A	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Potato, Irish (continued)						
aphid (continued)	malathion 8EC 5EC	3 pt. 1 pt.	3 0.625	0 0	1B 1B	
	oxamyl (Vydate) 2L	2-4 pt.	0.5-1	7	1A	
	pymetrozine (Fulfill) 50WDG	2.75-5.5 oz.	0.086-0.172	14	9B	
	spirotetramat (Movento) 2SC	4-5 oz.	0.0625-0.078	7	23	Use of an adjuvant is necessary.
	thiamethoxam (Actara) 25WP	3 oz.	0.047	14	4A	Also in a pre-mix for multiple pests.
beet armyworms	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	14	28	Also in a pre-mix for multiple pests.
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	14	15	
	spinetoram (Radiant) 1SC	6-8 oz.	0.047-0.063	7	5	
	Note: Avaunt or Coragen applied for cabbage looper will provide good control.					
fall armyworms	methomyl (Lannate) 2.4LV	1.5 pt.	0.45	6	1A	90 SP formulation also registered.
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	14	15	
	spinetoram (Radiant) 1SC	6-8 oz.	0.047-0.063	7	5	
	Note: Avaunt or Coragen applied for cabbage looper will provide good control.					
cabbage looper	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B	
	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	0	3	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	3.5-5 oz.	0.045-0.065	14	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6-2.8 oz.	0.025-0.044	0	3	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	7	3	
	indoxacarb (Avaunt) 30 WDG	2.5-6.0 oz.	0.045-0.11	7	22A	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	7	3	Also in a pre-mix for multiple pests.
	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	6	1A	90 SP formulation also registered.
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	14	15	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	14	3	Also available as 25WP formulation.
	spinetoram (Radiant) 1SC	6-8 oz.	0.047-0.063	7	5	
	zeta-cypermethrin (Mustang Max) 0.8 EC	1.76-4 oz.	0.011-0.025	1	3	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Potato, Irish (continued)						
Colorado potato beetle	abamectin (Agri-Mek) 0.15 EC	8.0-16.0 oz.	0.01-0.02	14	6	Also in a pre-mix for multiple pests.
	acetamiprid (Assail) 30SG	1.5-4 oz.	0.028-0.075	7	4A	
	carbaryl (Sevin) 80S	1.25-2.5 lb.	1-2	7	1A	
	clothianidin (Belay) 2.13 SC	2-3 oz.	0.033-0.05	14	4A	
	dinotefuran (Venom) 70SG	1-1.5 oz.	0.05-0.066	7	4A	
	endosulfan (Thionex) 3EC	1.33-2.66 pt.	0.5-1	7	2A	
	imidacloprid (Admire Pro) 4.6F	1.3 oz.	0.047	7	4A	Also in a pre-mix for multiple pests.
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	14	15	
	oxamyl (Vydate) 2L	2-4 pt.	0.5-1	7	1A	
	spinetoram (Radiant) 1SC	4.5-8 oz.	0.035-0.063	7	5	
	thiamethoxam (Actara) 25WG	1.5-3 oz.	0.023-0.047	14	4A	Also in a pre-mix for multiple pests.
	zeta-cypermethrin (Mustang Max) 0.8 EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
	NOTE: Thimet as applied for aphids will help reduce early season infestations.					
false chinch bug	endosulfan (Thionex) 3EC	2.66 pts.	1	7	2A	
	malathion 8EC 5EC	1 pt. 1.5 pt.	1 0.94	0 0	1B 1B	
flea beetles	acetamiprid (Assail) 30SG	1.5.-2.5 oz.	0.028-0.047	7	4A	
	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.1	21	3	Also in a pre-mix for multiple pest
	carbaryl (Sevin) 80S	0.625-1.25 lb.	0.5-1	7	1A	
	clothianidin (Belay) 2.13 SC	2-3 oz.	0.03-0.05	14	4A	
	cyfluthrin (Tombstone) 2EC	1.6-2.8 oz.	0.033-0.05	0	3	
	dinotefuran (Venom) 70SG	1-1.5 oz.	0.05-0.066	1	4A	
	endosulfan (Thionex) 3EC	1.33-2.66 pt.	0.5-1	7	2A	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	7	3	
	imidacloprid (Admire Pro) 4.6F	1.3 oz.	0.047	7	4A	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks	
Potato, Irish (continued)							
flea beetles (continued)	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	7	3	Also in a pre-mix for multiple pests.	
	methyl parathion (PennCap-M) 2FM	2-4 pt.	0.5-1	5	1B		
	oxamyl (Vydate) 2L	2-4 pt.	0.5-1	7	1A		
	thiamethoxam (Actara) 25WG	1.5-3 oz.	0.023-0.047	14	4A	Also in a pre-mix for multiple pests.	
	zeta-cypermethrin (Mustang Max) 0.8 EC	1.76-4 oz.	0.011-0.025	1	3	Also in a pre-mix for multiple pests.	
leafhoppers, potato	beta-cyfluthrin (Baythroid XL) 1EC	0.8-1.6 oz.	0.0065-0.0125	0	3	Also in a pre-mix for multiple pests.	
	carbaryl (Sevin) 80S	0.625-1.25 lb.	0.5-1	7	1A		
	clothianidin (Belay) 2.13 SC	2-3 oz.	0.033-0.05	14	4A		
	cyfluthrin (Tombstone) 2EC	0.8-1.6 oz.	0.013-0.025	0	3	Also in a pre-mix for multiple pests.	
	dimethoate 4EC 2.67EC	0.5-1 pt. 0.75-1.5 pt.	0.25-0.5 0.25-0.5	0 0	1B 1B		
	endosulfan (Thionex) 3EC	1.33-2.66 pt.	0.5-1	7	2A		
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	7	3		
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	7	3	Also in a pre-mix for multiple pests.	
	methyl parathion (PennCap-M) 2FM	2-4 pt.	0.5-1	5	1B		
	methomyl (Lannate) 2.4LV	1.5 - 3 pt.	0.45-0.9	6	1A	90 SP formulation also registered.	
	oxamyl (Vydate) 2L	2-4 pt.	0.5-1	7	1A		
	thiamethoxam (Actara) 25WG	1.5-3 oz.	0.023-0.047	14	4A	Also in a pre-mix for multiple pests.	
	zeta-cypermethrin (Mustang Max) 0.8 EC	1.76-4 oz.	0.011-0.025	1	3	Also in a pre-mix for multiple pests.	
	tuberworm, potato	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	0	3	Also in a pre-mix for multiple pests.
		cyfluthrin (Tombstone) 2EC	1.6-2.8 oz.	0.025-0.044	0	3	
endosulfan (Thionex) 3EC		1.33-2.66 pt.	0.5-1	7	2A		
esfenvalerate (Asana) 0.66EC		5.8-9.6 oz.	0.015-0.03	7	3		
lambda-cyhalothrin (Karate) 2.08CS		1.28-1.92 oz.	0.02-0.03	7	3	Also in a pre-mix for multiple pests.	
methomyl (Lannate) 2.4LV		1.5-3 pt.	0.45-0.9	6	1A	90 SP formulation also registered.	
novaluron (Rimon) 0.83EC		9-12 oz.	0.058-0.078	14	15		

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Potato, sweet						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
aphids, cucumber beetles, flea beetles, whiteflies	clothianidin (Belay) 2.13SC	9-12 oz.	0.15-0.2	4A		Apply at planting or at ground cracking.
	imidacloprid (Admire Pro) 4.6F	4.4-10.5 oz.	0.158-0.377	125	4A	
	thiamethoxam (Platinum) 75SG	1.66-2.67 oz..	0.078-0.125		4A	
soil insects	bifenthrin (Brigade) 2EC	9.6-19.2 oz. 3.2-9.6 oz.	0.15-0.3 0.05-0.15		3 3	(at planting) (lay-by)
	chlorpyrifos (Lorsban) 4E, Advanced 75WG 15G	4 pt. 2.67 lb. 13.5 lb.	2 2 2	125 125 125	1B 1B 1B	
	ethoprop (Mocap) 15G	1.6-2.1 lb per 1000 row feet			1B	Also available as 20G.
	NOTE: Lorsban applied pre-plant incorporated. Overall results may be variable depending on insect pressure and environmental conditions. Growers should avoid planting sweet potatoes in fields that have a high potential for soil insect problems or that have had a history of problems.					
FOLIAR TREATMENTS						
Pre-mix for multiple pests	bifenthrin + imidacloprid (Brigadier)	3.8-7.7 oz. Rate varies with targeted pests		21	3 4A	
	imidacloprid + beta-cyfluthrin (Leverage) 360	2.4-2.8 oz.	0.038-0.044 + 0.019-0.022	7	4A 3	
	lambda-cyhalothrin + chlorantraniliprole (Voliam xpress)	5-9 oz. Rate varies with targeted pests.		14	3 28	
	lambda-cyhalothrin + thiamethoxam (Endigo ZC)	4-4.5 oz.	0.028-0.03 + 0.037-0.04	14	3 4A	
	thiamethoxam + chlorantraniliprole (Voliam flexi)	4 oz.	0.05 + 0.05	14	3 28	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025 + 0.03-0.075	21	3 3	
	aphids	acetamiprid (Assail) 30SG	2.5-4 oz.	0.047-0.075	7	4A
clothianidin (Belay) 2.13SC		2-3 oz.	0.033-0.05	14	4A	
imidacloprid (Admire Pro) 4.6F		1.2 oz.	0.043	7	4A	Also in a pre-mix for multiple pests.
flonicamid (Beleaf) 50SG		2.0-2.8 oz.	0.062-0.089	7	9C	
malathion 5EC		1.5-2 pt.	0.94-1.25	3-7	1B	
pymetrozine (Fulfil) 50WDG		2.75 -5.5 oz.	0.086 -0.172	14	9B	
spirotetramat (Movento) 2SC		4-5 oz.	0.0625-0.078	7	23	Use of an adjuvant is necessary.
thiamethoxam (Actara) 25WP		3 oz.	0.047	14	4A	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Potato, sweet (continued)						
beet armyworms	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	14	28	Also in a pre-mix for multiple pests.
	methoxyfenozide (Intrepid) 2F	6-10 oz.	0.09-0.16	7	18A	
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	14	15	
	spinetoram (Radiant) 1SC	6-8 oz.	0.047-0.063	7	5	
NOTE: Avaunt as applied for looper will provide good control.						
leafhoppers	beta-cyfluthrin (Baythroid XL) 1EC	0.8-1.6 oz.	0.0065-0.0125	0	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	0.8-1.6 oz.	0.013-0.025	0	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	7	3	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	1-1.75 pt. 1.5-2 pt.	1- 1.75 0.94-1.25	3 3	1B 1B	
	thiamethoxam (Actara) 25WP	1.5-3 oz.	0.023-0.047	14	4A	Also in a pre-mix for multiple pests.
	zeta-cypermethrin (Mustang Max) 0.8 EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
cabbage looper	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	0	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6-2.8 oz.	0.025-0.044	0	3	
	indoxacarb (Avaunt) 30WDG	2.5-6 oz.	0.045-0.11	7	22A	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	7	3	
	malathion 8EC 5EC	1-1.75 pt. 1.5-2 pt.	1- 1.75 0.94-1.25	3 3	1B 1B	
	methoxyfenozide (Intrepid) 2F	6-10 oz.	0.09-0.16	7	18	
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	14	15	
	spinetoram (Radiant) 1SC	6-8 oz.	0.047-0.063	7	5	
	zeta-cypermethrin (Mustang Max) 0.8 EC	1.76-4 oz.	0.011-0.025	1	3	Also in a pre-mix for multiple pests.
	NOTE: <i>Bacillus thuringiensis</i> (various names) will suppress loopers if applied on early infestations.					
sweet potato hornworm, yellowstriped armyworm	carbaryl (Sevin) 80S	1.25-2.5 lb.	1-2	7	1A	
	methoxyfenozide (Intrepid) 2F	6-10 oz.	0.09-0.16	7	18A	
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	14	15	
NOTE: Radiant, Intrepid, Rimon and Avaunt give good control of armyworms.						

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Potato, sweet (continued)						
sweet potato weevil	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.1	21	3	Also in a pre-mix for multiple pests.
	phosmet Imidan 70WP	1.33 lb.	0.9	7	1B	
NOTE: If you plan to ship potatoes outside of Georgia, contact the Plant Protection Division, Georgia Department of Agriculture, prior to planting for management requirements.						
whitefringed beetle larvae	NOTE: Do not plant into fields that have whitefringed beetle larvae present.					
Pumpkin						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
aphids, whitefly	Imidacloprid (Admire Pro) 4.6F	Planthouse: 0.44 oz./10,000 plants			4A	
Pre-mixes for multiple pests	thiamethoxam + chlorantraniliprole (Durivo)	10-13 oz.	0.13-0.17 + 0.065-0.085	30	4A 28	
aphid, cucumber beetle, whitefly	clothianidin (Belay) 2.13SC	9-12 oz.	0.15-0.2	AP	4A	
	imidacloprid (Admire Pro) 4.6F	7-10.5 oz.	0.25-0.375	21	4A	
	dinotefuran (Venom) 70SG	5-6 oz.	0.226-0.268	21	4A	
	thiamethoxam (Platinum) 75SG	1.66-3.67 oz.	0.078-0.17	30	4A	Also in a pre-mix for multiple pests.
caterpillar pests	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	See label for timing of application. Also in a pre-mix for multiple pests.
whitefly	chlorantraniliprole (Coragen) 1.67SC	5.0-7.5 oz.	0.065-0.098	1	28	Best control has been obtained with applications at or shortly after planting. Also in a pre-mix for multiple pests.
FOLIAR TREATMENTS						
Pre-mixes for multiple pests	bifenthrin + avermectin (Athena)	7-17 oz.	0.04-0.1 + 0.006-0.015	7	3 6	
	flubendiamide+ buprofezin (Vetiva)	12-17 oz.	0.03-0.044 + 0.22-0.31	7	28 16	Primarily for caterpillar pests and whitefly.
	lambda-cyhalothrin + chlorantraniliprole (Voliam xpress)	6-9 oz.	0.02-0.029 + 0.039-0.059	1	3 28	
	lambda-cyhalothrin + thiamethoxam (Endigo ZC)	4-4.5 oz.	0.028-0.03 + 0.037-0.04	1	3 4A	
	thiamethoxam+ chlorantraniliprole (Voliam flexi) WDG	4-7 oz.	0.05-0.0875 + 0.05-0.0875	1	4A 28	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025 + 0.03-0.075	3	3 3	
aphid	acetamiprid (Assail) 30SG	2.5-4 oz.	0.047-0.075	0	4A	
	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Pumpkin (continued)						
aphid (continued)	clothianidin (Belay) 2.13SC	3-4 oz.	0.05-0.067	21	4A	
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	endosulfan (Thionex) 3EC	1.33-2.66 pt.	0.5-1	11	2A	
	flonicamid (Beleaf) 50SG	2.0-2.8 oz.	0.062-0.089	0	9C	
	malathion 5EC	1.5 pt.	0.94	3	1B	
	oxamyl (Vydate) 2L	2-4 pt.	0.5-1	1	1A	
	pymetrozine (Fulfill) 50WDG	2.75 oz.	0.086	0	9B	
	thiamethoxam (Actara) 25WDG	1.5-3 oz.	0.023-0.0468	0	4A	Also in a pre-mix for multiple pests.
aphid/mosaic suppression	JMS stylet oil Saf-T-Side Sunspray UFO	3 qt. per 100 gal. finished spray 1 gal. per 100 gal. finished spray 1 gal. per 100 gal. finished spray				
	NOTE: Oils when used at the above rates applied two to three times per week with a high pressure (400 PSI) high volume (100 GPA) sprayer give noted suppression of aphid transmitted virus infection. To prevent aphid colonization, treat with admire, venom or platinum at planting or tank mix an effective contact insecticide with every 2 to 3 applications of oil.					
cucumber beetle	beta-cyfluthrin (Baythroid XL) 1EC	2.4-2.8 oz.	0.019-0.022	0	3	
	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	1.25 lb.	1	3	1A	
	cyfluthrin (Tombstone) 2EC	2.4-2.8 oz.	0.038-0.044	0	3	
	endosulfan (Thionex) 3EC	0.66-1.33 qt.	0.5-1.0		2A	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	malathion 5EC	3 pt.	1.875	3	1B	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	Also available as 25WP formulation.
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.018-0.025	1	3	Also in a pre-mix for multiple pests.
	cutworm	beta-cyfluthrin (Baythroid XL) 1EC	0.8-1.6 oz.	0.0065-0.0125	0	3
bifenthrin (Brigade) 2EC		2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
cyfluthrin (Tombstone) 2EC		0.8-1.6 oz.	0.013-0.025	0	3	
esfenvalerate (Asana) 0.66EC		5.8-9.6 oz.	0.03-0.05	3	3	
lambda-cyhalothrin (Karate) 2.08CS		1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Pumpkin (continued)						
cutworm (continued)	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	Also available as 25WP formulation.
	zeta-cypermethrin (Mustang Max) 0.8EC	1.28-4 oz.	0.008-0.025	1	3	Also in a pre-mix for multiple pests.
leafminer	abamectin (Agri-Mek) 0.15EC	0.5-1 pt.	0.01-0.02	7	6	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	5-7 oz.	0.065-0.09	1	28	Also in a pre-mix for multiple pests.
	cyromazine (Trigard) 75WP	2.66 oz.	0.125	0	17	
	spinetoram (Radiant) 1SC	6-10 oz.	0.047-0.078	3	5	
pickleworm and melonworm	beta-cyfluthrin (Baythroid XL) 1EC	1.6 - 2.4 oz.	0.0125-0.019	0	3	
	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	0.625-1.25 lb.	0.5-1	3	1A	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	
	cyfluthrin (Tombstone) 2EC	1.6-2.4 oz.	0.025-0.038	0	3	
	endosulfan (Thionex) 3EC	1.33-2.66 pt.	0.5-1	11	2A	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	indoxacarb (Avaunt) 30WDG	2.5-6 oz.	0.045-0.11	3	22A	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	malathion 5EC	1.5 pt.	0.94	3	1B	
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	3	18A	
	novaluron (Rimon) 0.83EC	12 oz.	0.078	1	15	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	Also available as 25WP formulation.
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	3	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.018-0.025	1	3	Also in a pre-mix for multiple pests.
	spider mites	abamectin (Agri-Mek) 0.15EC	0.5-1 pt.	0.01-0.02	7	6
bifenazate (Acramite) 50WS		0.75 - 1 lb.	0.375-0.5	3	25	Good coverage is essential.
etoxazole (Zeal) 72WG		2-3 oz.	0.09-0.135	7	10B	Predominately an ovicide/larvicide.
spiromesifen (Oberon) 2SC		7 - 8.5 oz.	0.11-0.13	7	23	
NOTE: Brigade and Danitol at highest labeled rates may provide some control.						

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

Statement on generic products: For brevity, generic products typically are not listed within this section. The trade names listed are intended to aid in identification of products and are not intended to promote use of specific trade name products nor to discourage use of generic products. When a generic product is selected for use and is a different formulation than indicated in the table, the label should be consulted for proper product use rate. Pounds active ingredient per acre should be similar.

PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Pumpkin (continued)						
squash bug	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	1.25 lb.	1	3	1A	
	endosulfan (Thionex) 3EC	0.66-1.33 qt.	0.5-1	11	2A	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	permethrin (Permethrin) 3.2EC	8 oz.	0.2	0	3	Also available as 25WP formulation.
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.018-0.025	1	2A	Also in a pre-mix for multiple pests.
squash vine borer	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	endosulfan (Thionex) 3EC	1.33-2.66 pt.	0.5-1	11	2A	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Ajuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	malathion 5	3 pt.	1.875	3	1B	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	Also available as 25WP formulation.
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.018-0.025	1	3	Also in a pre-mix for multiple pests.
silverleaf whitefly	acetamiprid (Assail) 30SG	2.5-5.3 oz.	0.047-0.1	0	4A	
	buprofezin (Courier) 40SC	9-13.6 oz.	0.25-0.38	7	16	Activity on nymphs. Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	5-7 oz.	0.065-0.09	1	28	Activity on nymphs. Addition of an adjuvant has shown increased efficacy. Also in a pre-mix for multiple pests.
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	pyriproxyfen (Knack) 0.86EC	8 - 10 oz.	0.054-0.067	7	7C	Activity on eggs and last instar nymphs.
	spiromesifen (Oberon) 2SC	7 - 8.5 oz.	0.11-0.13	7	23	
	thiamethoxam (Actara) 25WDG	3-5.5 oz.	0.0468-0.086	0	4A	Also in a pre-mix for multiple pests.
NOTE: Reduced residual activity has been noted with all Group 4A insecticides. NOTE: Endosulfan (Thionex) will give good control of adults. Pyrethroid insecticides (Group 3) tank mixed with organophosphate insecticides (Group 1) may provide good control. Group 4A insecticides should not be used for foliar applications if a Group 4A was applied in the soil.						

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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Spinach						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
Pre-mixes for multiple pests	thiamethoxam + chlorantraniliprole (Durivo)	10-13 oz.	0.13-0.17 + 0.065-0.085	30	4A 28	
aphid, whitefly	clothianidin (Belay) 2.13SC	9-12 oz.	0.15-0.2	AP	4A	
	imidacloprid (Admire Pro) 4.6F	4.4-10.5 oz.	0.156-0.375	21	4A	
	dinotefuran (Venom) 70SG	5-6 oz.	0.226-0.268	21	4A	
	thiamethoxam (Platinum) 75SG	1.66-3.67 oz.	0.078-0.17	30	4A	Also in a pre-mix for multiple pests.
caterpillar pests	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Coragen is labeled at higher rates for suppression of whitefly. Also in a pre-mix for multiple pests.
soil insects	diazinon 4E	2-4 qt.	2-4	**	1B	
	50W	4-8 lb.	2-4	**	1B	
FOLIAR TREATMENTS						
Pre-mixes for multiple pests	flubendiamide+ buprofezin (Vetiva)	12-17 oz..	0.03-0.044 + 0.22-0.31	7	28 16	Primarily for caterpillar pests and whitefly.
	imidacloprid + beta-cyfluthrin (Leverage) 360	3 oz.	0.047 + 0.023	7	4A 3	
	thiamethoxam+ chlorantraniliprole (Voliam flexi) WDG	4-7 oz	0.05-0.0875 + 0.05-0.0875	7	4A 28	
aphid	acetamiprid (Assail) 30SG	2-4 oz.	0.038-0.075	7	4A	
	clothianidin (Belay) 2.13SC	3-4 oz.	0.05-0.067	21	4A	
	dimethoate 4EC	.5 pt.	0.25	14	1B	
	2.67EC	0.75 pt.	0.25	14	1B	
	dinotefuran (Venom) 70SG	1-3 oz.	0.045-0.134	7	4A	
	flonicamid (Beleaf) 50SG	2.0-2.8 oz.	0.062-0.089	0	9C	
	imidacloprid (Admire Pro) 4.6F	1.3 oz.	0.047	7	4A	Also in a pre-mix for multiple pests.
	malathion 5	3 pt.	1.875	3	1B	
	5EC	2 pt.	1.25	7	1B	
	pymetrozine (Fulfill) 50WDG	2.75 oz.	0.086	7	9B	
	spirotetramat (Movento) 2SC	4-5 oz.	0.0625-0.078	3	23	Use of an adjuvant is necessary.
thiamethoxam (Actara) 25WDG	1.5-3 oz.	0.023-0.0468	7	4A	Also in a pre-mix for multiple pests.	
beet armyworms	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Also in a pre-mix for multiple pests.
	emamectin benzoate (Proclaim) 5WDG	2.4 - 4.8 oz.	0.0075-0.015	7	6	
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	indoxacarb (Avaunt) 30WDG	3.5 oz.	0.065	3	22A	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Spinach (continued)						
beet armyworms (continued)	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	1	18A	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
cabbage looper	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B	
	beta-cyfluthrin (Baythroid XL) 1EC	1.6 - 2.4 oz.	0.0125-0.019	0	3	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6-2.4 oz.	0.025-0.038	0	3	
	emamectin benzoate (Proclaim) 5WDG	3.2 - 4.8 oz.	0.01-0.015	7	6	
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	indoxacarb (Avaunt) 30WDG	3.5 oz.	0.065	3	22A	
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	1	18A	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	1	3	Also available as 25WP formulation.
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	
	cabbage webworm, imported and cross-striped cabbageworm	Note: Products applied for cabbage looper will provide good control of these pests.				
diamondback moth caterpillar	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Also in a pre-mix for multiple pests.
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
	NOTE: Lannate and pyrethroid insecticides (Mustang Max, etc.) can provide good control of non-resistant caterpillars; however, resistance to any registered insecticides is a possibility in Georgia. Resistance management programs for this pest should be strictly followed. NOTE: Proclaim and Avaunt as applied for cabbage looper or beet armyworm will provide good control.					
vegetable weevil	NOTE: Group 3 (pyrethroid) insecticides and Lannate as applied for worms may give helpful control.					
Squash (summer)						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
aphids, whitefly	imidacloprid (Admire Pro) 4.6F	Planthouse: 0.44 oz./10,000 plants			4A	
Pre-mixes for multiple pests	thiamethoxam + chlorantraniliprole (Durivo)	10-13 oz.	0.13-0.17 + 0.065-0.085	30	4A 28	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Squash (summer) (continued)						
aphid, cucumber beetle, whitefly	clothianidin (Belay) 2.13SC	9-12 oz.	0.15-0.2	AP	4A	
	imidacloprid (Admire Pro) 4.6F	7-10.5 oz.	0.25-0.375	21	4A	
	dinotefuran (Venom) 70SG	5-6 oz.	0.226-0.268	21	4A	
	thiamethoxam (Platinum) 75SG	1.66-3.67 oz.	0.078-0.17	30	4A	Also in a pre-mix for multiple pests.
caterpillar pests	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	See label for application timing. Also in a pre-mix for multiple pests.
whitefly	chlorantraniliprole (Coragen) 1.67SC	5.0-7.5 oz.	0.065-0.098	1	28	Best control has been obtained with application at or shortly after planting. Also in a pre-mix for multiple pests.
FOLIAR TREATMENTS						
Pre-mixes for multiple pests	bifenthrin + avermectin (Athena)	7-17 oz.	0.04-0.1 + 0.006-0.015	7	3 6	
	flubendiamide+ buprofezin (Vetica)	12-17 oz.	0.03-0.044 + 0.22-0.31	7	28 16	Primarily for caterpillar pests and whitefly.
	lambda-cyhalothrin + chlorantraniliprole (Voliam xpress)	6-9 oz.	0.02-0.029 + 0.039-0.059	1	3 28	
	lambda-cyhalothrin + thiamethoxam (Endigo ZC)	4-4.5 oz.	0.028-0.03 + 0.037-0.04	1	3 4A	
	thiamethoxam+ chlorantraniliprole (Voliam flexi) WDG	4-7 oz.	0.05-0.0875 + 0.05-0.0875	1	4A 28	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025 + 0.03-0.075	3	3 3	
aphid	acetamiprid (Assail) 30SG	2.5-4 oz.	0.047-0.075	0	4A	
	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	clothianidin (Belay) 2.13SC	3-4 oz.	0.05-0.067	21	4A	
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	endosulfan (Thionex) 3EC	1.33-2.66 pt.	0.5-1	4	2A	Unlawful to use after July 31, 2012.
	flonicamid (Beleaf) 50SG	2.0-2.8 oz.	0.062-0.089	0	9C	
	malathion 8EC 5EC	1.75 pt. 1.5 pt.	1.75 0.94	1 1	1B 1B	
	oxamyl (Vydate) 2L	2-4 pt.	0.5-1	1	1A	
	pymetrozine (Fulfill) 50WDG	2.75 oz.	0.086	0	9B	
	thiamethoxam (Actara) 25WDG	1.5-3 oz.	0.023-0.0468	0	4A	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Squash (summer) (continued)						
aphid/mosaic suppression	JMS stylet oil	3 qt. per 100 gal. finished spray				
	Saf-T-Side	1 gal. per 100 gal. finished spray				
	Sunspray UFO	1 gal. per 100 gal. finished spray				
NOTE: Oils when used at the above rates applied two to three times per week with a high pressure (400 PSI) high volume sprayer give noted suppression of aphid transmitted virus infection. To prevent aphid colonization, treat with admire, venom or platinum at planting or tank mix an effective contact insecticide with every 2 to 3 applications of oil.						
cucumber beetle	beta-cyfluthrin (Baythroid XL) 1EC	2.4-2.8 oz.	0.019-0.022	0	3	
	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	1.25 lb.	1	3	1A	
	cyfluthrin (Tombstone) 2EC	2.4-2.8 oz.	0.038-0.044	0	3	
	endosulfan (Thionex) 3EC	1.33-2.66 pt.	0.5-1	4	2A	Unlawful to use after July 31, 2012.
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	fenpropathrin (Danitol) 2.4EC	10.66-16 oz.	0.2-0.3	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	1.75 pt. 3 pt.	1.75 1.88	1 1	1B 1B	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	Also available as 25WP formulation.
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.018-0.025	1	3	Also in a pre-mix for multiple pests.
	cutworm	beta-cyfluthrin (Baythroid XL) 1EC	0.8-1.6 oz.	0.0065-0.0125	0	3
bifenthrin (Brigade) 2EC		2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
cyfluthrin (Tombstone) 2EC		0.8-1.6 oz.	0.013-0.025	0	3	
esfenvalerate (Asana) 0.66EC		5.8-9.6 oz.	0.03-0.05	3	3	
lambda-cyhalothrin (Karate) 2.08CS		1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
permethrin (Permethrin) 3.2EC		4-8 oz.	0.1-0.2	0	3	Also available as 25WP formulation.
zeta-cypermethrin (Mustang Max) 0.8EC		1.28-4 oz.	0.008-0.025	1	3	Also in a pre-mix for multiple pests.
leafminer	abamectin (Agri-Mek) 0.15EC	0.5-1 pt.	0.01-0.02	7	6	Also in a pre-mix for multiple pests.
	cyromazine (Trigard) 75WP	2.66 oz.	0.125	0	17	
	spinetoram (Radiant) 1SC	6-10 oz.	0.047-0.078	3	5	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Squash (summer) (continued)						
pickleworm and melonworm	beta-cyfluthrin (Baythroid XL) 1EC	1.6 - 2.4 oz.	0.0125-0.019	0	3	
	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	0.625-1.25 lb.	0.5-1	3	1A	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6-2.4 oz.	0.025-0.038	0	3	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	endosulfan (Thionex) 3EC	1.33-2.66 pt.	0.5-1	4	2A	Unlawful to use after July 31, 2012.
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	indoxacarb (Avaunt) 30WDG	2.5-6 oz.	0.045-0.11	3	22A	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	1.75 pt. 1.5 pt.	1.75 0.94	1 1	1B 1B	
	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	1-3	1A	90 SP formulation also registered.
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	3	18A	
	novaluron (Rimon) 0.83EC	12 oz.	0.078	1	15	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	Also available as 25WP formulation.
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	3	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.018-0.025	1	3	Also in a pre-mix for multiple pests.
spider mites	abamectin (Agri-Mek) 0.15EC	0.5-1 pt.	0.01-0.02	7	6	Also in a pre-mix for multiple pests.
	bifenazate (Acramite) 50WS	0.75 - 1 lb.	0.375-0.5	3	25	Good coverage is essential.
	dicofol (Dicofol) 4EC	1.25 pt.	0.625	2	un	Reentry interval is 21 days.
	etoxazole (Zeal) 72WG	2-3 oz.	0.09-0.135	7	10B	Predominately an ovicide/larvicide.
	spiromesifen (Oberon) 2SC	7 - 8.5 oz.	0.11-0.13	7	23	
	NOTE: Brigade and Danitol at highest labeled rate may provide some control.					
squash bug	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	1.25 lb.	1	1	1A	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Squash (summer) (continued)						
squash bug (continued)	endosulfan (Thionex) 3EC	1.33-2.66 pt.	0.5-1	4	2A	Unlawful to use after July 31, 2012.
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	permethrin (Permethrin) 3.2EC	8 oz.	0.2	0	3	Also available as 25WP formulation.
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.018-0.025	1	3	Also in a pre-mix for multiple pests.
squash vine borer	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	endosulfan (Thionex) 3EC	1.33-2.66 pt.	0.5-1	4	2A	Unlawful to use after July 31, 2012.
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	1.75 pt. 3 pt.	1.75 1.88	1 1	1B 1B	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	Also available as 25WP formulation.
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.018-0.025	1	3	Also in a pre-mix for multiple pests.
silverleaf whitefly	acetamiprid (Assail) 30SG	2.5-5.3 oz.	0.047-0.1	0	4A	
	buprofezin (Courier) 40SC	9-13.6 oz.	0.25-0.38	7	16	Activity on nymphs. Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	5-7 oz.	0.065-0.09	1	28	Activity on nymphs. Addition of an adjuvant has shown increased efficacy. Also in a pre-mix for multiple pests.
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	pyriproxyfen (Knack) 0.86EC	8 - 10 oz.	0.054-0.067	7	7C	Activity on eggs and last instar nymphs.
	spiromesifen (Oberon) 2SC	7 - 8.5 oz.	0.11-0.13	7	23	
	thiamethoxam (Actara) 25WDG	3-5.5 oz.	0.0468-0.086	0	4A	Also in a pre-mix for multiple pests.
NOTE: Reduced residual activity has been noted with all Group 4A insecticides. NOTE: Pyrethroid insecticides (Group 3) tank mixed with organophosphate insecticides (Group 1) may provide good control. Group 4A insecticides should not be used for foliar applications if a Group 4A was applied in the soil.						

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Tomato						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
aphids, whitefly	imidacloprid (Admire Pro) 4.6F	Planthouse: 0.44 oz./10,000 plants			4A	
Pre-mixes for multiple pests	thiamethoxam + chlorantraniliprole (Durivo)	10-13 oz.	0.13-0.17 + 0.065-0.085	30	4A 28	
aphid, Colorado potato beetle, whitefly	clothianidin (Belay) 2.13SC	9-12 oz.	0.15-0.2	AP	4A	
	imidacloprid (Admire Pro) 4.6F	7-10.5 oz.	0.25-0.375	21	4A	
	dinotefuran (Venom) 70SG	5-6 oz.	0.226-0.268	21	4A	
	thiamethoxam (Platinum) 75SG	1.66-3.67 oz.	0.078-0.17	30	4A	Also in a pre-mix for multiple pests.
caterpillar pests	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Coragen is labeled at higher rates for suppression of whitefly. Also in a pre-mix for multiple pests.
soil insects	diazinon 4E	2-4 qt.	2-4		1B	
	14G	14-28 lb.	2-4		1B	
FOLIAR TREATMENTS						
Pre-mixes for multiple pests	bifenthrin + avermectin (Athena)	7-17 oz.	0.04-0.1 + 0.006-0.015	7	3 6	
	bifenthrin + imidacloprid (Brigadier)	3.8-9.85 oz. Rate varies with targeted pests		1	3 4A	
	flubendiamide+ buprofezin (Vetica)	12-17 oz.	0.03-0.044 + 0.22-0.31	1	28 16	Primarily for caterpillar pests and whitefly.
	imidacloprid + beta-cyfluthrin (Leverage) 360	3.8-4.1 oz.	0.059-0.064 + 0.03-0.032	0	4A 3	
	lambda-cyhalothrin + thiamethoxam (Endigo ZC)	4-4.5 oz.	0.028-0.03 + 0.037-0.04	5	3 4A	
	thiamethoxam+ chlorantraniliprole (Voliam flexi) WDG	4-7 oz.	0.05-0.0875 + 0.05-0.0875	1	4A 28	
	lambda-cyhalothrin + chlorantraniliprole (Voliam xpress)	5-9 oz. Rate varies with targeted pests.		5	3 28	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025 + 0.03-0.075	1	3 3	
aphid	acetamiprid (Assail) 30SG	2-4 oz.	0.038-0.075	7	4A	
	bifenthrin (Brigade) 2EC	2.1-5.2 oz.	0.033-0.08	1	3	Also in a pre-mix for multiple pests.
	clothianidin (Belay) 2.13SC	3-4 oz.	0.05-0.067	21	4A	
	dimethoate 4EC 2.67EC	0.5-1 pt. 0.75-1.5 pt.	0.25-.5 0.25-0.5	7 7	1B 1B	
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Tomato (continued)						
aphid (continued)	endosulfan (Thionex) 3EC	1.33-2.66 pt.	0.5-1	4	2A	
	flonicamid (Beleaf) 50SG	2.0-2.8 oz.	0.062-0.089	0	9C	
	imidacloprid (Admire Pro) 4.6F	1.3-2.2 oz.	0.047-0.079	0	4A	Also in a pre-mix for multiple pests.
	malathion 8EC 5EC	1.5 pt. 1 pt.	1.5 0.625	1 1	1B 1B	
	oxamyl (Vydate) 2L	2-4 pts.	0.5-1	3	1A	
	pymetrozine (Fulfill) 50WDG	2.75 oz.	0.086	0	9B	
	spirotetramat (Movento) 2SC	4-5 oz.	0.0625-0.078	1	23	Use of an adjuvant is necessary.
	thiamethoxam (Actara) 25WDG	2-3 oz.	0.03-0.0468	0	4A	Also in a pre-mix for multiple pests.
beet armyworms	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	emamectin benzoate (Proclaim) 5WDG	2.4 - 4.8 oz.	0.0075-0.015	7	6	
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	indoxacarb (Avaunt) 30WDG	3.5 oz.	0.065	3	22A	
	methoxyfenozide (Intrepid) 2F	4-16 oz.	0.06-0.25	1	18A	
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	1	15	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
cabbage looper	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B	
	beta-cyfluthrin (Baythroid XL) 1EC	2.1-2.8 oz.	0.0165-0.022	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1 - 5.1 oz.	0.033-0.08	1	3	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2E	2.1-2.8 oz.	0.033-0.044	0	3	
	emamectin benzoate (Proclaim) 5WDG	3.2 - 4.8 oz.	0.01-0.015	7	6	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	1	3	
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	gamma-cyhalothrin (Proaxis) 0.5 EC	1.92-3.20 oz.	0.0075-0.0125	5	3	
	indoxacarb (Avaunt) 30WDG	2.4-3.5 oz.	0.045-0.065	3	22A	
	lambda-cyhalothrin (Karate) 2.08CS	0.96-1.60 oz.	0.015-0.025	5	3	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Tomato (continued)						
cabbage looper (continued)	methoxyfenozide (Intrepid) 2F	4-16 oz.	0.06-0.25	1	18A	
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	1	15	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	Also available as 25WP formulation.
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	5	Also in a pre-mix for multiple pests.
Colorado potato beetle	abamectin (Agri-Mek) 0.15EC	.5-1 pt.	0.01-0.02	7	6	Also in a pre-mix for multiple pests.
	acetamiprid (Assail) 30SG	1.5-2.5 oz.	0.025-0.05	7	4A	
	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	0	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	1.25-2.5 lb.	1-2	3	1A	
	cyfluthrin (Tombstone) 2E	1.6-2.8 oz.	0.025-0.044	0	3	
	endosulfan (Thionex) 3EC	1.33-2.66 pt.	0.5-1	4	2A	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	1	3	
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	5	3	
	imidacloprid (Admire Pro) 4.6F	1.3-2.2 oz.	0.047-0.079	0	4A	Also in a pre-mix for multiple pests.
	lamda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	5	3	Also in a pre-mix for multiple pests.
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	1	15	
	oxamyl (Vydate) 2L	2-4 pt.	0.5-1	3	1A	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
	thiamethoxam (Actara) 25WDG	2-3 oz.	0.03-0.0468	0	4A	Also in a pre-mix for multiple pests
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.
	cutworms	beta-cyfluthrin (Baythroid XL) 1EC	2.1-2.8 oz.	0.0165-0.022	0	3
bifenthrin (Brigade) 2EC		2.1 - 5.2 oz.	0.033-0.08	1	3	Also in a pre-mix for multiple pest
cyfluthrin (Tombstone) 2E		2.1-2.8 oz.	0.033-0.044	0	3	
esfenvalerate (Asana) 0.66EC		5.8-9.6 oz.	0.03-0.05	1	3	
gamma-cyhalothrin (Proaxis) 0.5 EC		1.92-3.20 oz.	0.0075-0.0125	5	3	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks	
Tomato (continued)							
cutworms (continued)	lambda-cyhalothrin (Karate) 2.08CS	0.96-1.60 oz.	0.015-0.025	5	3	Also in a pre-mix for multiple pests.	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.	
hornworm	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	0	3	Also in a pre-mix for multiple pests.	
	carbaryl (Sevin) 80S	1.25-2.5 lb.	1-2	3	1A		
	cyfluthrin (Tombstone) 2E	1.6-2.8 oz.	0.025-0.044	0	3		
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.	
	emamectin benzoate (Proclaim) 5WDG	2.4 - 4.8 oz.	0.0075-0.015	7	6		
	endosulfan (Thionex) 3EC	1.33-2.66 pt.	0.5-1	4	2A		
	esfenvalerate (Asana) 0.66EC	2.9-5.8 oz.	0.015-0.03	1	3		
	fenpropathrin (Danitol) 2.4EC	10.66 oz.	0.2	3	3		
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests	
	gamma-cyhalothrin (Proaxis) 0.5 EC	1.92-3.20 oz.	0.0075-0.0125	5	3		
	indoxacarb (Avaunt) 30WDG	2.4-3.5 oz.	0.045-0.065	3	22A		
	lambda-cyhalothrin (Karate) 2.08CS	0.96-1.60 oz.	0.015-0.025	5	3	Also in a pre-mix for multiple pests.	
	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	1	1A	90 SP formulation also registered.	
	methoxyfenozide (Intrepid) 2F	4-16 oz.	0.06-0.25	1	18A		
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	1	15		
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	Also available as 25WP formulation.	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5		
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also registered as a Hero (pre-mix with bifenthrin).	
	leafminer	abamectin (Agri-Mek) 0.15EC	0.5-1 pt.	0.01-0.02	7	6	Also in a pre-mix for multiple pests.
		chlorantraniliprole (Coragen) 1.67SC	5-7.5 oz.	0.065-0.098	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
cyromazine (Trigard) 75WP		2.66 oz.	0.125	0	17		
spinetoram (Radiant) 1SC		6-10 oz.	0.047-0.078	1	5		

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Tomato (continued)						
spider mite	abamectin (Agri-Mek).15EC	0.5-1 pt.	0.01-0.02	7	6	Also in a pre-mix for multiple pests.
	bifenazate (Acramite) 50WS	0.75 - 1 lb.	0.375-0.5	3	25	Good coverage is essential.
	dicofol (Dicofol) 4EC	0.75-1.5 pts.	0.375-0.75	2	un	Reentry interval is 25 days.
	fenpyroximate (Portal) 0.4EC	2 pt	0.1	1	21A	
	spiromesifen (Oberon) 2SC	7 - 8.5 oz.	0.11-0.13	1	23	
NOTE: Brigade and Danitol at highest labeled rates may provide some control.						
stink bug, leaf-footed bugs	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-5.2 oz.	0.033-0.08	1	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2E	1.6-2.8 oz.	0.025-0.044	0	3	
	endosulfan (Thionex) 3EC	2-2.66 pts.	0.75-1	4	2A	
	fenpropathrin (Danitol) 2.4EC	10.66 oz.	0.2	3	3	
	gamma-cyhalothrin (Proaxis) 0.5EC	2.56-3.84 oz.	0.01-0.015	5	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	5	3	Also in a pre-mix for multiple pests.
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	Also in a pre-mix for multiple pests.
tomato fruitworm (corn earworm)	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.8 oz.	0.0125-0.022	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-5.1 oz.	0.033-0.08	1	3	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2E	1.6-2.8 oz.	0.025-0.044	0	3	
	emamectin benzoate (Proclaim) 5WDG	2.4-4.8 oz	0.0075-0.015	7	6	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	1	3	
	fenpropathrin (Danitol)	10.66 oz.	0.2	3	3	
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz	0.01-0.015	5	3	
	indoxacarb (Avaunt) 30WDG	3.5 oz.	0.065	3	22A	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	5	3	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Tomato (continued)						
tomato fruitworm (corn earworm) (continued)	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	1	1A	90 SP formulation also registered.
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	1	15	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	Also available as 25WP formulation.
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests..
tomato pinworm	abamectin (Agri-Mek) 0.15EC	1 pt.	0.02	7	6	Also in a pre-mix for multiple pests.
	beta-cyfluthrin (Baythroid XL) 1EC	2.1-2.8 oz.	0.0165-0.022	0	3	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Use of an adjuvant is recommended. Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2E	2.1-2.8 oz.	0.033-0.044	0	3	
	emamectin benzoate (Proclaim) 5WDG	2.4 - 4.8 oz.	0.0075-0.015	7	6	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	1	3	
	flubendiamide (Synapse) 2SC	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	gamma-cyhalothrin (Proaxis) 0.5 EC	2.56-3.84 oz.	0.01-0.015	5	3	
	indoxacarb (Avaunt) 30WDG	3.5 oz.	0.065	3	22A	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	5	3	Also in a pre-mix for multiple pests.
	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	1	1A	90 SP formulation also registered.
	novaluron (Rimon) 0.83EC	9-12 oz.	0.058-0.078	1	15	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	Also available as 25WP formulation.
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	1	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	2.24-4 oz.	0.014-0.025	1	3	Also in a pre-mix for multiple pests.
	western flower thrips	acetamiprid (Assail) 30SG	4 oz.	0.075	7	4A
dinotefuran (Venom) 70SG		1-4 oz.	0.045-0.179	1	4A	
spinetoram (Radiant) 1SC		6-10 oz.	0.047-0.078	1	5	
Baythroid, Danitol, Lannate and Warrior give fair to good control of thrips.						

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Tomato (continued)						
silverleaf whitefly	acetamiprid (Assail) 30SC	2.5-4 oz.	0.05-0.075	7	4A	
	buprofezin (Courier) 40SC	9-13.6 oz.	0.25-0.38	1	16	Activity on nymphs. Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	5.0-7.5 oz.	0.065-0.098	1	28	Activity on nymphs. Addition of an adjuvant has shown increased efficacy. Also in a pre-mix for multiple pests.
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	pyriproxyfen (Knack) 0.86EC	8-10 oz.	0.054-0.067	1	7C	Activity on eggs and last instar nymphs.
	spiromesifen (Oberon) 2SC	7 - 8.5 oz.	0.11-0.13	1	23	
	spirotetramat (Movento) 2SC	4-5 oz.	0.0625-0.078	1	23	Use of an adjuvant is necessary. Activity on early instar nymphs.
	thiamethoxam (Actara) 25WDG	3-5.5 oz.	0.0468-0.086	0	4A	Also in a pre-mix for multiple pests.
NOTE: Reduced residual activity has been noted with all Group 4A insecticides. NOTE: Endosulfan (Thionex) will give good control of adults. Pyrethroid insecticides (Group 3) tank mixed with organophosphate insecticides (Group 1) may provide good control. Group 4A insecticides should not be used for foliar applications if a Group 4A was applied in the soil.						
Turnip						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
aphid	clothianidin (Belay) 2.13SC	9-12 oz.	0.15-0.2	AP	4A	
	imidacloprid (Admire Pro) 4.6F	4.4-10.5 oz.	0.156-0.375	21	4A	
soil insects	chloropyrifos (Lorsban) 4E, Advanced 15G 75WG	1.6-2.75 oz. per 1,000 ft. of row 4.6-9.2 oz. per 1,000 ft. of row 1.1-1.8 oz. per 1,000 ft. of row			1B 1B 1B	Also labeled for broadcast application.
FOLIAR TREATMENTS						
Pre-mixes for multiple pests	imidacloprid + beta-cyfluthrin (Leverage) 360	3 oz.	0.047 + 0.023	7	4A 3	
aphid	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.1	7	3	
	clothianidin (Belay) 2.13SC	3-4 oz.	0.05-0.067	21	4A	
	dimethoate 4EC 2.67EC	0.5 pt. 0.75 pt.	0.25 0.25	14 14	1B 1B	
	flonicamid (Beleaf) 50SG	2.0-2.8 oz.	0.062-0.089	0	9C	
	imidacloprid (Admire Pro) 4.6F	1.2 oz.	0.043	7	4A	Also in a pre-mix for multiple pests.
	malathion 5EC	1.5-2 pt.	0.94-1.25	7	1B	
	pymetrozine (Fulfill) 50WDG	2.75 oz.	0.086	7	9B	
	thiamethoxam (Actara) 25WDG	1.5-3 oz.	0.023-0.0468	7	4A	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Turnip (continued)						
cabbage looper	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B	
	beta-cyfluthrin (Baythroid XL) 1EC	1.6-2.4 oz.	0.0125-0.019	0	3	Also in a pre-mix for multiple pests.
	bifenthrin (Brigade) 2EC	2.1-6.4 oz.	0.033-0.1	7	3	
	cyfluthrin (Tombstone) 2EC	1.6-2.4 oz.	0.025-0.038	0	3	
	emamectin benzoate (Proclaim) 5WDG	3.2-4.8 oz.	0.01-0.015	14	6	
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy.
	indoxacarb (Avaunt) 30WDG	2.5-3.5 oz.	0.045-0.065	3	22A	
	permethrin (Permethrin) 3.2EC	4 oz.	0.1	1	3	Also available as 25WP formulation.
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	1	18A	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	3	5	
	zeta-cypermethrin (Mustang Max) 0.8EC	3.2-4 oz.	0.02-0.025	1	3	
	cabbage webworm, imported cabbageworm, cross-striped cabbageworm	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B
beta-cyfluthrin (Baythroid XL) 1EC		1.6-2.4 oz.	0.0125-0.019	0	3	Also in a pre-mix for multiple pests.
bifenthrin (Brigade) 2EC		2.1-6.4 oz.	0.033-0.1	7	3	
cyfluthrin (Tombstone) 2EC		1.6-2.4 oz.	0.025-0.038	0	3	
emamectin benzoate (Proclaim) 5WDG		2.4 - 4.8 oz.	0.0075-0.015	14	6	
esfenvalerate (Asana) 0.66EC		5.8-9.6 oz.	0.03-0.05	7	3	
flubendiamide (Synapse) 24WG		3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy.
indoxacarb (Avaunt) 30WDG		2.5-3.5 oz.	0.045-0.065	3	22A	
malathion 5EC		2 pt.	1.25	7	1B	
methomyl (Lannate) 2.4LV		1.5-3 pt.	0.45-0.9	10	1A	90 SP formulation also registered.
methoxyfenozide (Intrepid) 2F		4-10 oz.	0.06-0.16	1	18A	
permethrin (Permethrin) 3.2EC		4 oz.	0.1	1	3	Also available as 25WP formulation.
spinetoram (Radiant) 1SC		5-10 oz.	0.039-0.078	3	5	
zeta-cypermethrin (Mustang Max) 0.8EC		3.2-4 oz.	0.02-0.025	1	3	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Turnip (continued)						
diamondback moth caterpillar	<i>Bacillus thuringiensis</i> "Bt" (various names)	Follow label.		0	11B	
	emamectin benzoate (Proclaim) 5WDG	2.4 - 4.8 oz.	0.0075-0.015	14	6	
	flubendiamide (Synapse) 24WG	3-5 oz.	0.045-0.075	1	28	Adjuvants have been shown to increase efficacy.
	indoxacarb (Avaunt) 30WDG	3.5 oz.	0.065	3	22A	
	spinetoram (Radiant) 1SC	5-10 oz..	0.039-0.078	3	5	
NOTE: Lannate, and pyrethroid insecticides can provide good control of non-resistant caterpillars; however, resistance to any registered insecticide is a possibility in Georgia. Resistance management programs for this pest should be strictly followed. NOTE: Coragen as applied for beet armyworm (see label) should provide good control of most caterpillar pests.						
false chinch bug	NOTE: Dimethoate as applied for aphids will give helpful control.					
root aphids	NOTE: Lorsban as applied for soil insects gives suppression; admire good control.					
vegetable weevil	NOTE: Lannate, or Permethrin as applied for cabbage webworm will give good control.					
yellowmargined leaf beetle	Permethrin or Sevin gives good control of yellowmargined leaf beetle.					
Watermelon						
PRE-PLANT, AT-PLANTING, AND CHEMIGATION TREATMENTS						
aphids, whitefly	imidacloprid (Admire Pro) 4.6F	Planthouse: 0.44 oz./10,000 plants			4A	
Pre-mixes for multiple pests	thiamethoxam + chlorantraniliprole (Durivo)	10-13 oz.	0.13-0.17 + 0.065-0.085	30	4A 28	
aphids, whitefly, cucumber beetles	clothianidin (Belay) 2.13SC	9-12 oz.	0.15-0.2	AP	4A	
	imidacloprid (Admire Pro) 4.6F	7-10.5 oz.	0.25-0.375	21	4A	
	dinotefuran (Venom) 70SG	5-6 oz.	0.226-0.268	21	4A	
	thiamethoxam (Platinum) 75SG	1.66-3.67 oz.	0.078-0.17	30	4A	Also in a pre-mix for multiple pests.
caterpillar pests	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	See label for application timing. Also in a pre-mix for multiple pests.
soil insects	diazinon 4E	2-4 qt.	2-4		1B	
	(diazinon) 50W	4-8 lb.	2-4	**	1B	
whitefly	chlorantraniliprole (Coragen) 1.67SC	5.0-7.5 oz.	0.065-0.098	1	28	Best control has been obtained with applications at or shortly after planting. Also in a pre-mix for multiple pests.
FOLIAR TREATMENTS						
Pre-mixes for multiple pests	bifenthrin + avermectin (Athena)	7-17 oz.	0.04-0.1 + 0.006-0.015	7	3 6	
	flubendiamide+ buprofezin (Vetica)	12-17 oz.	0.03-0.044 + 0.22-0.31	7	28 16	Primarily for caterpillar pests and whitefly.
	lambda-cyhalothrin + chlorantraniliprole (Voliam xpress)	6-9 oz.	0.02-0.029 + 0.039-0.059	1	3 28	

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Watermelon (continued)						
Pre-mixes for multiple pests (continued)	lambda-cyhalothrin + thiamethoxam (Endigo ZC)	4-4.5 oz.	0.028-0.03 + 0.037-0.04	1	3 4A	
	thiamethoxam+ chlorantraniliprole (Voliam flexi) WDG	4-7 oz.	0.05-0.0875 + 0.05-0.0875	1	4A 28	
	zeta-cypermethrin+ bifenthrin (Hero)	4-10.3 oz.	0.01-0.025 + 0.03-0.075	3	3 3	
aphid	acetamiprid (Assail) 30SG	2.5-4 oz.	0.047-0.075	0	4A	
	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	clothianidin (Belay) 2.13SC	3-4 oz.	0.05-0.067	21	4A	
	dimethoate 4EC 2.67EC	0.5-1 pt. 0.75-1.5 pt.	0.25-0.5 0.25-0.5	3 3	1B 1B	
	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A	
	endosulfan (Thionex) 3EC	1.33-2.66 pt.	0.5-1	4	2A	Unlawful to use after July 31, 2012.
	flonicamid (Beleaf) 50SG	2.0-2.8 oz.	0.062-0.089	0	9C	
	malathion 5EC	1.5- 2 pt.	0.94-1.25	1	1B	
	oxamyl (Vydate) 2L	2-4 pt.	0.5-1	1	1A	
	pymetrozine (Fulfill) 50WDG	2.75 oz.	0.086	0	9B	
	thiamethoxam (Actara) 25WDG	1.5-3 oz.	0.023-0.0468	0	4A	Also in a pre-mix for multiple pests.
cucumber beetles	beta-cyfluthrin (Baythroid XL) 1EC	2.4-2.8 oz.	0.019-0.022	0	3	
	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	1.25 lb.	1	3	1A	
	cyfluthrin (Tombstone) 2EC	2.4-2.8 oz.	0.038-0.044	0	3	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	fenpropathrin (Danitol) 2.4EC	10.66-16 oz.	0.2-0.3	7	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	malathion 5EC	2 pt.	1.25	1	1B	
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	Also available as 25WP formulation.
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.018-0.025	1	3	Also in a pre-mix for multiple pests.

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

Statement on generic products: For brevity, generic products typically are not listed within this section. The trade names listed are intended to aid in identification of products and are not intended to promote use of specific trade name products nor to discourage use of generic products. When a generic product is selected for use and is a different formulation than indicated in the table, the label should be consulted for proper product use rate. Pounds active ingredient per acre should be similar.

PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Watermelon (continued)						
cutworm	beta-cyfluthrin (Baythroid XL) 1EC	0.8-1.6 oz.	0.0065-0.0125	0	3	
	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	0.8-1.6 oz.	0.013-0.025	0	3	
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	Also in a pre-mix for multiple pests.
	zeta-cypermethrin (Mustang Max) 0.8EC	1.28-4 oz.	0.008-0.025	1	3	Also in a pre-mix for multiple pests.
leafminer	abamectin (Agri-Mek) 0.15EC	0.5-1 pt.	0.01-0.02	7	6	Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	5-7 oz.	0.065-0.09	1	28	Also in a pre-mix for multiple pests.
	cyromazine (Trigard) 75WP	2.66 oz.	0.125	0	17	
	spinetoram (Radiant) 1SC	6-10 oz.	0.047-0.078	3	5	
pickleworm and melonworm	beta-cyfluthrin (Baythroid XL) 1EC	1.6 - 2.4 oz.	0.0125-0.019	0	3	
	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	3	Also in a pre-mix for multiple pests.
	carbaryl (Sevin) 80S	0.625-1.25 lb.	0.5-1	3	1A	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	28	Also in a pre-mix for multiple pests.
	cyfluthrin (Tombstone) 2EC	1.6-2.4 oz.	0.025-0.038	0	3	
	endosulfan (Thionex) 3EC	1.33-2.66 pt.	0.5-1	4	2A	Unlawful to use after July 31, 2012.
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3	3	
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.
	indoxacarb (Avaunt) 30WDG	2.5-6 oz.	0.045-0.11	3	22A	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.
	malathion 5EC	2.5 -2.75 pt.	1.5-1.75	1	1B	
	methomyl (Lannate) 2.4LV	1.5-3 pt.	0.45-0.9	1-3	1A	90 SP formulation also registered.
	methoxyfenozide (Intrepid) 2F	4-10 oz.	0.06-0.16	3	18A	
novaluron (Rimon) 0.83EC	12 oz.	0.078	1	15		

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks	
Watermelon (continued)							
pickleworm and melonworm (continued)	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	Also available as 25WP formulation.	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	3	5		
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.018-0.025	1	3	Also in a pre-mix for multiple pests.	
Rindworm complex (corn earworm, cabbage looper)	beta-cyfluthrin (Baythroid XL) 1EC	1.6 - 2.4 oz.	0.0125-0.019	0	3		
	bifenthrin (Brigade) 2EC	2.6-6.4 oz.	0.04-0.10	3	28	Also in a pre-mix for multiple pests.	
	chlorantraniliprole (Coragen) 1.67SC	3.5-5.0 oz.	0.045-0.065	1	3	Also in a pre-mix for multiple pests.	
	cyfluthrin (Tombstone) 2EC	1.6-2.4 oz.	0.025-0.038	0	3		
	esfenvalerate (Asana) 0.66EC	5.8-9.6 oz.	0.03-0.05	3			
	flubendiamide (Synapse) 24WG	2-3 oz.	0.03-0.045	1	28	Adjuvants have been shown to increase efficacy. Also in a pre-mix for multiple pests.	
	lambda-cyhalothrin (Karate) 2.08CS	1.28-1.92 oz.	0.02-0.03	1	3	Also in a pre-mix for multiple pests.	
	novaluron (Rimon) 0.83EC	12 oz.	0.078	1	15		
	permethrin (Permethrin) 3.2EC	4-8 oz.	0.1-0.2	0	3	Also available as 25WP formulation.	
	spinetoram (Radiant) 1SC	5-10 oz.	0.039-0.078	3	5		
	zeta-cypermethrin (Mustang Max) 0.8EC	2.8-4 oz.	0.018-0.025	1	3	Also in a pre-mix for multiple pests.	
	NOTE: Avaunt as applied for pickleworm will provide good control of most caterpillars of this complex.						
	spider mites	abamectin (Agri-Mek) 0.15EC	0.5-1 pt.	0.01-0.02	7	6	Also in a pre-mix for multiple pests.
bifenazate (Acramite) 50WS		0.75 - 1 lb.	0.375-0.5	3	25	Good coverage is essential.	
etoxazole (Zeal) 72WG		2-3 oz.	0.09-0.135	7	10B	Predominately an ovicide/larvicide.	
fenpyroximate (Portal) 0.4EC		2 pt.	0.1	3	21A		
spiromesifen (Oberon) 2SC		7 - 8.5 oz.	0.11-0.13	7	23		
NOTE: Brigade and Danitol at highest labeled rates may provide some control.							
tarnished plant bugs	NOTE: Dimethoate should give good control. Lannate should give fair to good control.						
thrips, western flower	dinotefuran (Venom) 70SG	1-4 oz.	0.045-0.179	1	4A		
	spinetoram (Radiant) 1SC	6-10 oz.	0.047-0.078	3	5		
	NOTE: methomyl (Lannate) at rate for pickleworm gives good control						

COMMERCIAL VEGETABLE INSECT CONTROL (continued)

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PEST	INSECTICIDE	AMOUNT OF PRODUCT PER ACRE	POUNDS ACTIVE PER ACRE	PHI* (DAYS)	IRAC GROUP	Remarks
Watermelon (continued)						
silverleaf whitefly	acetamiprid (Assail) 30SG	2.5-5.3 oz	0.047-0.1	0	4A	
	buprofezin (Courier) 40SC	9-13.6 ozs.	0.25-0.38	7	16	Activity on nymphs. Also in a pre-mix for multiple pests.
	chlorantraniliprole (Coragen) 1.67SC	5-7 ozs.	0.065-0.09	1	28	Activity on nymphs. Addition of an adjuvant has shown increased efficacy. Also in a pre-mix for multiple pests.
	dinotefuran (Venom) 70SG	1-4 ozs.	0.045-0.179	1	4A	
	pyriproxyfen (Knack) 0.86EC	8 - 10 ozs.	0.054-0.067	7	7C	Activity on eggs and last instar nymphs.
	spiromesifen (Oberon) 2SC	7 - 8.5 ozs.	0.11-0.13	7	23	
	thiamethoxam (Actara) 25WDG	3-5.5 ozs.	0.0468-0.086	0	4A	Also in a pre-mix for multiple pests.
NOTE: Reduced residual activity has been noted with all Group 4A insecticides. NOTE: Pyrethroid insecticides (Group 3) tank mixed with organophosphate insecticides (Group 1) may provide good control. Group 4A insecticides should not be used for foliar applications if a Group 4A was applied in the soil.						

* PHI = Pre-harvest interval, which is the minimum number of days between last application and harvest.

**No harvest restriction noted.

EFFICACY OF INSECTICIDES/ACARACIDES FOR CONTROLLING ARTHROPOD PESTS OF FRUITING VEGETABLE CROPS

Alton N. Sparks, Jr., Extension Entomologist

Chemical class (IRAC)	Common name	Example Product	Flea Beetle	Colorado potato beetle	Corn earworm	European corn borer	Fall armyworm	Beet armyworm	Stink bugs, Squash bug	Aphids	Thrips	Western Flower Thrips	Silverleaf whitefly	Cutworms	Spider mites	Broad mite
1A	carbaryl	Sevin	+++	+	+	++	+	-	-	-	+	-	-	+	-	-
	methomyl	Lannate	+	-	++	++	++	+	++	+	+++	++	+	-	-	-
1B	malathion	Malathion	++	+	+	+	+	-	+	+	+	-	-	+	-	-
	acephate	Orthene	-	-	+	+++	++	-	-	++	++	-	-	++	-	-
2A	endosulfan	Thionex	++	+	++	+	+	+	+++	++	++	-	+	-	-	-
3	permethrin	Pounce	++	++	++	++	+	-	++	+	+	-	-	++	-	-
	zeta cypermethrin	Mustang Max	+++	+	++	+++	+	-	++	+	++	-	-	+++	-	-
	cyfluthrin	Baythroid	++	++	++	++	+	-	++	+	+	-	-	+++	-	-
	lambda cyhalothrin	Warrior	+++	+	++	+++	+	-	++	+	++	-	-	+++	-	-
	esfanvalerate	Asana XL	+++	++	++	++	+	-	+	+	+	-	-	++	-	-
	fenpropathrin	Danitol	++	-	++	++	+	-	++	+	+	-	+	++	+	-
4A	bifenthrin	Brigade	+++	-	++	++	+	-	++	+	++	-	+	+++	+	-
	imidacloprid	Admire /Provado	+++	+++	-	-	-	-	-	+++	++	-	++	-	-	-
	acetamiprid	Assail	++	+++	-	-	-	-	+	+++	++	-	++	-	-	-
	thiamethoxam	Platinum/Actara	+++	+++	-	-	-	-	++	+++	+	-	++	-	-	-
	dinotefuran	Venom	+++	+++	-	-	-	-	++	++	++	-	++	-	-	-
5	spinetoram	Radiant	-	+++	+++	+++	++	++	-	-	+++	++	-	+	-	-
6	emamectin benzoate	Proclaim	-	-	++	++	++	+++	-	-	-	-	-	+	+++	-
	abamectin	AgriMek	-	+++	-	-	-	-	-	-	++	+	-	-	+++	+++
7C	pyriproxyfen	Knack	-	-	-	-	-	-	-	-	-	-	++	-	-	-
9B	pymethozine	Fulfill	-	-	-	-	-	-	-	+++	-	-	+	-	-	-
9C	flonicamid	Beleaf	-	-	-	-	-	-	-	+++	-	-	-	-	-	-
11	Bt	Dipel, various	-	-	+	+	+	+	-	-	-	-	-	-	-	-
15	novaluron	Rimon	-	+++	++	+++	+++	+++	+	-	+	+	+	-	-	-
16	buprofezin	Courier	-	-	-	-	-	-	-	-	-	-	++	-	-	-
18	methoxyfenozide	Intrepid	-	-	++	++	+++	+++	-	-	-	-	-	-	-	-
21	fenpyroximate	Portal		-	-	-	-	-	-	-	-	-	-	-	+++	+++
22	Indoxacarb	Avaunt	+	+++	+++	++	++	+++	-	-	-	-	-	+	-	-
23	spiromesifen	Oberon	-	-	-	-	-	-	-	-	-	-	+	-	+++	++
23	spirotetramat	Movento	-	-	-	-	-	-	-	++	-	-	++	-	-	-
25	bifenazate	Acramite	-	-	-	-	-	-	-	-	-	-	-	-	+++	-
28	rynaxypyr	Coragen	-	+++	+++	+++	+++	+++	-	-	+	-	++	+	-	-
28	flubendiamide	Synapse/ Belt	-	++	+++	+++	++	+++	-	-	-	-	-	+	-	-

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EFFICACY OF INSECTICIDES/ACARACIDES FOR CONTROLLING ARTHROPOD PESTS OF CUCURBIT CROPS

Alton N. Sparks, Jr., Extension Entomologist

Chemical class (IRAC)	Common name	Example Product	Cucumber beetles	Cabbage looper	Beet armyworm	Stink bugs, Squash bug	Aphids	Thrips	Western Flower Thrips	Silverleaf Whitefly	Cutworms	Spider mites	Pickleworm, melonworm
1A	carbaryl	Sevin	++	+	-	-	-	+	-	-	+	-	+
	methomyl	Lannate	-	++	+	++	+	+++	++	+	-	-	++
1B	malathion	Malathion	++	+	-	+	+	+	-	-	+	-	+
2A	endosulfan	Thionex	++	+	+	+++	++	++	-	+	-	-	++
3	permethrin	Pounce	++	++	-	++	+	+	-	-	++	-	++
	zeta cypermethrin	Mustang Max	+++	++	-	++	+	++	-	-	+++	-	+++
	cyfluthrin	Baythroid	++	++	-	++	+	+	-	-	+++	-	+++
	lambda cyhalothrin	Warrior	+++	++	-	++	+	++	-	-	+++	-	+++
	esfanvalerate	Asana XL	++	++	-	+	+	+	-	-	++	-	+++
	fenpropathrin	Danitol	++	+	-	++	+	+	-	+	++	+	+++
	bifenthrin	Brigade/Capture	+++	+	-	++	+	++	-	+	+++	+	+++
4A	imidacloprid	Admire Pro	+++	-	-	-	+++	++	-	++	-	-	-
	acetamiprid	Assail	++	-	-	+	+++	++	-	++	-	-	-
	thiamethoxam	Platinum/Actara	++	-	-	++	+++	+	-	++	-	-	-
	dinotefuran	Venom	++	-	-	++	++	++	-	++	-	-	-
5	spinetoram	Radiant	-	++	++	-	-	+++	++	-	+	-	+++
6	abamectin	AgriMek	-	-	-	-	-	++	+	-	-	+++	-
7C	pyriproxyfen	Knack	-	-	-	-	-	-	-	++	-	-	-
9B	pymethozine	Fulfill	-	-	-	-	+++	-	-	+	-	-	-
11	Bt	Dipel, various	-	++	+	-	-	-	-	-	-	-	+
16	buprofezin	Courier	-	-	-	-	-	-	-	++	-	-	-
18	methoxyfenozide	Intrepid	-	+++	+++	-	-	-	-	-	-	-	++
21	fenpyroximate	Portal	-	-	-	-	-	-	-	-	-	+++	-
22	Indoxacarb	Avaunt	+	+++	+++	-	-	-	-	-	+	-	+++
23	spiromesifen	Oberon	-	-	-	-	-	-	-	+	-	+++	-
25	bifenazate	Acramite	-	-	-	-	-	-	-	-	-	+++	-
28	rynaxypyr	Coragen	-	+++	+++	-	-	+	-	++	+	-	+++
28	flubendiamide	Synapse/ Belt	-	+++	+++	-	-	-	-	-	+	-	+++

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EFFICACY OF INSECTICIDES/ACARACIDES FOR CONTROLLING ARTHROPOD PESTS OF BRASSICA CROPS

Alton N. Sparks, Jr., Extension Entomologist

Chemical class (IRAC)	Common name	Example Product	Flea Beetle	Corn earworm	Cabbage looper	Imported cabbageworm	Diamondback moth	Beet armyworm	Stink bugs, Squash bug	Aphids	Thrips	Silverleaf Whitefly	Cutworms
1A	methomyl	Lannate	+	++	++	++	++	+	++	+	+++	+	-
1B	malathion	Malathion	++	+	+	++	+	-	+	+	+	-	+
	acephate	Orthene	-	+	+	++	-	-	-	++	++	-	++
2A	endosulfan	Thionex	++	++	+	++	++	+	+++	++	++	+	-
3	permethrin	Pounce	++	++	++	+++	+	-	++	+	+	-	++
	zeta cypermethrin	Mustang Max	+++	++	++	+++	+	-	++	+	++	-	+++
	cyfluthrin	Baythroid	++	++	++	+++	+	-	++	+	+	-	+++
	lambda cyhalothrin	Warrior	+++	++	++	+++	+	-	++	+	++	-	+++
	esfanvalerate	Asana XL	+++	++	++	+++	+	-	+	+	+	-	++
	fenpropathrin	Danitol	++	++	+	+++	+	-	++	+	+	+	++
	bifenthrin	Brigade	+++	++	+	+++	+	-	++	+	++	+	+++
4A	imidacloprid	Admire/Provado	+++	-	-	-	-	-	-	+++	++	++	-
	acetamiprid	Assail	++	-	-	-	-	-	+	+++	++	++	-
	thiamethoxam	Platinum/Actara	+++	-	-	-	-	-	++	+++	+	++	-
	dinotefuran	Venom	+++	-	-	-	-	-	++	++	++	++	-
5	spinetoram	Radiant	-	+++	++	+++	++	++	-	-	+++	-	+
6	emamectin benzoate	Proclaim	-	++	+++	+++	+++	+++	-	-	-	-	+
7C	pyriproxyfen	Knack	-	-	-	-	-	-	-	-	-	++	-
9B	pymethozine	Fulfill	-	-	-	-	-	-	-	+++	-	+	-
9C	flonicamid	Beleaf	-	-	-	-	-	-	-	+++	-	-	-
11	Bt	Dipel, various	-	+	++	+++	+	+	-	-	-	-	-
15	novaluron	Rimon	-	++	++	+++	+	+++	+	-	+	+	-
16	buprofezin	Courier	-	-	-	-	-	-	-	-	-	++	-
18	methoxyfenozide	Intrepid	-	++	+++	+++	+	+++	-	-	-	-	-
22	Indoxacarb	Avaunt	+	+++	+++	+++	++	+++	-	-	-	-	+
23	spiromesifen	Oberon	-	-	-	-	-	-	-	-	-	+	-
23	spirotetramat	Movento	-	-	-	-	-	-	-	++	-	++	-
28	rynaxypyr	Coragen	-	+++	+++	+++	+++	+++	-	-	+	++	+
28	flubendiamide	Synapse/ Belt	-	+++	+++	+++	+++	+++	-	-	-	-	+

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EFFICACY OF INSECTICIDES/ACARACIDES FOR CONTROLLING ARTHROPOD PESTS OF BEANS

Alton N. Sparks, Jr., Extension Entomologist

Chemical class (IRAC)	Common name	Example Product	Cucumber beetles	Corn earworm	European corn borer	Fall armyworm	Cabbage looper	Beet armyworm	Stink bugs, Squash bug	Aphids	Thrips	Western Flower Thrips	Silverleaf whitefly	Cutworms	Spider mites
1A	carbaryl	Sevin	++	+	++	+	+	-	-	-	+	-	-	+	-
	methomyl	Lannate	-	++	++	++	++	+	++	+	+++	++	+	-	-
1B	malathion	Malathion	++	+	+	+	+	-	+	+	+	-	-	+	-
	acephate	Orthene	-	+	+++	++	+	-	-	++	++	-	-	++	-
2A	endosulfan	Thionex	++	++	+	+	+	+	+++	++	++	-	+	-	-
3	zeta cypermethrin	Mustang Max	+++	++	+++	+	++	-	++	+	++	-	-	+++	-
	cyfluthrin	Baythroid	++	++	++	+	++	-	++	+	+	-	-	+++	-
	lambda cyhalothrin	Warrior	+++	++	+++	+	++	-	++	+	++	-	-	+++	-
	esfanvalerate	Asana XL	++	++	++	+	++	-	+	+	+	-	-	++	-
	bifenthrin	Brigade/Capture	+++	++	++	+	+	-	++	+	++	-	+	+++	+
4A	imidacloprid	Admire/Provado	+++	-	-	-	-	-	-	+++	++	-	++	-	-
	acetamiprid	Assail	++	-	-	-	-	-	+	+++	++	-	++	-	-
5	spinetoram	Radiant	-	+++	+++	++	++	++	-	-	+++	++	-	+	-
7C	pyriproxyfen	Knack	-	-	-	-	-	-	-	-	-	-	++	-	-
11	Bt	Dipel, various	-	+	+	+	++	+	-	-	-	-	-	-	-
16	buprofezin	Courier	-	-	-	-	-	-	-	-	-	-	++	-	-
18	methoxyfenozide	Intrepid	-	++	++	+++	+++	+++	-	-	-	-	-	-	-
25	bifenazate	Acramite	-	-	-	-	-	-	-	-	-	-	-	-	+++

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VEGETABLE DISEASE CONTROL

David Langston, Extension Plant Pathologist

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
ASPARAGUS					
Rust Cercospora Leaf spot	Amistar	2.0 - 5.0 oz	11	100	Amistar primarily for Stemphylium. Apply to ferns after harvest; spray at first appearance, 7- to 10-day intervals.
	Folicur 3.6 F	4.0 - 6.0 fl oz	3	180	
	Nova or Rally	5.0 oz	3	180	
	Bravo Weather Stik	2.0 - 4.0 pts.	M	190	
	Dithane M 45	2.0 lb	M	180	
	Dithane F 45	1.6 qt	M	180	
	Dithane Rain Shield	2.0 lb	M	180	
	Dithane DF	2.0 lb	M	180	
	Manex II	1.6 qt	M	180	
	Manzate 75 DF	2.0 lb	M	180	
	Penncozeb 75 DF	2.0 lb	M	180	
	Penncozeb 80 WP	2.0 lb	M	180	
	Sulfur W	See Label	M	-	
Fusarium Root Rot	Clorox 5.25%	1.0 pt/8 pt water			Wash seed for 40 minutes in solution with continuous agitation; air dry promptly. Use 1.0 gal. of solution/lb. seed.
Crown Rot	Manzate75 DF	1.0 lb/100 gal	M	180	Preplant root and crop dip. Dip loosely packed crowns for 5 minutes. Drain and plant as soon as possible. See Label.
	Dithane DF	1.0 lb/100 gal	M	180	
	Dithane M 45	1.0 lb/100 gal	M	180	
	Dithane F 45	1.6 pt/100 gal	M	180	
	Manex II	0.8 qt/100 gal	M	180	
Phytophthora crown rot spear rot	Ridomil Gold EC	1.0 pt	4		Broadcast application with a minimum of 10 gal of water over beds. See Labels. Apply 30-60 days before first cutting. For additional control, make another application just before the beginning of harvest.
	Ridomil Gold SL	1.0 pt	4		
	MetaStar	2.0 qts	4		
BEANS (Snap, Pole)					
Bacterial Blight	Examples: Basic Copper Sulfate	2.0 - 4.0 lb	M	0	See label
	Nordox 75WG	2/3 - 2.5 lbs.	M	0	See label
	KOP-Hydroxide	1.0 - 3.0 lb	M	0	See label
	Blue Shield DF	1.0 - 3.0 lb	M	0	Apply on 7-14 day schedule, depending on conditions.
	Citcop 4E (H)	2.0 qt	M	0	
	Champ DP	0.6 - 2.0 lb	M	0	Apply when disease threatens followed by 5-10 day intervals. Use western grown seed and rotate every three years. Do not work in fields when vines are wet.

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
BEANS (Snap, Pole) (continued)					
Bacterial Blight (cont.)	Kocide 101 (H)	1.0 - 3.0 lb	M	0	
	Kocide 4.5 LF	0.6 - 2.0 pt	M	0	
	Kocide LF	1.3 - 4.0 pt	M	0	
	Kocide 3000	0.5 - 1.25 lb	M	0	
	Kocide DF	1.0 - 3.0 lb	M	0	
	Nu-Cop 3L	0.6 - 4.0 pt	M	0	
	Cuprofix Dispers	1.5 - 3.5 lb	M	0	
Seedling Disease and Stem Rot	Quadris (Amistar)	0.4 - 0.8 fl oz/1000 row feet (0.125 - 0.25 oz/1000 row feet)		Applied in-furrow or banded. See label. Apply about 1/4 of the material on seed in the opened furrow and the remainder into the covering soil during the planting operation. If a choice must be made, put all of the material into the furrow. Plow under cover crops, weeds, and old crop debris 3-4 weeks in advance of planting. Spray planting furrow and covering soil at planting. Avoid spraying seed directly. Same as Terraclor 2 EC.	
Rhizoctonia	Terraclor 75WP (H)	2.0 lb/10 gal/ 8,430 ft. for pole beans and 14,500 ft for bush beans.			
	Terraclor 10G (H)	10-15 lb - Apply per 14,500 linear feet of bush or per 8,430 linear feet of pole.			
	Terraclor 2 EC	2.0 - 3.0 qt/8 - 10 gal			
	Terraclor F	2.0 - 3.0 pt/8 - 10 gal			
Pythium & Rhizoctonia Seedling Rots	Ridomil Gold PC GR	10 lb/13,000 linear ft. at planting See Label.		Adjust the application equipment so the granules are mixed with the soil surrounding the seed.	
	Uniform	0.34 fl oz/1000 row ft, 4/11		Use as an in-furrow spray.	
Pythium Damping-Off	Ridomil Gold PC GR	10 lb/13,000 linear ft of row in a 7" band at the time of planting	4	Adjust the application equipment so the granules are mixed with the soil surrounding the seed. Incorporate in the top 2 inches of soil pre-plant or on surface after planting.	
	Ridomil Gold EC	0.5 - 1.0 pt	4		
	Ridomil Gold SL	0.5 - 1.0 pt	4		
	MetaStar	2.0 - 4.0 pts	4		
Rust Common and Asian Soybean	Quadris (Amistar)	6.2 fl oz (2.0 oz)	11	1	Use every 7 - 14 days. See label.
	Endura	8.0 - 11.0 oz	7	7	See label
	Folicur 3.6 F	4.0 - 6.0 fl oz	3	7	Use every 7 - 14 days. See label.
	Ziram	2 pt/100 gal	M	4 (snap)	Apply at disease onset and on 4-7 day intervals as needed.
	Headline	6.0 - 9.0 fl oz	11	7	
	Bravo 500 or	2 - 4 ¼ pt	M	7	See Label.
	Bravo Weather Stik	1.0 - 3 pt	M		
	Equus 720	1.37 - 2.0 pt	M	7	Use at first sign of disease and weekly until disease is under control.
	Echo 720	1.37 - 3.0 pt	M	7	
	Bravo S	4.0 - 8.0 pt	M	7	
	Nova or Rally	4.0 - 5.0 oz	3	0	Begin applications when rust is first observed.

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
BEANS (Snap, Pole) (continued)					
Southern Blight	Quadris (Amistar)	6.2 - 15.4 fl oz (2.0 - 5.0 oz)			Apply at beginning flower.
	Terraclor 75WP (H)	Same as for seedling disease and stem rot.			Plant behind corn or some other grass crop. Deep plow to cover old crop debris.
Stem Anthracnose	Quadris (Amistar)	6.2 - 15.4 fl oz (2.0 - 5.0 oz)	11	1 4 (snap)	Use every 7 - 14 days. See label. Plant disease-free seed and rotate with other crops.
	Headline	6.0 - 9.0 fl oz	11	7	Rotate with non-strobilurins.
	Topsin M	1.0 - 1.5 lb	1	14	See label.
	Topsin 4.5 L	20.0 - 30.0 fl oz	1	14	
	T-Methyl 70WSB	1.0 - 1.5 lb	1	14	
	T-Methyl 4.5F	20.0 - 30.0 fl oz	1	14	
	Ziram	2 pt/100 gal	M	--	Apply at disease onset and on 4-7 day inter- vals as needed
White Mold (Sclerotinia) Botrytis	Endura	8.0 - 11.0 oz	7	7	Apply at beginning flower or disease onset.
	Topsin-M 70W	1.0 - 2.0 lb.	1	28 (lima) 14 (snap)	Apply Topsin at 25 to 50% bloom and repeat at peak bloom.
	Topsin 4.5L	30.0 - 40.0 fl oz	1	14 (lima)	
	T-Methyl 70WSB	1.0 - 2.0 lb.	1	14	See label.
	T-Methyl 4.5F	30.0 - 40.0 fl oz	1	14	
	Botran 75-W	2.25 lb (bush) 4.0 lb (pole)	14	2 2	Apply when disease is anticipated; repeat at 7 - day intervals during disease favorable periods.
	Switch	11.0 - 14.0 oz	9/12		
	Rovral 4F	1.5 - 2.0 pt	2	10	Apply Rovral as foliar spray at early bloom (1 - 10%) bloom. Repeat on 7 day intervals if conditions are favorable for disease.
	Omega 500	0.5 - 0.85 pt	29	14	
	Iprodione 4L	1.5 - 2.0 pt	2	10	
	Bravo 500	4 ¼ pt	M	7	Begin application during early bloom stage.
	Bravo Weather Stik	2.0 - 4.25 pt	M	7	Applications to be made to pods harvested dry with pods removed.
	Equus 720	3.0 pt	M	7	
	Echo 720	3.0 pt	M	7	
Bravo S	8.0 pt	M	7		
Rhizoctonia Web blight Pod/Tip Rot	Quadris (Amistar)	6.2 - 15.4 fl oz (2.0 - 5.0 oz)	11	1	Apply at beginning flower.
	Nova or Rally	4.0 - 5.0 oz	3	0	Begin applications when pods begin to develop. Continue applications on a 7 - 10-day schedule during periods favorable for disease development.
Pythium Cottony Leak	Ridomil Gold Copper	1 pk/2.5 acres	4 + M	3	Use at disease onset and every 7 - 10 days.

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
BEETS					
Downy Mildew, Leaf spots, and Blights	Quadris (Amistar)	6.2 - 15.4 fl oz (2.0 - 5.0 oz)	11	0	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after two sequential sprays of Quadris or Cabrio. Use every 14 days. Begin when disease appears and repeat every 7-10 days.
	Cabrio	8.0 - 12.0 oz	11	0	
	Folicur 3.6 F	3.0 - 7.2 fl oz	3	7	
	Basic Copper Sulfate	2.0 - 3.0 lb	M	0	
	Nordox 75WG	2/3 - 2.5 lbs.	M	0	
Pythium and <i>Phytophthora</i> spp.	Ridomil Gold EC	1.0 - 2.0 pt	4		Incorporate into soil. See Label.
	Ridomil Gold SL	1.0 - 2.0 pt	4		
	MetaStar	4.0 - 8.0 pt	4		
BROCCOLI, CABBAGE, BRUSSELS SPROUTS					
Wire Stem	Terraclor 75WP (H)	15 - 20 lb/100 gal/water	14		Apply ½ pint of solution around each plant at transplanting. Apply in 8" band centered on row immediately prior to seeding.
	Terraclor 10G	110 - 150 lb (40" rows)	14		
	Terraclor 15G	75 - 100 lb (40" rows)	14		
	Terraclor 4F	1.9 - 2.8 gal/35 gal (40" rows)	14		
Pythium and <i>Phytophthora</i> spp.	Ridomil Gold EC	1.0 - 2.0 pt.	4		Incorporate into soil. See Labels.
	Ridomil Gold SL	1.0 - 2.0 pt	4		
	MetaStar	4.0 - 8.0 pt	4		
Black Leg	Rovral 4F	2.0 pt	2		Apply to base of plants at two-four leaf stage.
	Iprodione 4L (Broccoli only)	2.0 pt	2		
Alternaria Leaf spot & Downy mildew	Amistar	2.0 - 5.0 oz	11	0	Rotate to other chemistry after 1 application. Use no more than 4.0 oz. Actigard/season. Rotate for resistance management. Apply every 7-10 days. No more than 2 sequential applications. Begin application after plants are set in the field or after emergence for direct seeded. Rotate to other chemistry after 1 application. See Label. Tank-mix with protectant fungicides. Use surfactants.
	Actigard	0.5 - 1.0 oz	P	7	
	Cabrio	12.0 - 16.0 oz	11	0	
	Manex	1.2 - 1.6 qt	M	7	
	Inspire Super	16 - 20 fl. oz.	3/9	7	
	Ridomil Gold Bravo	1.5 lb	4/M	7	
	Revus	8.0 fl. oz.	40	1	
	Quadris Top	14 fl. oz.	11/3	1	
	Kocide DF	1.0 - 2.0 lb	M	0	
	Presidio	3.0 - 4.0 fl oz	43	2	
	Procure	6.0 - 8.0 fl. oz	3	1	
	Revus	8.0 fl oz	40	1	
	Switch	11.0 - 14.0 oz	9/12	0	
	Nordox 75WG	2/3 - 2.5 lbs.	M	0	
Kocide LF	2.6 pt	M	0		

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
BROCCOLI, CABBAGE, BRUSSELS SPROUTS (continued)					
Alternaria Leaf spot & Downy mildew (cont.)	Kocide 4.5LF	0.6 - 1.3 pt	M	0	
	Kocide 101	1.0 - 2.0 lb	M	0	
	Kocide 3000	0.5 - 0.75 lb	M	0	
	Champ DP	0.3 - 0.6 lb	M	0	
	Nu-Cop 3L	0.3 - 1.3 pt	M	0	
	Cuprofix Disperss	1.5 - 2.5 lb	M	0	
	Bravo Weather Stik	1.5 pt	M	7	
	Echo 720	1.5 pt	M	7	
	Equus 720	1.5 pt	M	7	
	Bravo S	4.5 pt	M	7	
	Catamaran	4 pts	M/33	7	
Powdery mildew	Procure	6.0 – 8.0 fl oz	3	1	
	Switch	11.0 - 14.0 oz.	9/12	0	
Black rot	Actigard	0.5 - 1.0 oz	P	7	Suppression only. See label. Use no more than 4.0 oz/season. Primary method for reducing losses to Black rot is to use certified, non-infected seed.
	Nordox 75WG	2/3 - 2.5 lbs.	M	0	
	Kocide DF	1.0 - 2.0 lb	M	0	
	Kocide LF	2.6 pt	M	0	
	Kocide 4.5LF	0.6 - 1.3 pt	M	0	
	Kocide 101	1.0 - 2.0 lb	M	0	
	Kocide 3000	0.5 - 0.75 lb	M	0	
	Champ DP	0.3 - 0.6 lb	M	0	
	Nu-Cop 3L	0.3 - 1.3 pt	M	0	
	Cuprofix Disperss	1.5 - 2.5 lb	M	0	
CABBAGE					
Alternaria Leaf spot	Amistar	2.0 - 5.0 oz	11	0	Rotate to other chemistry after 1 application.
	Cabrio	12.0 - 16.0 oz	11	0	Rotate for resistance management.
	Maneb 75DF	1.5 - 2.0 lb	M	7	See Label.
	Maneb 80WP	1.5 - 2.0 lb	M	7	
	Manex	1.2 - 1.6 qt	M	7	Apply every 7-10 days.
	Switch	11.0-14.0 oz.	9/12	7	Begin application after plants are set in the field or after emergence for direct seeded.
	Inspire Super	16 - 20 fl. oz.	3/9	7	No more than 2 sequential applications.
	Ridomil Gold Bravo	1.5 lb	4/M	7	
	Quadris Top	14	11/3	1	Rotate to other chemistry after 1 application.
	Procure	6.0 – 8.0 fl oz	3	1	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
CABBAGE (continued)					
Alternaria Leaf spot (cont.)	Nordox	2/3 - 2.5 lbs.	M	0	
	Kocide DF	1.0 - 2.0 lb	M	0	See Label
	Kocide LF	2.6 pt	M	0	See Label
	Kocide 4.5LF	0.6 - 1.3 pt	M	0	
	Kocide 101	1.0 - 2.0 lb	M	0	
	Kocide 3000	0.5 - 0.75 lb	M	0	
	Champ DP	0.3 - 0.6 lb	M	0	
	Nu-Cop 3L	0.3 - 1.3 pt.	M	0	
	Cuprofix Disperss	1.5 - 2.5 lb	M	0	
	Bravo Weather Stik	1.5 pt.	M	0	
	Echo 720	1.5 pt.	M	0	
	Equus 720	1.5 pt.	M	0	Do not apply to Chinese cabbage or Chinese broccoli within 7 days of harvest.
	Bravo S	4.5 pt.	M	0	
	Omega 500	6.45 fl. oz./100 gals			
Club Root	Terraclor 10G or	200 lb (40" row)	14		Incorporate in 12 - 15" band before planting.
	Terraclor 15G or	125 lb (40" row)	14		
	Terraclor 4F or	3 pt/100 gal	14		Use 1/2 pint per plant at transplant.
	Terraclor 75WP + hydrated lime (H)	2 lb/100 gal 1,500 lb	14		Broadcast and disk lime in soil 0 to 3 days before planting.
Pythium Damping-Off	Ridomil Gold EC	½ - 1 pt./13,000 linear ft. of row or incorporate 1-2 pt/A.			See Label.
	Ridomil Gold SL				
	Metastar	4.0 - 8.0 pts			
Downy Mildew	Actigard	0.5 - 1.0 oz	P	7	Use no more than 4.0 oz. of Actigard/season.
	Amistar	2.0 - 5.0 oz	11	0	Rotate to other chemistry after 1 application.
	Cabrio	12.0 - 16.0 oz	11	0	Rotate for resistance management.
	Bravo 500	2 ¼ pt	M	0	Begin application after plants are set in the field or after emergence for direct seeded.
	Maneb 75DF	1.5 - 2.0 lb	M	7	
	Maneb 80WP	1.5 - 2.0 lb	M	7	Apply every 14 days.
	Manex	1.2 - 1.6 qt	M	7	
	Ridomil Gold Bravo	1.5 lb	4/M	7	
	Kocide DF	1.0 - 2.0 lb	M	0	
	Presidio	3.0 - 4.0 fl oz	43	2	Tank-mix with protectant fungicides.

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
CABBAGE (continued)					
Downy Mildew (cont.)	Revus	8.0 fl oz	40	1	Use surfactants.
	Nordox 75WG	2/3 - 2.5 lbs.	M	0	
	Kocide LF	2.6 pt	M	0	
	Kocide 4.5LF	0.6 - 1.3 pt	M	0	
	Kocide 101	1.0 - 2.0 lb	M	0	
	Kocide 3000	0.5 - 0.75 lb	M	0	
	Champ DP	0.3 - 0.6 lb	M	0	
	Nu-Cop 3L	0.3 - 1.3 pt.	M	0	
	Cuprofix Disperss	1.5 - 2.5 lb	M	0	
	Bravo Weather Stik	1.5 pt.	M	0	
	Echo	1.5 pt.	M	0	
	Equus 720	1.5 pt.	M	0	
	Bravo S	4.5 pt	M	0	
	Aliette	2.0 - 5.0 lb	33	3	
	Aliette/Maneb 2+2	4.0 lb	33/M	7	
Catamaran	4 pts	M/33	7		
Sclerotinia (Raisin Head)	Endura	6.0 - 9.0 oz	7	0	See Label.
CHINESE CABBAGE					
(tight headed varieties only)	Amistar	2.0 - 5.0 oz	11	0	Rotate to other chemistry after 1 application.
	Cabrio	12.0 - 16.0 oz	11	0	Rotate for resistance management.
	Bravo Weather Stik	1.0 - 1.5 pt	M	0	Repeat at 7-10 day intervals.
	Equus 720	1.5 pt	M	See Remarks	Do not apply to Chinese cabbage or Chinese broccoli within 7 days of harvest.
	Echo 720	1.0 - 1.5 pt	M		
CANTALOUPE					
Alternaria Leafspot	Pristine	12.5 - 18.5 oz	7/11	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray.
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris or Cabrio.
	Inspire Super	16 - 20 fl. oz.	3/9	7	No more than 2 sequential applications.
	Cabrio	12.0 - 16.0 oz	11	0	
	Quadris Top	10 - 14 fl. oz.	11/3	1	Rotate after 1 application.
	Reason	5.5 fl oz	11	14	Rotate with non-strobilurins.
	Quadris Opti	3.2 pts	11/M	1	
	Switch	11.0 - 14.0 oz	9/12	1	
	Tanos	8.0 oz	11/27	3	Tank-mix with mancozeb or chlorothalonil.

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
CANTALOUPE (continued)					
Alternaria Leafspot (cont.)	Manex	1.2 - 1.6 qt	M	5	Apply every 7-14 days.
	Manex II	1.6 - 2.4 qt	M	5	Begin application after plants are set in the field or after emergence for direct seeded.
	Maneb 80WP	1.0 - 2.0 lb	M	5	
	Maneb 75DF	1.0 - 2.0 lb	M	5	
	Manzate 75DF	2.0 - 3.0 lb	M	5	
	Penncozeb80WP	2.0 - 3.0 lb	M	5	
	Penncozeb 75DF	2.0 - 3.0 lb	M	5	
	Dithane F-45	1.6 - 2.4 qt	M	5	
	Dithane M-45	2.0 - 3.0 lb	M	5	
	Dithane DF	2.0 - 3.0 lb	M	5	
	Dithane DF Rain Shield	2.0 - 3.0 lb	M	5	
	Ridomil Gold Bravo	2.0 - 3.0 lb	4/M	0	Greenhouse approved. See Label.
	Flouromil	2.0 - 3.0 lb	4/M	0	
	Bravo Weather Stik	1 ½ pt	M	0	
	Echo 720	1 ½ pt	M	0	
	Bravo 500	2 ¼ - 2 ¾ pt	M	0	
	Equus 720	2.0 - 3.0 pt	M	0	
	ManKocide	2.0 - 3.0 lb	M	5	
	Nordox 75WG	1 - 1.25 lb	M	0	
	Kocide 4.5LF	1.3 pt	M	0	
	Kocide 3000	0.5 - 1.25 lbs	M	0	
	Nu-Cop 3L	1.0 - 4.0 pt	M	0	
	Champ DP	1.3 lb.	M	0	
Champ 2F	1.3 pt	M	0		
Cuprofix Disperss	2.5 lb	M	0		
Catamaran	4 pts	M/33	7	Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.	
Anthracnose	Pristine	18.5 oz	7/11	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray.
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris or Cabrio.
	Inspire Super	16 - 20 fl. oz.	3/9	7	No more than 2 sequential applications.
	Cabrio	12.0 - 16.0 oz	11	0	
	Quadris Opti	3.2 pts	11/M	1	
	Tanos	8.0 oz	11/27	3	Tank mix with mancozeb or chlorothalonil. See Label.

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS	
	MATERIAL	FORMULATED	FRAC CODE			
CANTALOUPE (continued)						
Anthracnose (cont.)	Quadris Top	10 - 14 fl. oz.	11/3	1	Rotate to other chemistry after 1 application.	
	Topsin M 70W	¼ - ½ lb.	1	0		
	T-Methyl 70WSB		1	0		
	Topsin 4.5L	10.0 fl oz	1	0	Use western-grown seed. Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.	
	T-Methyl 4.5	10.0 fl oz	1	0		
	Manex	1.2 - 1.6 qt	M	5	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray.	
	Pristine	18.5 oz	7/11	0		
				11	1	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris or Cabrio.
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)		11	0	
	Cabrio	12.0 - 16.0 oz		11/M	1	Tank mix with mancozeb or chlorothalonil. See Label.
	Quadris Opti	3.2 pts		11/27	3	
	Tanos	8.0 oz		1	0	
	Topsin M 70W	¼ - ½ lb.		1	0	
	T-Methyl 70WSB			1	0	
	Topsin 4.5L	10.0 fl oz		1	0	
	T-Methyl 4.5	10.0 fl oz		M	5	Use western-grown seed. Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.
	Manex	1.2 - 1.6 qt		M	5	
	Manex II	1.6 - 2.4 qt		M	5	
	Maneb 80WP	1.0 - 2.0 lb		M	5	
	Maneb 75DF	1.0 - 2.0 lb		M	5	
	Manzate 75DF	2.0 - 3.0 lb		M	5	
	Penncozeb80WP	2.0 - 3.0 lb		M	5	
	Penncozeb 75DF	2.0 - 3.0 lb		M	5	
	Dithane F-45	1.6 - 2.4 qt		M	5	Greenhouse approved.
	Dithane M-45	2.0 - 3.0 lb		M	5	Greenhouse approved.
	Dithane DF	2.0 - 3.0 lb		M	5	Greenhouse approved.
	Dithane DF Rain Shield	2.0 - 3.0 lb		M	5	
	Ridomil Gold Bravo	2.0 - 3.0 lb		4/M	0	
	Flouronil	2.0 - 3.0 lb		4/M	0	Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.
	Bravo Weather Stik	1.5 - 2.0 pt		M	0	
Echo 720	1.5 - 2.0 pt		M	0		
Bravo 500	2 ¼ - 2 ¾ pt		M	0		
Equus 720	1.5 - 2.0 pt		M	0		

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
CANTALOUPE (continued)					
Anthracnose (cont.)	ManKocide	2.0 - 3.0 lb	M	5	
	Nordox 75WG	1 - 1.25 lb	M	0	
	Kocide 4.5LF	1.3 pt	M	0	
	Kocide 3000	0.5 - 1.25 lbs	M	0	
	Nu-Cop 3L	1.0 - 4.0 pt	M	0	
	Nu-Cop 50DF	2.0 lb	M	0	
	Champ DP	1.3 lb.	M	0	
	Champ 2F	1.3 pt	M	0	
	Champ F	2.6 pt	M	0	
	Cuprofix Disperss	2.5 lb	M	0	
					Apply every 7 - 10 days as needed.
Downy Mildew	Pristine	12.5 - 18.5 oz	7/11	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray. Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris, Cabrio or Flint. Rotate with non-strobilurins. Tank mix with organosilicone surfactant. Tank mix with mancozeb or chlorothalonil. See label. Tank mix with mancozeb or chlorothalonil. Tank mix with mancozeb or chlorothalonil. Tank mix with mancozeb or chlorothalonil. Use w/ protectant fungicides & surfactants. Apply on less than or equal to 7 day interval. Apply every 7-14 days. Apply when disease threatens and every 7 days. Greenhouse approved.
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	
	Quadris Opti	3.2 fl oz	11/M	0	
	Cabrio	8.0 - 12.0 oz	11	0	
	Flint	4.0 oz/acre	11	14	
	Reason	5.5 fl oz	11	0	
	Ranman	2.1 - 2.75 fl oz	21	3	
	Curzate	3.2 oz	27	2	
	Previcur Flex	1.2 pt	28	3	
	Tanos	8.0 oz	11/27	5	
	Presidio	3.0 - 4.0 fl oz	43	2	
	Revus	8.0 fl oz	40	0	
	Actigard	0.5 - 1.0 oz	P	0	
	Manex	1.2 - 1.6 qt	M	5	
	Manex II	1.6 - 2.4 qt	M	5	
	Maneb 80WP	1.0 - 2.0 lb	M	5	
	Maneb 75DF	1.0 - 2.0 lb	M	5	
	Manzate 75DF	2.0 - 3.0 lb	M	5	
	Penncozeb 80WP	2.0 - 3.0 lb	M	5	
	Penncozeb 75DF	2.0 - 3.0 lb	M	5	
Dithane F-45	1.6 - 2.4 qt	M	5		

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
CANTALOUPE (continued)					
Downy Mildew (cont.)	Dithane M-45	2.0 - 3.0 lb	M	5	Greenhouse approved.Greenhouse approved. Must be tank-mixed with another fungicide. Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.
	Dithane DF	2.0 - 3.0 lb	M	5	
	Dithane DF Rain Shield	2.0 - 3.0 lb	M	5	
	Ridomil Gold MZ	2.5 lb	4/M	0	
	Forum	6.0 fl oz	40	5	
	Gavel	2.0 lb	22/M	0	
	Ridomil Gold Bravo	2.0 lb	4/M	0	
	Flouronil	2.0 lb	4/M	0	
	Bravo Weather Stik	1.5 - 2.0 pt	M	0	
	Echo 720	1.5 - 2.0 pt	M	0	
	Bravo 500	2 ¼ - 2 ¾ pt	M	0	Apply every 7 - 10 days as needed.
	Equus 720	1.5 - 2.0 pt	M	0	
	Aliette	4.0 lb	33	5	
	Aliette/Maneb 2 + 2	4.0 lb	33	5	
	ManKocide	2.0 - 3.0 lb	M	0	
	Nordox 75WG	1 - 1.25 lb	M	0	
	Kocide DF	2.0 lb	M	0	
	Kocide LF	2.6 pt.	M	0	
	Kocide 4.5LF	1.3 pt	M	0	
	Kocide 3000	0.5 - 1.25 lb	M	0	
	Nu-Cop 3L	1.0 - 4.0 pt	M	0	
	Nu-Cop 50DF	2.0 lb	M	0	
	Champ DP	1.3 lb.	M	0	
Champ 2F	1.3 pt	M	0		
Champ F	2.6 pt	M	0		
Cuprofix Disperss	2.5 lb	M	0		
Catamaran	4 pts,	M	7		
<i>Pythium</i> spp. Damping-off Cottony leak <i>Phytophthora</i>	Ridomil Gold EC	1.0 - 2.0 pt	4		Incorporate into soil. See Label.
	Ridomil Gold Sc	1.0 - 2.0 pt	4		
	Ultra Flourish	2.0 - 4.0 pt	4		
	MetaStar	4.0 - 8.0 pt	4		Apply pre-plant to greenhouse media. Tank-mix with copper.
	Previcur Flex	1:1000 stock sol.	21	3	
	Presidio	3.0 - 4.0 fl oz	43	2	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
CANTALOUPE (continued)					
<i>Pythium</i> spp. Damping-off Cottony leak <i>Phytophthora</i> (cont.)	Revus	8.0 fl oz	40	0	Tank-mix w/ copper + use surfactant.
	Ranman	2.1 - 2.75 fl oz	21	0	Tank mix with organosilicone surfactant.
	Tanos	8.0 - 10.0 oz	11/27	0	Foliar and fruit phase suppression only.
Gummy Stem Blight	Pristine	12.5 - 18.5 oz	7/11		Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray.
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris or Cabrio.
	Inspire Super	16 - 20 fl. oz.	3/9	7	No more than 2 sequential applications.
	Cabrio	12.0 - 16.0 oz	11	0	
	Quadris Opti	3.2 pts	11/M	1	
	Folicur 3.6 F	8.0 fl oz	3	7	Rotate with other fungicide chemistries.
	Topsin M 70W	4.0 - 8.0 oz	1	0	
	T-Methyl 70WP	4.0 - 8.0 oz	1	0	
	Topsin 4.5L	10.0 fl oz.	1	0	Use western-grown seed. Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.
	Quadris Top	10 - 14 fl. oz.	11/3	1	Rotate to another chemistry after 1 application.
	T-Methyl 4.5F	10.0 fl oz.	1	0	
	Switch	11.0 - 14.0 oz	9/12	1	
	Manex	1.2 - 1.6 qt	M	5	
	Manex II	1.6 - 2.4 qt	M	5	
	Maneb 80WP	1.0 - 2.0 lb	M	5	
	Maneb 75DF	1.0 - 2.0 lb	M	5	
	Manzate 75DF	2.0 - 3.0 lb	M	5	
	Penncozeb 80WP	2.0 - 3.0 lb	M	5	
	Penncozeb 75DF	2.0 - 3.0 lb	M	5	
	Dithane F-45	1.6 - 2.4 qt	M	5	Greenhouse approved.
Dithane M-45	2.0 - 3.0 lb	M	5	Greenhouse approved.	
Dithane DF	2.0 - 3.0 lb	M	5	Greenhouse approved.	
Dithane DF Rain Shield	2.0 - 3.0 lb	M	5		
Ridomil Gold Bravo	2.0 - 3.0 lb	4/M	0		

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
CANTALOUPE (continued)					
Gummy Stem Blight (cont.)	Flouronil	2.0 - 3.0 lb	4/M	0	Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.
	Bravo Weather Stik	2.0 - 3.0 pt	M	0	
	Echo 720	2.0 - 3.0 pt	M	0	
	Bravo 500	2 ¼ - 2 ¾ pt	M	0	
	Equus 720	2.0 - 3.0 pt	M	0	
	ManKocide	2.0 - 3.0 lb	M	5	
	Nordox 75WG	1 - 1.25 lb	M	0	
	Kocide 4.5LF	1.3 pt	M	0	
	Kocide 3000	0.5 - 1.25 lb	M	0	
	Nu-Cop 3L	1.0 - 4.0 pt	M	0	
	Champ DP	1.3 lb.	M	0	
	Champ 2F	1.3 pt	M	0	
	Cuprofix Disperss	2.5 lb	M	0	
	Catamaran	4 pts	M/33	7	
Powdery Mildew	Pristine	12.5 - 18.5 oz	7/11	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray.
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris, Cabrio or Flint.
	Inspire Super	16 - 20 fl. oz.	3/9	7	No more than 2 sequential applications.
	Cabrio	12.0 - 16.0 oz	11	0	
	Flint	1.5 - 2.0 oz/acre	11	0	Spray preventively when conditions are favorable for disease and repeat every 7-10 days.
	Quadris Top	10 - 14 fl. oz.	11/3	1	Rotate to other chemistry after 1 application.
	Quintec	4.0 - 6.0 fl oz	13	3	See label.
	Nova or Rally	2.5 - 5.0 oz	3	0	Apply at first sign of disease and continue every 7 -10 days. Rotate with other fungicides.
	Procure	4.0 - 8.0 oz	3	0	Tank-mix w/ protectants.
	Folicur 3.6 F	4.0 - 6.0 fl oz	3	7	Tank-mix with protectants.
	Topsin M	4.0 - 8.0 oz	1	0	Don't rotate with Nova or Rally or Rally.
	T-Methyl 70 WP	4.0 - 8.0 oz	1	0	Apply when disease threatens and alternate
	Topsin 4.5L	10.0 fl oz	1	0	Topsin with chlorothalonil products or other mode of action. Continue every 7-14 days until disease is no longer a problem.
	T-Methyl 4.5F	10.0 fl oz	1	0	
	Switch	11.0 - 14.0 oz	9/12	1	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
CARROTS (continued)					
Cercospora Leaf Blight (cont.)	Cabrio	8.0 - 12.0 oz	11	0	Apply every 7-10 days as needed. See label.
	Tilt	4.0 oz	3	14	
	Chlorothalonil same as for Alternaria blight.	1.3 pt 1.5 lb	M	7 0	
	Nordox 75WG	1.25 - 2.5 lb	M	0	
	Kocide 4.5LF	1.3 lb	M	0	
	Kocide 2000	1.3 pt	M	0	
	Champ DP	2.6 pt	M	0	
	Champ 2F	2.0 lb	M	0	
	Champ F	2.6 pt.	M	0	
	Kocide DF	2.0 lb	M	0	
	Kocide LF	1.3 - 2.6 pt	M	0	
	Kocide 101	2.0 lb	M	0	
	Nu-Cop 3L	2.5 lb	M	0	
	Cuprofix Disperss	2.5 lb	M	0	
Bacterial leaf blight					Plant disease-free seed.
Foliar oomycetes	Ridomil Gold/Copper	2.0 lb	4/M		See Label.
	Ridomil Gold Bravo	1.5 - 2.0 lb	4/M		
	Flouronil	1.5 - 2.0 lb	4/M		
Pythium and Phytophthora spp.	Ridomil Gold EC	1.0 - 2.0 pt	4		Incorporate into soil. See Label.
	Ridomil Gold SC	1.0 - 2.0 pt	4		
	MetaStar	4.0 - 8.0 pt	4		
	Ultraflourish	2.0 - 4.0 pt	4		
Southern blight (Quadris for Rhizoctonia only)	Quadris (Amistar)	9.2 - 20.3 fl oz (3.0 - 5.0 oz)	11	0	See label.
	Quadris Top	14.0 fl oz	3/11	7	Use 14.0 fl oz/acre for southern blight.
	Pristine	8.0 - 10.5 oz	7/11		See label.
CORN (SWEET)					
Leaf Blights and Rust	Quadris (Amistar)	6.2 - 9.2 oz (Rust) 9.2 - 15.4 oz (Leaf Blight) (2.0 - 5.0)	11	7	Apply no more than three sequential applica- tions of Quadris before rotating to a fungicide with a different mode of action. Spray at 7 - 14 day intervals.
	Headline	6.0 - 9.0 fl oz	11	7	
	Folicur 3.6 F	4.0 - 6.0 fl oz	3	7	
	Stratego	10.0 fl oz	3/11	14	
	Tilt	2.0 - 4.0 fl oz	3	14	
	Manex	1.2 qt	M	7	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
CORN (SWEET) (continued)					
Leaf Blights and Rust (cont.)	Manex II	1.2 qt	M	7	Apply when disease threatens and every 4-7 days. Do not apply to sweet corn to be processed. (Leaf Blight) Apply when disease threatens and every 3-7 days. Plant early enough to miss build up of disease late in season. Do not apply to seed corn to be processed. (Rust)
	Maneb 80WP	1.5 lb	M	7	
	Maneb 75DF	1.5 lb	M	7	
	Manzate 75DF	1.5 lb	M	7	
	Penncozeb80WP	1.0 - 1.5 lb	M	7	
	Penncozeb 75DF	1.0 - 1.5 lb	M	7	
	Dithane F-45	1.2 qt	M	7	
	Dithane M-45	1.5 lb	M	7	
	Dithane DF	1.5 lb	M	7	
	Dithane DF	1.5 lb	M	7	
	Dithane DF Rain Shield	1.5 lb	M	7	
	Bravo Weather Stik	0.75 - 2.0 pt	M	14	
	Echo 720	0.75 - 2.0 pt	M	14	
	Bravo 500	1.125 - 2.75 lb	M	14	
	Equus 720	0.75 - 2.0 pt.	M	14	
Catamaran,	4 pts	M/33	7		
CUCUMBER					
Angular Leafspot	Actigard	0.5 – 1.0 oz	P	0	Apply at least every 7 days. Apply when disease threatens and weekly as long as disease is a problem.
	Manex	1.2 - 1.6 qt	M	5	
	ManKocide	2.0 - 2.5 lb	M	5	
	Nordox 75WG	1 - 1.25 lbs	M	0	
	Basic Copper Sulfate (H)	2.0 lb.	M	0	
	Kocide DF	1.5 - 2.0 lb	M	0	
	Kocide LF	2.0 - 2.6 pt	M	0	
	Kocide 4.5 LF	1.3 pt	M	0	
	Kocide 3000	0.5 - 1.25 lbs	M	0	
	Champ DP	1.3 lb	M	0	
	Champ 2F	1.3 pt	M	0	
	Champ F	2.0 - 2.3 pt	M	0	
	Nu-Cop 50DF	1.5 - 2.0 lb	M	0	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
CUCUMBER (continued)					
Angular Leafspot (cont.)	Nu-Cop 3L	1.0 - 4.0 pt	M	0	
	Cuprofix Disperss	2.5 lb	M	0	
<i>Pythium</i> spp. Damping-off Cottony leak Phytophthora	Ridomil Gold EC	1.0 - 2.0 pt	4		Incorporate into soil. See Label.
	Ridomil Gold SC	1.0 - 2.0 pt	4		
	Ultra Flourish	2.0 - 4.0 pt	4		
	MetaStar	4.0 - 8.0 pt	4		
	Presidio	3.0 - 4.0 fl oz	43	2	Tank-mix with copper.
	Revus	8.0 fl oz	40	0	Tank-mix w/ copper + use surfactant.
	Previcur Flex	1:1000 stock sol.	28	3	Apply pre-plant to greenhouse media.
	Ranman	2.1 - 2.75 fl oz	21		Tank mix with organosilicone surfactant.
	Tanos	8.0 - 10.0 fl oz	11/27		Foliar and fruit phase suppression only.
Anthracnose	Pristine	18.5 oz	7/11	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray.
	Quadris (Amistar)	11 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris or Cabrio. Use western-grown seed. Apply fungicides when first three leaves fully expand and alternate Topsin M with Bravo. Continue every 7-14 days until harvest.
	Inspire Super	16 - 20 fl. oz.	3/9	7	No more than 2 sequential applications.
	Quadris Opti	3.2 pts	11/M	1	
	Quadris Top	10 - 14 fl. oz.	11/3	1	Rotate to other chemistry after 1 application.
	Cabrio	12.0 - 16.0 oz	11	0	
	Topsin M 70W	4.0 - 8.0 oz	1	0	
	T-Methyl 70WP	4.0 - 8.0 oz	1	0	
	Topsin 4.5L	10.0 fl oz	1	0	
	T-Methyl 4.5F	10.0 fl oz	1	0	
	Tanos	8.0 oz	11/27	3	Tank mix with mancozeb or chlorothalonil.
	Maneb 80WP	1.5 - 2.0 lb	M	5	
	Maneb 75DF	1.5 - 2.0 lb	M	5	
	Manex	1.2 - 1.6 qt	M	5	
	Manex II	1.6 - 2.4 qt	M	5	
	Dithane F-45	1.6 - 2.4 qt	M	5	Greenhouse approved. See Label.
Manzate 75DF	2.0 - 3.0 lb	M	5		
Dithane M-45	2.0 - 3.0 lb	M	5	Greenhouse approved. See Label.	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
CUCUMBER (continued)					
Anthracnose (cont.)	Dithane DF	2.0 - 3.0 lb	M	5	Greenhouse approved. See Label.
	Dithane DF Rain Shield	2.0 - 3.0 lb	M	5	
	Penncozeb 75DF	1.5 - 3.0 lb	M	5	
	Penncozeb 80WP	1.5 - 3.0 lb	M	5	
	Ridomil Gold Bravo	2.0 - 3.0 lb	4/M	0	
	Flouronil	2.0 - 3.0 lb	4/M	0	
	Equus 720	1.5 - 2.0 pt	M	0	
	Echo 720	1.5 - 2.0 pt	M	0	
	Bravo Weather Stik	1.5 - 2.0 pt	M	0	
	Nordox 75WG	1 - 1.25 lb	M	0	
	Champ DP	1.3 lb	M	0	
	Champ 2F	1.3 pt	M	0	
	Nu-Cop 3L	1.0 - 4.0 pt	M	0	
	Cuprofix Disperss	2.5 lb	M	0	
	ManKocide	2.0 - 2.5 lb	M	5	
Alternaria Leafspot	Pristine	12.5 - 18.5 oz	7/11	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray.
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris or Cabrio.
	Inspire Super	16 - 20 fl. oz.	3/9	7	No more than 2 sequential applications.
	Cabrio	12.0 - 16.0 oz	11	0	
	Reason	5.5 fl oz	11	14	Rotate with non-strobilurins.
	Quadris Opti	3.2 pts	11/M	1	
	Quadris Top	10 - 14 fl. oz.	11/3	1	Rotate to other chemistry after 1 application.
	Tanos	8.0 oz	11/27	3	Tank mix with mancozeb or chlorothalonil.
	Switch	11.0 - 14.0 oz	9/12	1	
	Manex	1.2 - 1.6 qt	M	5	
	Maneb 80WP	1.5 - 2.0 lb	M	5	
	Maneb 75DF	1.5 - 2.0 lb	M	5	
	Dithane F-45	1.6 - 2.4 qt	M	5	
	Dithane M-45	2.0 - 3.0 lb	M	5	
	Dithane DF	2.0 - 3.0 lb	M	5	
	Dithane DF Rain Shield	2.0 - 3.0 lb	M	5	
	Penncozeb 75DF	1.5 - 3.0 lb	M	5	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
CUCUMBER (continued)					
Alternaria Leafspot (cont.)	Penncozeb 80WP	1.5 - 3.0 lb	M	5	
	Equus 720	2.0 - 3.0 pt	M	0	
	Echo 720	2.0 - 3.0 pt	M	0	
	Bravo Weather Stik	2.0 - 3.0 pt	M	0	
	Nordox 75WG	1 - 1.25 lb.	M	0	
	Champ DP	1.3 lb	M	0	
	Champ 2F	1.3 pt	M	0	
	Nu-Cop 3L	1.0 - 4.0 pt	M	0	
	Cuprofix Disperss	2.5 lb	M	0	
	Catamaran	4 pts	M/11		
Corynespora Leafspot	Cabrio	12.0 - 16.0 oz	11	0	Alternate to another fungicide class after one spray of Quadris or Cabrio. Apply when disease appears or when runners form. Repeat at 7 - 14 day intervals.
	Topsin M 70W	4.0 - 8.0 oz	1	0	
	T-Methyl 70WP	4.0 - 8.0 oz	1	0	
	Topsin 4.5L	10.0 fl oz	1	0	
	T-Methyl 4.5F	10.0 fl oz	1	0	
	Equus 720	1.5 - 2.0 pt	M	0	
	Echo 720	1.5 - 2.0 pt	M	0	
	Bravo Weather Stik	1.5 - 2.0 pt	M	0	
Bacterial Wilt					No control. Eliminate cucumber beetles.
Downy Mildew	Pristine	12.5 - 18.5 oz	7/11	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray. Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris or Cabrio. Rotate with non-strobilurins. See Label. Rotate similar to Quadris and Cabrio. See Label. Tank mix with organosilicone surfactant. Rotate with non-strobilurins. Tank mix with mancozeb or chlorothalonil. Tank mix with mancozeb or chlorothalonil. Tank mix w/ protectant + surfactant.. Tank mix with mancozeb or chlorothalonil.
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	
	Cabrio	8.0 - 12.0 oz	11	0	
	Previcur	1.2 pt	28	2	
	Flint	4.0	11	0	
	Quadris Opti	3.2 pts	11/M	1	
	Ranman	2.1 - 2.75 fl oz	21	0	
	Reason	5.5 fl oz	11	14	
	Tanos	8.0 oz	11/27	3	
	Curzate	3.2 oz	27	3	
	Presidio	3.0 - 4.0 fl oz	43	2	
	Revus	8.0 fl oz	40	0	
	Manex	1.2 - 1.6 qt	M	5	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS	
	MATERIAL	FORMULATED	FRAC CODE			
CUCUMBER (continued)						
Downy Mildew (cont.)	Manex II	1.6 - 2.4 qt	M	5	Apply when disease threatens and every 7-10 days.	
	Maneb 80WP	1.0 - 2.0 lb	M	5		
	Maneb 75DF	1.0 - 2.0 lb	M	5		
	Manzate 75DF	2.0 - 3.0 lb	M	5		
	Penncozeb80WP	1.5 - 3.0 lb	M	5		
	Penncozeb 75DF	1.5 - 3.0 lb	M	5		
	Dithane F-45	1.6 - 2.4 qt	M	5		Greenhouse approved. See Label.
	Dithane M-45	2.0 - 3.0 lb	M	5		Greenhouse approved. See Label.
	Dithane DF	2.0 - 3.0 lb	M	5		Greenhouse approved. See Label.
	Dithane DF Rain Shield	2.0 - 3.0 lb	M	5		
	Ridomil Gold MZ	2.5 lb	4/M	5		
	Forum	6.0 fl oz	40	0		Must be tank-mixed with other fungicides.
	Gavel	2.0 lb	22/M	5		
	Ridomil Gold Bravo	2.0 lb	4/M	0		See Label.
	Flouronil	2.0 lb	4/M	0		See Label.
	Bravo Weather Stik	1.5 - 2.0 pt	M	0	See Label.	
	Echo 720		M	0		
	Bravo 500 (H)		M	0		
	Equus 720		M	0		
	Aliette		33	0		
	Actigard		P	0	Apply at least every 7 days.	
	ManKocide		M	5		
	Nordox 75WG		M	0		
	Kocide DF		M	0		
	Kocide LF		M	0		
	Kocide 4.5LF		M	0		
	Kocide 3000		M	0		
	Nu-Cop 3L		M	0		
	Nu-Cop 50DF		M	0		
	Champ DP		M	0		
Champ 2F		M	0			

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
CUCUMBER (continued)					
Downy Mildew (cont.)	Champ F	2.0 - 2.3 pt	M	0	
	Cuprofix Disperss	2.5 lb	M	0	
	Catamaran	4 pts	M/33	7	
Fruit & Belly Rot (Rhizoctonia)	Quadris (Amistar)	11 - 15.4 fl oz (3.5-5.0 oz)	11	1	Make first application of Quadris at the 1.0 - 3.0 leaf stage with second application just prior to vines running or 10 - 14 days later, whichever comes first.
	Topsin M 70W	8.0 oz	1	0	Apply Topsin in enough water for foliar run-off.
	T-Methyl 70WP	8.0 oz	1	0	
	Topsin 4.5L	10.0 fl oz	1	0	
	T-Methyl 4.5F	10.0 fl oz	1	0	
Gummy Stem Blight	Pristine	12.5 - 18.5 oz	7/11	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray.
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris or Cabrio.
	Cabrio	12.0 - 16.0 oz	11	0	
	Quadris Opti	3.2 pts	11/M	1	See Label.
	Inspire Super	16 - 20 fl oz	3/9	7	No more than 2 sequential applications.
	Folicur 3.6 F	8.0 fl oz	3	7	Use every 10 - 14 days in rotation.
	Quadris Top	10 - 14 fl oz	11/3	1	Rotate to other chemistry after 1 application.
	Topsin M 70W	4.0 - 8.0 oz	1	0	
	T-Methyl 70WP	4.0 - 8.0 oz	1	0	
	Topsin 4.5L	10.0 fl oz	1	0	
	T-Methyl 4.5F	10.0 fl oz	1	0	
	Switch	11.0 - 14.0 oz	9/12	1	
	Manex	1.2 - 1.6 qt	M	5	Use western-grown seed. Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.
	Manex II	1.6 - 2.4 qt	M	5	
	Maneb 80WP	1.0 - 2.0 lb	M	5	
	Maneb 75DF	1.0 - 2.0 lb	M	5	
	Manzate 75DF	2.0 - 3.0 lb	M	5	
	Penncozeb80WP	1.5 - 3.0 lb	M	5	
	Penncozeb 75DF	1.5 - 3.0 lb	M	5	
	Dithane F-45	1.6 - 2.4 qt	M	5	Greenhouse approved.
Dithane M-45	1.6 - 2.4 qt	M	5	Greenhouse approved.	
Dithane DF	2.0 - 3.0 lb	M	5	Greenhouse approved.	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
CUCUMBER (continued)					
Gummy Stem Blight (cont.)	Dithane DF Rain Shield	2.0 - 3.0 lb	M	2.0 - 3.0 lb	Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest. Apply every 7 - 10 days as needed.
	Ridomil Gold Bravo	2.0 - 3.0 lb	4/M	2.0 - 3.0 lb	
	Flouronil	2.0 - 3.0 lb	4/M	2.0 - 3.0 lb	
	Bravo Weather Stik	2.0 - 3.0 pt	M	2.0 - 3.0 pt	
	Echo 720	2.0 - 3.0 pt	M	2.0 - 3.0 pt	
	Bravo 500	2 ¼ - 2 ¾ pt	M	2 ¼ - 2 ¾ pt	
	Equus 720	2.0 - 3.0 pt	M	2.0 - 3.0 pt	
	ManKocide	2.0 - 2.5 lb	M	2.0 - 2.5 lb	
	Nordox 75WG	1 - 1.25 lb	M	1 - 1.25 lb	
	Kocide 4.5LF	1.3 pt	M	1.3 pt	
	Kocide 3000	0.5 - 1.25 lb	M	0.5 - 1.25 lb	
	Nu-Cop 3L	1.0 - 4.0 pt	M	1.0 - 4.0 pt	
	Champ DP	1.3 lb.	M	1.3 lb.	
	Champ 2F	1.3 pt	M	1.3 pt	
	Cuprofix Disperss	2.5 lb	M	2.5 lb	
Catamaran,	4 pts	M/33	4 pts		
Powdery Mildew	Pristine	12.5 - 18.5 oz	7/11	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray.
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris, Cabrio or Flint.
	Cabrio	12.0 - 16.0 oz	11	0	
	Flint	1.5 - 2.0 oz/acre	11	0	Spray preventively when conditions are favorable for disease and repeat every 7-10 days.
	Inspire Super	16 - 20 fl oz	3/9	7	No more than 2 sequential applications.
	Nova or Rally	2.5 - 5.0 oz	3	0	Apply at first sign of disease and continue every 7 - 10 days. Rotate with other fungicides.
	Procure	4.0 - 8.0 oz	3	0	
	Quadris Top	10 - 14 fl oz	11/3	1	Rotate to other chemistry after 1 application.
	Folicur 3.6 F	4.0 - 6.0 fl oz	3	7	Do not rotate with Procure or Rally.
	Topsin M 70WP	4.0 - 8.0 oz	1	0	Apply when disease threatens and alternate Topsin with chlorothalonil products or other mode of action. Continue every 7-14 days until disease is no longer a problem. Apply every 10-14 days.
	T-Methyl 70WP	4.0 - 8.0 oz	1	0	
	Topsin 4.5L	10.0 fl oz	1	0	
	T-Methyl 4.5F	10.0 fl oz	1	0	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
CUCUMBER (continued)					
Powdery Mildew (cont.)	Switch	11.0 – 14.0 oz	9/12	1	Apply every 7-10 days as needed. Apply at least every 7 days.
	Bravo Weather Stik	2.0 - 3.0 pt	M	0	
	Echo 720	2.0 - 3.0 pt	M	0	
	Bravo 500	2 ¼ - 2 ¾ pt	M	0	
	Equus 720	2 - 3 pt	M	0	
	Actigard	0.5 – 1.0 oz	P	0	
	Cuprofix Disperss	2.5 lb	M	0	
Scab	Bravo 500	2 ¾ - 4 ¼ pt	M	0	Apply when disease threatens and every 7-10 days. Greenhouse approved. See Label. Greenhouse approved. See Label. Greenhouse approved. See Label. Greenhouse approved. See Label. Apply every 7-14 days. See Label.
	Dithane DF Rain Shield	2.0 - 3.0 lb	M		
	Dithane M-45	2.0 - 3.0 lb	M		
	Dithane DF	2.0 - 3.0 lb	M	5	
	Dithane F-45	1.6 - 2.4 qt	M	5	
	Manex II	1.6 - 2.4 qt	M	5	
	Manzate 75DF	2.0 - 3.0 lb	M	5	
	Penncozeb75DF	1.5 - 3.0 lb	M	5	
	Penncozeb80WP	1.5 - 3.0 lb	M	5	
	Ridomil Gold Bravo	2.0 - 3.0 lb	4/M	5	
	Flouronil	2.0 - 3.0 lb	4/M	5	
	Bravo Weather Stik	2.0 - 3.0 pt	M	0	
	Echo 720	2.0 - 3.0 pt	M	0	
	Equus 720	2.0 - 3.0 pt	M	0	
EGGPLANT					
<i>Pythium</i> and <i>Phytophthora</i> spp.	Ridomil Gold EC	1.0 - 2.0 pt.	4		Apply in sufficient water (20 - 50 gal) to provide adequate coverage. See Label.
	Ridomil Gold SL	1.0 - 2.0 pt	4		
	Ultraflourish	2.0 - 4.0 pt	4		
	MetaStar	4.0 - 8.0 pt	4		
Phomopsis, Alternaria, Anthracnose, Fruit Rots & Leaf Blights	Endura	2.5 - 3.5 oz per acre/ 100 gal	7	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after two sprays. Quadris and Cabrio are primarily for Anthracnose and Alternaria. No more than one application of either of these fungicides should be made before rotating to different fungicide chemistry. Rotate to other chemistry after 1 application.
	Quadris (Amistar)	6.2 - 15.4 fl oz (2.0 - 5.0 oz)	11	0	
	Quadris Top	10 - 14 fl oz	11/3	14	
	Cabrio	8.0 - 12.0 oz	11		
	Evito	3.8 - 5.7 fl oz	11	3	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
EGGPLANT (continued)					
<i>Pythium</i> and <i>Phytophthora</i> spp.	Ridomil Gold EC	1.0 - 2.0 pt.	4		Apply in sufficient water (20 - 50 gal) to provide adequate coverage. See Label.
	Ridomil Gold SL	1.0 - 2.0 pt	4		
	Ultraflourish	2.0 - 4.0 pt	4		
	MetaStar	4.0 - 8.0 pt	4		
Phomopsis, Alternaria, Anthracnose, Fruit Rots & Leaf Blights	Endura	2.5 - 3.5 oz per acre/ 100 gal	7	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after two sprays.
	Quadris (Amistar)	6.2 - 15.4 fl oz (2.0 - 5.0 oz)	11	0	Quadris and Cabrio are primarily for Anthracnose and Alternaria. No more than one application of either of these fungicides should be made before rotating to different fungicide chemistry.
	Quadris Top	10 - 14 fl oz	11/3	14	Rotate to other chemistry after 1 application.
	Cabrio	8.0 - 12.0 oz	11		
	Evito	3.8 - 5.7 fl oz	11	3	
	Flint	1.5 - 2.0 oz	11	0	
	Bravo Weather Stik	1.5 pt	M	3	
	Nordox 75WG	1.25 - 2.5 lb	M	0	
	Kocide 101	2.0 lb	M	0	
	Kocide DF	2.0 lb	M	0	
	Kocide LF	2.6 pt	M	0	
	Kocide 4.5 LF	1.3 pt	M	0	
	Kocide 3000	0.75 lb	M	0	
	Champ DP	1.3 lb	M	0	
	Champ 2F	1.3 pt	M	0	
	Champ F	2.6 pt	M	0	
	Nu-Cop 50DF	2.0 lb	M	0	
	Nu-Cop 3L	1.3 pt	M	0	
	Blue Shield	2.0 lb	M	0	
	Forum	6.0 fl oz	40	0	Forum is labeled for suppression of <i>Phytophthora</i> fruit and crown rot.
	Cuprofix Disperss	2.5 lb	M	0	
	Maneb 80WP	1.5 - 2.0 lb	M	5	
	Maneb 75DF	1.5 - 2.0 lb	M	5	
	Manex	1.2 - 1.6 qt	M	5	
	Catamaran	4 pts	M/33	7	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
IRISH POTATO					
Black Leg	Streptomycin sulfate 21.2 WP	½ lb./100 gal	1.0 tsp.		Soak cut seed pieces for 30 minutes and plant. Eradicate seedcorn maggots.
Black Scurf	Terraclor 10G (H)	180 to 250 lb broadcast or 100 lb/12,400 ft. row	14		Apply according to label directions.
	Terraclor 75 WP (H)	24 to 33 lb broadcast or 13 ½ lb/12,400 ft. or row	14		
Early Blight and Late Blight	Endura	2.5 - 4.5 oz	7	30	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after two sprays.
	Scala	7.0 fl oz	9	7	Alternate with protectant fungicides.
	Quadris (Amistar)	6.2 - 15.4 fl oz (2.0 - 5.0 oz)	11	14	Use only in combination with protectant fungicide.
	Quadris Opti	1.6 pts	11/M	14	Surfactant recommended.
	Revus Top	5.5 - 7.0 fl oz	3/40	14	Rotate with non-strobilurins.
	Reason	5.5 - 8.2 fl oz	11	14	Tank-mix with mancozeb or chlorothalonil.
	Tanos	6.0 - 8.0 oz	11/27	14	See Label.
	Curzate 60DF	3.3 oz	27	14	
	Evito	3.8 fl oz	11	7	
	Quadris Top	8 - 14 fl oz	11/3	14	Rotate to other chemistry after 1 application.
	Bravo 500	1 ½ 2 c pt	M	0	
	Polyram 80DF	1.5 - 2.0 lb	M	0	
	Dithane DF Rain Shield	0.5 - 2.0 lb	M	14	Spray every week beginning when plants are 4 to 6 inches high, and continue weekly until harvest.
	Dithane M-45	0.5 - 2.0 lb	M	14	
	Dithane DF	0.5 - 2.0 lb	M	14	
	Dithane F-45	0.4 - 1.6 qt	M	14	
	Maneb 75DF	1.5 - 2.0 lb	M	14	
	Maneb 80WP	1.5 - 2.0 lb	M	14	
	Manex	0.8 - 1.6 qt	M	14	
	Manex II	0.8 - 1.6 qt	M	14	
	Manzate 75DF	1.0 - 2.0 lb	M	14	
	Penncozeb75DF	0.5 - 2.0 lb	M	14	
	Penncozeb80WP	0.5 - 2.0 lb	M	14	
ManKocide	1.5 - 2.0 lb	M	14		
Ranman	2.1 - 2.75 fl oz	21	14	Mix with organosilicone surfactant.	
Forum	6.0 fl oz	40	7	Forum for late blight only.	
Gavel 75DF	1.5 - 2.0 lb	22/M	14		

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
IRISH POTATO (continued)					
Early Blight and Late Blight (cont.)	Previcur	1.2 pt	28	14	Tank mix with chlorothalonil or mancozeb.
	Ridomil Gold Bravo	2.0 lb	4/M	14	
	Ridomil Gold MZ	2.5 lb	4/M	14	
	Ridomil Gold/Copper	2.0 lb	4/M	14	
	Flouronil	2.0 lb	4/M	14	Add 0.8 lb. a.i./acre of EBDC or chlorothalonil to Ridomil Gold/Copper.
	Bravo Weather Stik	1.0 - 1.5 pt	M	0	
	Echo 720	1.0 - 1.5 pt	M	0	
	Equus 720	1.0 - 1.5 pt	M	0	
	Bravo S	3.0 - 4.5 pt	M	0	
	Super Tin	2.5 - 3.75 lb	M	21	See label.
	Rovral 4F	1.0 - 2.0 pt.	2	14	Rovral for early blight only.
	Catamaran	4 - 5 pts	M/33	7	
Most CuOH (copper hydroxide) & CuSO ₄ (copper sulfate) cmpds	See labels.		See labels.	See labels.	
Seed Piece Rot	Maneb 80WP	1.0 lb./10 gal	M	--	Dip whole or cut potato in fungicide/water. Plant as soon as possible. Spread treated seed pieces in a cool place, if held before planting.
	Maneb 75DF	1.0 lb./10 gal	M		
	Dithane M-45	1.25 lb./50 gal	M		
	Dithane DF	1.25 lb./50 gal	M		
	Dithane F-45	1 qt/50 gal	M		
	Penncozeb 75DF	1.25 lb./50 gal	M		
	Penncozeb80WP	1.25 lb./50 gal	M		Use according to manufacturer's directions.
	Manzate 75DF	1.25 lb./50 gal	M		Do not use treated seed for food or feed purposes.
	Manzate 80WP	1.25 lb./50 gal	M		
	Manex II	1.0 qt/10 gal	M		See Label.
	Mertect 340F	0.42 ozs/2000 lb.	1		
Tops 2.5 Dust	1.0 lb/100 lb seed				
LETTUCE					
Pythium Damping-off	Ridomil Gold EC	1.0 - 2.0 pt	4		Incorporate into soil. See Label.
	Ridomil Gold GR	20 - 40 lb	4		
	Ridomil Gold SL	1.0 - 2.0 pt	4		
	Metastar	4.0 - 8.0 pt	4		

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
LETTUCE (continued)					
Sclerotinia Bottom Rot/ Drop	Endura	8.0 - 11.0 oz	7	14	Apply prior to disease onset.
	Botran 75WP	2.7 lb	14	14	Spray at first appearance and continue at 7 to 10 day intervals.
	Rovral 4F	1.5 - 2.0 pt.	2	14	Apply at 3-leaf stage. See label.
	Iprodione 4L	1.5 - 2.0 pt	2	14	
Downy Mildew	Quadris (Amistar)	12.3 - 15.4 fl oz (4.0 - 5.0 oz)	11		Apply no more than three sequential applications of Quadris before rotating to a fungicide with a different mode of action. Apply under favorable disease conditions. Apply at first appearance of disease and every 7 to 10 days.
	Reason	5.5-82 fl oz	11	14	Rotate with non-strobilurins.
	Tanos	8.0 oz	11/27	3	Tank-mix Tanos with other fungicides.
	Forum	6.0 fl oz	40	0	Tank-mix Forum with other fungicides.
	Previcur Flex	2.0 pt	28	2	See label.
	Presidio	3.0 - 4.0 fl oz	43	2	Tank-mix with protectants.
	Revus	8.0 fl oz	40	1	Surfactant recommended.
	Aliette	2.0 - 5.0 lb.	33	3	
	Aliette + Maneb 2+2	4.0 lb.	33/M	10	
	Manex	1.2 - 1.6 qt	M	10	
	Maneb 75DF	1.5 - 2.0 lb	M	10	
	Maneb 80WP	1.5 - 2.0 lb	M	10	
LIMA BEAN					
Anthracnose	Quadris (Amistar)	6.2 - 15.4 fl oz (2.0 - 5.0 oz)	11	1	Apply prior to disease onset on a 7 - 14 day interval.
	Headline	6.0 - 9.0 fl oz	11	7	Rotate with non-strobilurins.
	Topsin M 70W	1.0 - 2.0 lb	1	14	Apply at 10 - 30% bloom or when conditions are favorable for disease and repeat 7 day intervals.
	T-Methyl 70WP	1.0 2.0 lb	1	14	
	Topsin 4.5L	20.0 - 30.0 fl oz	1	14	
	T-Methyl 4.5L	20.0 - 30.0 fl oz	1	14	
Anthracnose Downy Mildew	Headline	6.0 - 9.0 fl oz	11	7	Rotate with non-strobilurins.
Powdery Mildew	Headline	6.0 - 9.0 fl oz	11	7	Rotate with non-strobilurins.

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
LIMA BEAN (continued)					
Botrytis (Gray Mold) Sclerotinia (White Mold)	Topsin M 70W	1.0 - 2.0 lb	1	14	Apply at 10 - 30% bloom or when conditions are favorable for disease and repeat 7 day intervals. See label. Apply Rovral as foliar spray at early bloom (1 - 10%) bloom. Repeat on 7 day intervals if conditions are favorable for disease. (See Label).
	T-Methyl 70WP	1.0 - 2.0 lb	1	14	
	Topsin 4.5L	30.0 - 40.0 fl oz	1	14	
	T-Methyl 4.5L	30.0 - 40.0 fl oz	1	14	
	Rovral 4F	1.5 - 2.0 pt	2	14	
Rhizoctonia & Pythium Damping-off and Root Rots	Ridomil Gold EC	½ - 1.0 pt.	4		Incorporate into soil. See Label. Applied in-furrow. Use as an in-furrow spray.
	Ridomil Gold SL	0.5 - 1.0 pt	4		
	Quadris (Amistar)	0.4 - 0.8 fl oz/1000 row feet (0.125 - 0.25 oz/1000 row feet)	11		
	Uniform	0.34 fl oz/1000 row ft	4/11		
OKRA					
Foliar diseases	Quadris (Amistar)	6.2 - 15.4 fl oz (2.0 - 5.0 oz)		0	See comments on eggplant.
ONION (DRY)					
Pythium Damping-Off	Ridomil Gold EC	½ - 1.0 pt.			Incorporate into soil. See Label.
Purple Blotch ¹ Bacterial Leaf Blight ² Botrytis Leaf Blight ³ Downy Mildew ⁴	Pristine ^{1,3,4}	10.5 - 18.5 oz1 14.5 - 18.5 oz3 18.5 oz3	7/11	7	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after two sprays. Pristine only suppresses downy mildew. Use low rate of Scala with tank-mix only. Apply no more than two sequential applications of Quadris or Cabrio before rotating to a fungicide with a different mode of action. No more than 2 sequential applications. Tank-mix to broaden activity spectrum. Spray on a 7 - 14 day schedule depending on weather and disease pressure. Rotate to other chemistry after 1 application.
	Scala ^{1,3}	9 - 12 fl oz	9	7	
	Quadris (Amistar) ^{1,4}	6.2 - 15.4 fl oz (2.0 - 5.0 oz)	11	0	
	Inspire Super ^{1,3}	16 - 20 fl oz	3/9	7	
	Quadris Opti	2.4 - 3.6 pts	11/M	14	
	Cabrio ^{1,4}	8.0 - 12.0 oz	11	0	
	Omega 500 ^{1,4}	1 pt	29	7	
	Folicur 3.6 F ¹	4.0 - 6.0 fl oz	3	7	
	Ridomil Gold MZ ⁴	2.5 lb	4/M	7	
	Quadris Top ^{1,3}	14 fl oz	11/3	7	
	Ridomil Gold/Copper ⁴	2.0 lb	4/M	7	
	Ridomil Gold Bravo ^{1,3,4}	2.0 lb	4/M	10	
	Bravo Weather Stik ^{1,3,4}	1.0 - 2.0 pt	M	7	
	Echo 720 ^{1,3,4}	1.0 - 2.0 pt	M	7	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
BLACKEYE PEAS (SOUTHERN)					
Rhizoctonia & Pythium Damping-off	Ridomil Gold EC	½ - 1.0 pt.	4		Incorporate into soil. See Label. Applied in-furrow Use as an in-furrow spray.
	Ridomil Gold SL	0.5 - 1.0 pt	4		
	MetaStar	2.0 - 4.0 pt	4		
	Quadris (Amistar)	0.4 - 0.8 fl oz/1000 row feet (0.125 - 0.25 oz/1000 row feet)	11		
	Uniform	0.34 fl oz/1000 row ft	4/11		
Scab Anthracnose Mildew Rust	Quadris (Amistar)	6.2 - 15.4 fl oz (2.0 - 5.0 oz)	11	1	Apply at or prior to disease onset.
	Headline	6.0 -9.0 fl oz	11	7	Rotate with non-strobilurins.
Cercospora Leafspot Powdery Mildew Rust	Sulfur (H)	See label	M	0	Spray early bloom; repeat at 7 to 10 day intervals. See label.
	Quadris (Amistar)	6.2 - 15.4 fl oz (2.0 - 5.0 oz)	11	1	Apply at or prior to disease onset.
	Headline	6.0 - 9.0 fl oz	11	7	Rotate with non-strobilurins.
BLACKEYE PEAS (DRY)					
Pythium Damping-off Rust Anthracnose Downy Mildew Cercospora Leafspot	Ridomil Gold EC	½ - 1.0 pt.	4		Incorporate into soil. See Label. Apply at or prior to disease onset. See Label. See Label. See Label. See Label. Rotate with non-strobilurins.
	Ridomil Gold SL	0.5 - 1.0 pt	4		
	MetaStar	2.0 - 4.0 pt	4		
	Quadris (Amistar)	6.2 - 15.4 fl oz	11	1	
	Bravo 500	2.0 - 3.0 pt	M	42 days	
	Bravo Weather StiK	1 d - 2.0 pt	M	42 days	
	Echo 720	1 d - 2.0 pt	M	42 days	
	Equus 720	1.6 - 2.0 pt	M	42 days	
Headline	6.0 -9.0 fl oz	M	21		
PEPPER					
Cercospora, Alternaria, Anthracnose, Phytophthora blight Fruit Rots Bacterial Spot	Endura	2.5 - 3.5 oz per acre/100 gal	7	0	Endura is primarily for diseases caused by Alternaria and Cercospora on this group of crops.
	Quadris (Amistar)	6.2 - 15.4 fl oz (2.0 - 5.0 oz)	11	0	Quadris and Cabrio are primarily for Anthracnose and Alternaria. No more than one application of Quadris or Cabrio should be made before rotating to different fungicide chemistry.
	Quadris Top	12 - 14 fl oz	11/3	14	Rotate to other chemistry after 1 application.
	Cabrio	8.0 - 12.0 oz	11	0	
	Evito	3.8 - 5.7 fl oz	11	3	
	Flint	1.5 - 2.0	11	0	Flint is for powdery mildew.
	Tanos	8.0 - 10.0 oz	11/27	3	Tank mix Tanos with copper or maneb.

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
PEPPER (continued)					
Cercospora, Alternaria, Anthracnose, Phytophthora blight Fruit Rots Bacterial Spot (cont.)	Forum	6.0 fl oz	40	0	Tank mix Forum with copper or maneb. Spray on a 7 - 10 day interval. Shorten interval under high disease pressure or when weather is favorable for disease. Begin field application immediately following transplanting and continue at 5 - 10 day intervals depending on the weather and disease pressure. Plant certified seed or transplants. For use <u>only</u> on chili pepper. Tank mix copper compounds with Maneb/ Manex products to increase copper activity and to broaden control spectrum for foliar diseases.
	Manex	1.2 - 2.4 qt	M	7	
	Maneb 75DF	1.5 - 3.0 lb	M	7	
	Maneb 80WP	1.5 - 3.0 lb	M	7	
	Bravo Weather Stik	1.5 pt	M	3	
	Top Cop Tri-Basic (H)	1.0 - 2.0 qt	M	0	
	Nordox 75WG	1.25 - 2.5 lb	M	0	
	Kocide 101	2.0 - 3.0 lb	M	0	
	Kocide DF	2.0 - 3.0 lb	M	0	
	Kocide LF	2.6 - 4.0 pt	M	0	
	Actigard	0.3 - 0.75 oz	P	14	
	Kocide 4.5 LF	1.3 - 2.0 pt	M	0	
	Kocide 3000	0.5 - 1.25 lbs	M	0	
	Champ DP	1.3 - 2.0 lb	M	0	
	Champ 2F	1.3 - 2.0 pt	M	0	
	Champ F	2.6 - 4.0 pt	M	0	
	Nu-Cop 50DF	2.0 - 3.0 lb	M	0	
	Nu-Cop 3L	1.3 - 4.0 pt	M	0	
	Cuprofix Ultra 40	1.25 - 3.0 lb	M	0	
Catamaran	4 pts	M/33	7		
<i>Pythium</i> and <i>Phytophthora</i> spp.	Ridomil Gold EC	1.0 pt.	4		Apply Ridomil Gold EC at planting and again in 30 days. Make 3 - 4 applications of Ridomil Gold/Copper every 10 -14 days. Use copper with Presidio and Revus. Use surfactant with Revus. Rotate Presidio and Revus w/ Ridomil Gold Copper. Apply pre-plant to greenhouse media. Apply at planting. See label. Foliar and fruit phase suppression only.
	Ridomil Gold SL	1.0 pt	4		
	MetaStar	4.0 pt	4		
	Presidio	3.0 - 4.0 fl oz	43	2	
	Revus	8.0 fl oz	40	1	
	Ridomil Gold /Copper	2.5 lb	4/M	7	
	Previcur Flex	1:1000 stock sol. 1.2 pt	28		
	Tanos	8.0 - 10.0 oz	11/27	3	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
PEPPER (continued)					
Southern Blight	Terraclor or PCNB 75WP (H)	3.0 lb/100 gal			Use 1/2 pint per plant when transplanting. Rotate with corn or other grasses. Deep plow to cover debris.
PUMPKIN					
Downy Mildew	Pristine	12.5 - 18.5 oz	7/11	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray.
	Quadris Opti	3.2 pts	11/M	1	
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	Apply every 7-14 days. Alternate to a fungi- cide with a different mode of action after one spray of Quadris, Cabrio or Flint.
	Cabrio	8.0 - 12.0 oz	11	0	
	Flint	3.8 - 5.7 fl oz	11	0	Apply when disease threatens and every 7 days.
	Manex	1.2 - 1.6 qt	M	5	
	Ridomil Gold MZ	2.5 lb	4/M	5	Tank mix with organosilicone surfactant.
	Ranman	2.1 - 2.75 fl oz	21	0	
	Reason	5.5 fl oz	11	14	Rotate with non-strobilurins.
	Forum	6.0 fl oz	40	0	Forum must be tank-mixed with other fungi- cides.
	Gavel	2.0 lb	22/M	5	
	Tanos	8.0 oz	11/27	3	Tank mix with mancozeb or chlorothalonil.
	Previcur Flex	1.2 pt	28	2	See label.
	Curzate	3.2 oz	27	3	Tank mix with mancozeb or chlorothalonil.
	Presidio	3.0 - 4.0 fl oz	43	2	Tank-mix with protectant fungicides.
	Revus	8.0	40	0	
	Ridomil Gold Bravo	2.0 lb	4/M	0	Tank-mix w/ protectants & surfactant.
	Flouronil	2.0 lb	4/M	0	
	Bravo Weather Stik	1.5 - 2.0 pt	M	0	
	Echo 720	1.5 - 2.0 pt	M	0	
	Bravo 500	2 ¼ - 2 ¾ pt	M	0	
	Equus 720	1.5 - 2.0 pt	M	0	
Aliette	2.0 - 5.0 lb	33	0		
Aliette/Maneb 2 + 2	4.0 lb	33/M	5		
ManKocide	2.0 - 3.0 lb	M	5		
Nordox 75WG	1 - 1.25 lbs	M	0		
Kocide DF	2.0 lb	M	0		

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS	
	MATERIAL	FORMULATED	FRAC CODE			
PUMPKIN (continued)						
Downy Mildew (cont.)	Kocide LF	2.6 pt.	M	0	Apply every 7 - 10 days as needed.	
	Kocide 4.5LF	1.3 pt	M	0		
	Kocide 3000	0.5 - 1.25 lbs	M	0		
	Nu-Cop 3L	1.0 - 4.0 pt	M	0		
	Champ DP	1.3 lb.	M	0		
	Champ 2F	1.3 pt.	M	0		
	Cuprofix Disperss	2.5 lb	M	0		
	Actigard	0.5 - 1.0 oz	P	0		Apply at least every 7 days.
	Catamaran	4 pts	M/33	7		
Anthracnose	Pristine	18.5 oz	7/11	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray.	
	Inspire Super	16 - 20 fl oz	3/9	7	No more than 2 sequential applications.	
	Quadris Opti	3.2 pts	11/M	1	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris or Cabrio.	
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1		
	Quadris Top	10 - 14 fl oz	11/3	1		Rotate to another chemistry after 1 application
	Cabrio	12.0 - 16.0 oz	11	0	Tank mix Tanos with mancozeb or chlorothalonil.	
	Tanos	8.0 oz	11/27	3		
	Topsin M 70W	4.0 - 8.0 oz	1	0	See Label.	
	T-Methyl 70WP	4.0 - 8.0 oz	1	0	Use western-grown seed. Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.	
	Topsin 4.5L	10.0 fl oz	1	0		
	T-Methyl 4.5L	10.0 fl oz	1	0		
	Manex	1.2 - 1.6 qt	M	7		Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.
	Ridomil Gold Bravo	2.0 - 3.0 lb	4/M	5		
	Flouronil	2.0 - 3.0 lb	4/M	5		
	Bravo Weather Stik	1.5 - 2.0 pt	M	0		
	Echo 720	1.5 - 2.0 pt	M	0		
	Bravo 500	2 ¼ - 2 ¾ pt	M	0		
	Equus 720	1.5 - 2.0 pt	M	0		
	ManKocide	2.0 - 3.0 lb	M	0		
	Nordox 75WG	1 - 1.25 lbs	M	0		
Kocide 4.5LF	1.3 pt	M	0			

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
PUMPKIN (continued)					
Anthracnose (cont.)		4			
	Kocide 3000	0.5 - 1.25 lbs	M	5	Apply every 7 - 10 days as needed.
	Nu-Cop 3L	1.0 - 4.0 pt	M	0	
	Champ DP	1.3 lb.	M	0	
	Champ 2F	1.3 pt	M	0	
	Cuprofix Disperss	2.5 lb	M	0	
	Catamaran	4 pts	M/33	7	
Gummy Stem Blight	Pristine	12.5 - 18.5 oz	11	0	
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris or Cabrio.
	Inspire Super	16 - 20 fl oz	3/9	7	No more than 2 sequential applications.
	Cabrio	12.0 - 16.0 oz	11	0	
	Quadri Opti	3.2 pts	11/M	1	
	Folicur 3.6 F	8.0 fl oz	3	7	Tank-mix with protectants.
	Topsin M 70W	4.0 - 8.0 oz	1	0	See Label.
	T-Methyl 70WP	4.0 - 8.0 oz	1	0	
	Topsin 4.5L	10.0 fl oz	1	0	
	T-Methyl 4.5L	10.0 fl oz	1	0	
	Switch	11.0 - 14.0 oz	9/12	1	
	Manex	1.2 - 1.6 qt	M	5	Use western-grown seed. Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.
	Ridomil Gold Bravo	2.0 - 3.0 lb	4/M	0	
	Flouronil	2.0 - 3.0 lb	4/M	0	
	Bravo Weather Stik	2.0 - 3.0 pt	M	0	
	Echo 720	2.0 - 3.0 pt	M	0	Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.
	Bravo 500	2 ¼ - 2 ¾ pt	M	0	
	Equus 720	2.0 - 3.0 pt	M	0	
	ManKocide	2.0 - 3.0 lb	M	5	
	Nordox 75WG	1 - 1.25 lb	M	0	
	Kocide 4.5LF	1.3 pt	M	0	
	Kocide 2000	1.5 lb.	M	0	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
PUMPKIN (continued)					
Gummy Stem Blight (cont.)	Nu-Cop 3L	1.0 - 4.0 pt	M	0	
	Champ DP	1.3 lb.	M	0	
	Champ 2F	1.3 pt	M	0	
	Cuprofix Disperss	2.5 lb	M	0	
	Catamaran	4 pts	M/33	7	
Powdery Mildew	Pristine	12.5 - 18.5 oz	7/11	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray.
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris, Cabrio, or Flint.
	Inspire Super	16 - 20 fl oz	3/9	7	No more than 2 sequential applications.
	Cabrio	12.0 - 16.0 oz	11	0	
	Flint	1.5 - 2.0 oz/acre	11	0	Spray preventively when conditions are favorable for disease and repeat every 7-10 days.
	Nova or Rally	2.5 - 5.0 oz	3	0	Apply at first sign of disease and continue every 7 -10 days. Rotate with other fungicides.
	Quintec	4.0 - 6.0 oz	13	3	See label.
	Procure	4.0 - 8.0 oz	3	0	
	Folicur 3.6 F	4.0 - 6.0 fl oz	3	7	Tank-mix with protectants.
	Topsin M 70WP	4.0 - 8.0 oz	1	0	See label.
	T-Methyl 70WP	4.0 - 8.0 oz	1	0	
	Topsin 4.5L	10.0 fl oz	1	0	
	T-Methyl 4.5L	10.0 fl oz	1	0	
	Switch	11.0 - 14.0 oz	9/12	1	
	Bravo Weather Stik	2.0 - 3.0 pt	M	0	
	Echo 720	2.0 - 3.0 pt	M	0	Apply every 7-10 days as needed.
	Bravo 500	2 ¼ - 2 ¾ pt	M	0	
	Equus 720	2 - 3 pt	M	0	Apply at least every 7 days.
	Actigard	0.5 - 1.0 oz	P	0	
	Cuprofix Disperss	2.5 lb	M	0	
Alternaria Leafspot	Pristine	12.5 - 18.5 oz	7/11	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray.
	Inspire Super	16 - 20 fl oz	3/9	7	No more than 2 sequential applications.
	Quadris Opti	3.2 pts	11/M	1	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
PUMPKIN (continued)					
Alternaria Leafspot (cont.)	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris or Cabrio.
	Quadris Top	10 - 14 fl oz	11/3	1	Rotate to other chemistry after 1 application.
	Cabrio	12.0 - 16.0 oz	11	0	
	Tanos	8.0 oz	11/27	3	Tank mix Tanos with mancozeb or chlorothalonil.
	Manex	1.2 - 1.6 qt	M	7	See Label.
	Ridomil Gold Bravo	2.0 - 3.0 lb	4/M	5	Apply every 7-14 days.
	Flouronil	2.0 - 3.0 lb	4/M	0	Begin application after plants are set in the field or after emergence for direct seeded.
	Switch	11.0 - 14.0 oz	9/12	1	
	Bravo Weather Stik	1 ½ pt	M	0	
	Echo 720	1 ½ pt	M	0	Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.
	Bravo 500	2 ¼ - 2 ¾ pt	M	0	
	Equus 720	2.0 - 3.0 pt	M	0	
	Reason	5.5 fl oz	11	0	Rotate with non-strobilurins.
	ManKocide	2.0 - 3.0 lb	M	14	
	Nordox 75WG	1 - 1.25 lb	M	0	
	Kocide 4.5LF	1.3 pt	M	5	
	Kocide 3000	0.5 - 1.25 lbs	M	0	
	Nu-Cop 3L	1.0 - 4.0 pt	M	0	
	Champ DP	1.3 lb.	M	0	Apply every 7-10 days as needed.
	Champ 2F	1.3 pt	M	0	
Cuprofix Disperss	2.5 lb	M	0		
Catamaran	4 pts	M/33	7		
<i>Pythium</i> spp. Damping-off Cottony leak <i>Phytophthora</i>	Ridomil Gold EC	1.0 - 2.0 pt	4		Incorporate into soil. See Label.
	Ridomil Gold SL	1.0 - 2.0 pt	4		
	Ultra Flourish	2.0 - 4.0 pt	4		
	MetaStar	4.0 - 8.0 pt	4		
	Presidio	3.0 - 4.0 fl oz	43	2	Tank-mix with copper.
	Revus	8.0 fl oz	40	7	Tank-mix with copper + surfactant.
	Ranman	2.1 - 2.75 fl oz	21	3	Tank mix with organosilicone surfactant.
	Tanos	8.0 - 10.0 oz	11/27		Foliar and fruit phase suppression only.

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
RADISH					
<i>Pythium</i> and <i>Phytophthora</i>	Ridomil Gold EC	1.0 - 2.0 pt	4		Incorporate into soil. See Label.
	Ridomil Gold SL	1.0 - 2.0 pt	4		
	Presidio	3.0 - 4.0 fl oz	43	7	Tank-mix with non-group 43 fungicides.
Alternaria Leafspot	Quadris (Amistar)	6.2 - 15.4 fl oz (2.0 - 5.0 oz)	11	0	Apply no more than two sequential applications of Quadris or Cabrio before rotating to a fungicide with a different mode of action.
	Cabrio	8.0 - 12.0 oz	11	0	
	Top Cop with Sulfur (H)	2.0 qt	M	0	Begin application as soon as disease threatens and repeat at 7-10 day intervals. Use 3 day interval in plant beds. See label.
	Top Cop Tri Basic (H)	1-2 qt	M	0	
Foliar oomycetes & White Rust	Quadris (Amistar)	6.2 - 15.4 fl oz (2.0 - 5.0 oz)	11	0	Apply no more than two sequential applications of Quadris or Cabrio before rotating to a fungicide with a different mode of action.
	Cabrio	8.0 - 12.0 oz	11	7	
	Ridomil Gold/Copper	2.0 lb	4/M		See Label.
SPINACH					
Pythium Damping-off	Ridomil Gold EC	1.0 - 2.0 pt	4		Incorporate into soil. See Label.
	Ridomil Gold GR	20 - 40 lb	4		
	Ridomil Gold SL	1.0 - 2.0 pt	4		
Anthracnose & Cercospora Leafspot	Cabrio	12.0 - 16.0 oz	11	0	Rotate for resistance management. Apply no more than three sequential applications of Quadris before using another fungicide chemistry.
	Quadris (Amistar)	12.3 - 15.4 fl oz (3.0 - 5.0 oz)	11	0	
	Cuprofix Disperss	2.5 - 4.0 lb	M	0	Spray at 7 - 10 day intervals.
Downy Mildew & White Rust	Cabrio	16.0 oz	11	0	Rotate for resistance management.
	Quadris (Amistar)	12.3 - 15.4 fl oz (3.0 - 5.0 oz)	11	0	Apply no more than three sequential applications of Quadris before using another fungicide chemistry.
	Aliette	2.0 - 5.0 lb	33	3	Begin application as soon as disease threatens and repeat at 7-10 day intervals.
	Presidio	3.0 - 4.0 fl oz	43	2	Tank-mix with protectants.
	Revus	8.0 fl oz	40	1	Tank-mix w/ protectants and surfactant.
	Ridomil Gold/Copper	2.5 lb	4/M	21	
	Cuprofix Disperss	2.5 - 4.0 lb	M	0	See Label.

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
SQUASH					
Angular Leafspot	Examples: Actigard Nordox 75WG Kocide 4.5LF Kocide 3000 Champ DP Champ 2F Nu-Cop 3L Cuprofix Disperss	0.5 0 1.0 oz 1 - 1.25 lb 1.3 pt 0.5 - 1.25 lbs 1.3 lb 1.3 pt 1.0 - 4.0 pt 4.0 lb	P M M M M M M M	0 0 0 0 0 0 0 0	Apply at least every 7 days. Repeat applications of copper may cause yellowing. Begin at first sign of disease and repeat every 7-10 days as necessary.
<i>Pythium</i> spp. Damping-off Cottony leak <i>Phytophthora</i>	Ridomil Gold EC Ridomil Gold SL Ultra Flourish MetaStar Previcur Flex Ranman Tanos Presidio Revus	1.0 - 2.0 pt 1.0 - 2.0 pt 2.0 - 4.0 pt 4.0 - 8.0 pt 1:1000 stock sol. 2.1 - 2.75 fl oz 8.0 - 10.0 oz 3.0 - 4.0 fl oz 8.0 fl oz	4 4 4 4 28 21 11/27 43 40	3 0	Incorporate into soil. See Label. Apply pre-plant to greenhouse media. Tank mix with organosilicone surfactant. Foliar and fruit phase suppression only. Tank-mix with copper. Tank-mix w/ copper + surfactant.
Downy Mildew	Pristine Quadris (Amistar) Quadris Opti Cabrio Flint Manex Manex II Maneb 80WP Maneb 75DF Manzate 75DF Penncozeb 80WP Penncozeb 75DF	12.5 - 18.5 oz 11.0 - 15.4 fl oz (3.5 - 5.0 oz) 3.2 pts 8.0 - 12.0 oz 4.0 oz/acre 1.2 - 1.6 qt 1.6 - 2.4 qt 1.0 - 2.0 lb 1.0 - 2.0 lb 2.0 - 3.0 lb 2.0 - 3.0 lb 2.0 - 3.0 lb	7/11 11 11/M 11 11 M M M M M M M	0 1 1 0 0 5 5 5 5 5 5 5	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray. Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris, Cabrio or Flint. See Label. Apply every 7-14 days. Apply when disease threatens and every 7 days.

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
SQUASH					
Downy Mildew (cont.)	Dithane F-45	1.6 - 2.4 qt	M	5	Greenhouse approved.
	Dithane M-45	2.0 - 3.0 lb	M	5	Greenhouse approved.
	Dithane DF	2.0 - 3.0 lb	M	5	Greenhouse approved.
	Dithane DF Rain Shield	2.0 - 3.0 lb	M	5	
	Ridomil Gold MZ	2.5 lb	4/M	5	
	Ranman	2.1 - 2.75 fl oz	21	0	Tank mix with organosilicone surfactant.
	Reason	5.5 fl oz	11	14	Rotate with non-strobilurins.
	Forum	6.0 fl oz	40	0	Tank-mix Forum with other fungicides.
	Gavel	2.0 lb	22/M	5	See label.
	Tanos	8.0 oz	11/27	3	Tank mix with mancozeb or chlorothalonil.
	Previcur Flex	1.2 pt	28	2	Tank mix with mancozeb or chlorothalonil.
	Curzate	3.2 oz	27	3	Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.
	Presidio	3.0 - 4.0 fl oz	43	2	Tank-mix with protectants.
	Revus	8.0 fl oz	40	0	Tank-mix w/ protectants and surfactant.
	Ridomil Gold Bravo	2.0 lb	4/M	0	
	Flouronil	2.0 lb	4/M	0	
	Actigard	0.5 - 1.0 oz	P	1	Apply at least every 7 days.
	Bravo Weather Stik	1.5 - 2.0 pt	M	0	
	Echo 720	1.5 - 2.0 pt	M	0	
	Bravo 500	2 ¼ - 2 ¾ pt	M	0	
	Equus 720	1.5 - 2.0 pt	M	0	
	Aliette	2.0 - 5.0 lb	33	0	
	Aliette/Maneb 2 + 2	4.0 lb	33/M	5	
	ManKocide	2.0 - 3.0 lb	M	5	Apply every 7 - 10 days as needed.
	Noreox 75WG	1 - 1.25 lb	M	0	
	Kocide DF	2.0 lb	M	0	
	Kocide LF	2.6 pt.	M	0	
	Kocide 4.5LF	1.3 pt	M	0	
	Kocide 3000	0.5 - 1.25 lbs	M	0	
	Nu-Cop 3L	1.0 - 4.0 pt	M	0	
Champ DP	1.3 lb.	M	0		
Champ 2F]	1.3 pt.	M	0		

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
SQUASH (continued)					
Downy Mildew (cont.)	Cuprofix Disperss	2.5 lb	M	M	
	Catamaran	4 pts	M/33	M/33	
Powdery Mildew	Pristine	12.5 - 18.5 oz	7/11	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray.
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris, Cabrio or Flint.
	Inspire Super	16 - 20 fl oz	3/9	7	No more than 2 sequential applications.
	Cabrio	12.0 - 16.0 oz	11	0	
	Flint	1.5 - 2.0 oz/acre	11	0	Spray preventively when conditions are favorable for disease and repeat every 7-10 days.
	Nova or Rally	2.5 - 5.0 oz	3	0	Apply at first sign of disease and continue every 7 -10 days. Rotate with other fungicides.
	Quadris Top	10 - 14 fl oz	11/3	1	Rotate to other chemistry after 1 application.
	Procure	4.0 - 8.0 oz	3	0	
	Folicur 3.6 F	4.0 - 6.0 fl oz	3	7	Tank-mix to broaden control spectrum.
	Topsin M 70WP	4.0 - 8.0 oz	1	0	Apply when disease threatens and alternate Topsin with chlorothalonil products or other mode of action. Continue every 7-14 days until disease is no longer a problem. Apply every 10-14 days.
	T-Methyl 70WP	4.0 - 8.0 oz	1	0	
	Topsin 4.5L	10.0 fl oz	1	0	
	T-Methyl 4.5L	10.0 fl oz	1	0	
	Switch	11.0 - 14.0 oz	9/12	1	
	Bravo Weather Stik	2.0 - 3.0 pt	M	0	Apply every 7-10 days as needed.
	Echo 720	2.0 - 3.0 pt	M	0	Do not apply when temperatures exceed 95EF.
	Bravo 500	2 ¼ - 2 ¾ pt	M	0	
Equus 720	2 - 3 pt	M	0		
Cuprofix Disperss	2.5 lb	M	0		
Actigard	0.5 - 1.0 oz	P	0	Apply at least every 7 days.	
Microthiol Disperss	5.0 - 10.0 lb	M	0		
Scab	Bravo 500	2 ¾ - 4 ¼ pt	M	0	Begin when first blooms appear and continue every 3-5 days until 7 days before harvest. Use disease-free treated seed. Practice crop rotation.
	Equus 720	2.0 - 3.0 pt	M	0	
	Bravo Weather Stik	2.0 - 3.0 pt	M	0	
	Echo 720	2.0 - 3.0 pt	M	0	
Viruses	JMS Stylet Oil	See Label			(See White Fly Control).
Silver Leaf	Safe-T-Side	See Label			(See Label).

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
SWEET POTATO					
Black Rot & Root Rot Scurf	Mertect 340-F Botran 75-W	8.0 fl ozs/7.5 gal 1 lb/7.5 gal (seed dip) 3.0 - 3.75 lb./14 gal./1000 sq. ft.	1 14		Use certified seed. Use new land for bed or treat old bed with methyl bromide. Follow a 3 or 4 year rotation where black rot has been a problem. Treat seed in Mertect 340-F for 1 to 2 minutes and plant immediately. Do not use treated roots for food or feed. Botran may be applied as a seed dip (10 - 15 sec.) or as a plantbed spray.
Sclerotial Blight, Circular Spot & Soft Rot	Botran 75-W	1 lb/7.5 gal (seed dip)	14		Dip seed in chlorine then dip in Botran suspension. Dip seed 10 to 15 seconds in well agitated suspension. Drain and bed promptly. Prepare fresh suspension daily. Spray or sprinkle over bedded sweet potatoes before covering.
<i>Pythium</i> & <i>Phytophthora</i> spp.	Ridomil Gold EC Ridomil Gold SL Presidio	1.0 - 2.0 pt 1.0 - 2.0 pt 3.0 - 4.0 fl oz	4 4 43	7	Incorporate into soil. See Label. Tank-mix with protectant fungicides.
Bacterial Soft Rot (Erwinia)					Use clean seed potatoes or clean transplants. Practice good rotation.
Rhizopus Soft Rot	Botran 75-W	1.0 lb/100 gal.	14		Spray immediately after washing or dip. See Label.
Streptomyces (Soil Pox)	Telone C-17 chloropicrin	10.5 gal. 1.8 gal.	fumigant fumigant		Rates are for 36 - 42" rows w/ one chisel/row. Treatment is more effective if pH is under 5.5. Do not lime or plant back to heavily infested fields.
Foliar Diseases	Quadris (Amistar) Quadris Top Reason	6.2 - 15.4 fl oz (2.0 - 5.0 oz) 8 - 14 fl oz 5.5-8.2 fl oz	11 11/3 11	14 14 14	Apply no more than three sequential applications of Quadris before rotating to a fungicide with a different mode of action. Rotate with non-strobilurins.
TOMATO					
Anthracnose ¹ Early Blight ² Gray Leaf Spot ³ Gray Leaf Mold ⁴ Late Blight ⁵ Septoria Leaf Spot ⁶	Endura Scala ² Quadris (Amistar) ^{1,2,5,6} Inspire Super ^{1,2,3,4,6} Cabrio ^{1,2,5,6} Quadris Top ¹⁻⁶ Evito ^{1,5} Tanos ^{1,2,3,5,6} Revus Top ¹⁻⁶ Bravo 500 ¹⁻⁶	2.5 - 3.5 oz ¹ 9.0 - 12.5 oz ⁴ 7.0 fl oz 5.0 - 6.2 fl oz (1.6 - 2.0 oz) 16 - 20 fl oz 8.0 - 12.0 oz 8.0 fl oz 3.8 - 5.7 fl oz 6.0 - 8.0 oz 5.5 - 7.0 fl oz 1 ½ 2 1/8 pt	7 9 11 3/9 11 11/3 11 11/27 3/40 M	0 7 0 0 0 0 0 1 3	See label. Always tank-mix Scala with protectants. Alternate with protectant fungicides after one application of Cabrio or Quadris. No more than 2 consecutive applications. Rotate to other chemistries after 1 application. Tank-mix with mancozeb or chlorothalonil. Surfactant recommended.

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
TOMATO (continued)					
Anthracnose ¹	DithaneRainShield ¹⁻⁶	1.5 - 3.0 lb	M	5	Spray every week beginning when plants are 4 to 6 inches high, and continue every 7 - 14 days depending on disease pressure.
Early Blight ²	Dithane M-45 ¹⁻⁶	1.5 - 3.0 lb	M	5	
Gray Leaf Spot ³	Dithane DF ¹⁻⁶	1.5 - 3.0 lb	M	5	
Gray Leaf Mold ⁴	Dithane F-45 ¹⁻⁶	1.2 - 2.4 qt	M	5	
Late Blight ⁵	Maneb 75DF ¹⁻⁶	1.5 - 3.0 lb	M	5	
Septoria Leaf Spot ⁶	Maneb 80WP ¹⁻⁶	1.5 - 3.0 lb	M	5	
	(cont.)				
	Manex ¹⁻⁶	1.2 - 2.4 qt	M	5	
	Manex II ¹⁻⁶	0.6 - 1.2 qt	M	5	
	Manzate 75DF ¹⁻⁶	1.5 - 3.0 lb	M	5	
	Penncozeb75DF ¹⁻⁶	1.5 - 3.0 lb	M	5	
	Penncozeb80WP ¹⁻⁶	1.5 - 3.0 lb	M	5	
	Ranman ⁵	2.1 - 2.75 fl oz	21	0	Tank mix with organosilicone surfactant.
	Reason ⁵	5.5 - 8.2 fl oz	11	14	Rotate with non-strobilurins.
	Forum ⁵	6.0 fl oz	40	0	Tank mix Forum with other fungicides except mfenoxam. See label.
	Previcur Flex ⁵	0.7 - 1.5 pt	28	5	
	ManKocide ¹⁻⁶	2.5 - 5.0 lb	M	0	
	Nordox 75WG	1.25 - 2.5 lb	M	0	
	Cuprofix Dispers ¹⁻⁶	2.5 - 6.0 lb	M	5	
	Aliette/Maneb 2 + 2 ¹⁻⁶	4.0 lb.	33/M	14	
	Ridomil Gold Bravo ¹⁻⁶	2.0 - 3.0 lb	4/M	14	Add 0.8 lb. a.i./acre of EBDC or chlorothalonil to Ridomil Gold/Copper.
	Ridomil Gold MZ ⁵	2.5 lb	4/M	5	Increase rate of chlorothalonil products from 1.35 - 2.0 pt/acre in early season to 2.0 - 2.88 pt/acre at fruit set. Higher rates are recommended for Anthracnose, Alternaria fruit rot, Botrytis gray mold, late blight, and Rhizoctonia fruit rot.
	Switch ^{1,4}	11.0 - 14.0 oz	9/12	0	
	Ridomil Gold/Copper ⁵	2.0 lb	4/M	14	
	Flouronil ¹⁻⁶	2.0 - 3.0 lb	4/M	14	
	Bravo Weather Stik ¹⁻⁶	1.375 - 3.0 pt	M	0	
	Echo 720 ¹⁻⁶	1.35 - 3.0 pt	M	0	
	Equus 720 ¹⁻⁶	1.35 - 2.88 pt	M	0	
	Bravo S	4.5 - 8.5 pt	M	0	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
TOMATO (continued)					
Botrytis Gray Mold	Endura	9.0 - 12.5 oz	7	0	See label.
	Scala	7.0 fl oz	9	1	Always tank-mix Scala with protectants.
	Ridomil Gold Bravo	2.0 - 3.0 lb	4/M	14	See Label.
	Bravo 500	2.0 - 3.0 lb	M	0	Apply at first sign of disease and continue at 7 day intervals.
	Bravo Weather Stik	2 ¾ - 4 ¼ pt	M	0	
	Echo 720	2.0 - 3.0 pt	M	0	
	Equus 720	2.0 - 2.8 pt	M	0	Primarily a problem in greenhouses.
	Ziram 4L	2.0 pt./100 gal.	M	0	Greenhouse use.
Pythium Damping-off	Ridomil Gold EC	1.0 - 2.0 pt	4		Incorporate into soil. See Label.
	Ridomil Gold SL	1.0 - 2.0 pt	4		
	Ridomil Gold GR	20 lb	4		
	Ultra Flourish	2.0 - 4.0 pt	4		
	Aliette	2.0 - 5.0 lb	33		
	Previcur Flex	1:1000 stock sol.	28		Apply pre-plant to greenhouse media.
	Terramaster 4EC	6.5 fl oz/500 gal	14		Greenhouse production only. See label.
Southern Blight	Terraclor 75WP	3.0 lb/100 gal	14		Use 1/2 pint around each plant at transplanting. Deep plow to cover debris. Plant behind a grass crop
		or 6.5 - 10.0 lb/100 gal.			Spray in trench at or prior to planting.
TURNIPS, MUSTARD, COLLARDS & KALE					
Cercospora, Cercospora, & Alternaria Leafspots Downy Mildew	Quadris (Amistar)	6.2 - 15.4 fl oz (2.0 - 5.0 oz)	11	0	Quadris and Cabrio suppress most foliar fungal diseases. No more than 2 sequential applications of Quadris or Cabrio should be made before rotating to different fungicide chemistry.
	Cabrio	8.0 - 12.0 oz	11	0	
	Inspire Super	16 - 20 fl oz	3/9	7	No more than 2 consecutive applications.
	Switch	11.0 - 12.0 oz.	9/12	7	
	Folicur 3.6 F	3.0 - 4.0 fl oz	3	7	Tank-mix with Maneb. Up to 7.2 fl oz on turnips.
	Quadris Top	14 fl oz	11/3	1	Rotate to other chemistry after 1 application.
	Forum	6.0 fl oz	40	0	Tank-mix for downy mildew.
	Revus	8.0 fl oz	40	1	Tank-mix for downy.
	Maneb 75 DF	1.6 lb	M	14 days	Apply when disease appears and repeat every 14 days.
	Maneb 80W	1.5 lb	M	14 days	
	Manex	1.2 qt	M	14 days	
	Nordox 75WG	2/3 - 2 lbs	M	0	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
TURNIPS, MUSTARD, COLLARDS & KALE (continued)					
Cercospora, Cercosporella, & Alternaria Leafspots Downy Mildew (cont.)	Top Cop Tri-Basic (H)	2.0 qt		0	Apply every 7 days when disease threatens. Use higher rates if disease pressure increases.
	Top Cop with Sulfur (H)	2.0 qt		0	
	Kocide DF	1.0 - 2.0 lb	M	0	
	Kocide 4.5 LF	0.6 - 1.3 pt	M	0	
	Kocide 3000	0.5 - 0.75 lb	M	0	
	Champ DP	0.3 - 0.6 lb	M	0	
	Champ DF	0.3 - 0.6 pt	M	0	
	Nu-Cop 50DF	1.0 - 2.0 lb	M	0	
	Cuprofix Disperss	1.5 - 2.5 lb	M	0	
Powdery Mildew	Cabrio	8.0 - 12.0 oz	11	0	No more than 2 sequential applications of Cabrio should be made before rotating to different fungicide chemistry.
	Procure	6.0 - 8.0 fl oz	3	0	
	Microthiol Disperss	3.0 - 10.0 lb	M	0	
Clubroot (Not on turnips)	Terraclor 10G	200 lb./acre (40" row spacing)	14		Apply in 12 - 15" band and incorporate to 4 - 6" depth prior to planting.
	Terraclor 15G	125 lb./acre (40" row spacing)	14		
	Terraclor 75WP	2.0 lb/100 gal	14		Use ½ pint of this solution per plant.
	Terraclor F	3.0 pt./100 gal.	14		Use ½ pint of this solution per plant.
Wirestem (Not on turnips)	Terraclor 10G	110 - 150 lb./acre (40" row spacing)	14		Apply in 8" band centered over the row prior to planting.
	Terraclor 15G	75 - 100 lb./acre (40" row spacing)	14		
	Terraclor 75WP	15 - 20 lb./50 gal.	14		Apply as soil drench at or soon after planting. See label.
	Terraclor F	2.8 - 3.8 gal./50 gal.	14		
	Quadris (Amistar)	0.4 - 0.8 fl oz (0.125 - 0.25 oz) rates/1000 row ft	11		Use in-furrow or as a soil-applied band. See label for specific recommendations.
Downy Mildew	Cabrio	12.0 - 16.0 oz	11	3	Rotate for resistance management.
	Maneb 75 DF	1.6 lb	M	14	See Label.
	Maneb 80W	1.5 lb	M	14	See Label.
	Manex	1.2 qt	M	14	
	Aliette (not turnip)	2.0 - 5.0 lb	33	3	Do not mix Aliette with copper fungicides. Apply every 7 days when disease threatens. Use higher rates if disease pressure increases.
	Nordox 75WG	2/3 - 2 lbs	M	0	
	Kocide DF	1.0 - 2.0 lb	M	0	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
TURNIPS, MUSTARD, COLLARDS & KALE (continued)					
Downy Mildew (cont.)	Kocide 4.5 LF	0.6 - 1.3 pt	M	0	Tank Mix. Tank-mix plus use surfactant.
	Kocide 3000	0.5 - 0.75 lb	M	0	
	Champ DP	0.3 - 0.6 lb	M	0	
	Champ DF	0.3 - 0.6 pt	M	0	
	Nu-Cop 50DF	1.0 - 2.0 lb	M	0	
	Cuprofix Disperss	1.5 - 2.5 lb	M	0	
	Forum	6.0 fl oz	40	0	
	Revus	8.0 fl oz	40	1	
WATERMELON					
Anthracnose	Pristine	18.5 oz	7/11	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray.
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris or Cabrio.
	Inspire Super	16 - 20 fl oz	3/9	7	No more than 2 sequential applications.
	Quadris Opti	3.2 pts	11/M	1	
	Quadris Top	10 - 14 fl oz	11/3	1	Rotate to other chemistry after 1 application.
	Cabrio	12.0 - 16.0 oz	11	0	Tank mix with mancozeb or chlorothalonil.
	Tanos	8.0 oz	11/27	3	See Label.
	Topsin M 70W	¼ - ½ lb.	1	0	Use western-grown seed. Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.
	T-Methyl 70WP	0.25 - 0.5 lb	1	0	
	Topsin 4.5L	10.0 fl oz	1	0	
	T-Methyl 4.5L	10.0 fl oz	1	0	
	Manex	1.2 - 1.6 qt	M	5	
	Manex II	1.6 - 2.4 qt	M	5	
	Maneb 80WP	1.0 - 2.0 lb	M	5	
	Maneb 75DF	1.0 - 2.0 lb	M	5	
	Manzate 75DF	2.0 - 3.0 lb	M	5	
	Penncozeb80WP	2.0 - 3.0 lb	M	5	
	Penncozeb 75DF	2.0 - 3.0 lb	M	5	
	Dithane F-45	1.6 - 2.4 qt	M	5	Greenhouse approved.
	Dithane M-45	2.0 - 3.0 lb	M	5	Greenhouse approved.
Dithane DF	5 - 2.0 pt	M	5	Greenhouse approved.	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
WATERMELON (continued)					
Anthracnose (cont.)	Dithane DF Rain Shield	2.0 - 3.0 lb	M	5	Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.
	Ridomil Gold Bravo	2.0 - 3.0 lb	M	0	
	Flouromil	2.0 - 3.0 lb	4/M	0	
	Bravo Weather Stik	1.5 - 2.0 pt	4/M	0	
	Echo 720	1.5 - 2.0 pt	M	0	
	Bravo 500	2 ¼ - 2 ¾ pt	M	0	
	Equus 720	1.5 - 2.0 pt	M	0	
	ManKocide	2.0 - 3.0 lb	M	5	
	Kocide DF	2.0 lb	M	0	
	Nordox 75WG	2/3 - 2 lbs	M	0	
	Kocide LF	2.6 pt	M	0	
	Kocide 4.5LF	1.3 pt	M	0	
	Kocide 101	2.0 lb	M	0	
	Nu-Cop 3L	1.5 lb.	M	0	
	Nu-Cop 3L	1.0 - 4.0 pt	M	0	
	Nu-Cop 50DF	2.0 lb	M	0	
	Champ DP	1.3 lb.	M	0	
	Champ 2F	1.3 pt	M	0	
	Champ F	2.6 pt	M	0	
	Cuprofix Disperss	2.5 lb	M	0	Apply every 7 - 10 days as needed.
Catamaran	4 pts	M/33	7		
<i>Pythium</i> Damping-off Cottony leak <i>Phytophthora</i>	Ridomil Gold EC	1.0 - 2.0 pt	4		Incorporate into soil. See Label. Apply pre-plant to greenhouse media. Tank mix with organosilicone surfactant. Foliar and fruit phase suppression only. Tank-mix with copper. Tank-mix w/ copper + surfactant.
	Ridomil Gold SL	1.0 - 2.0 pt	4		
	Ultra Flourish	2.0 - 4.0 pt	4		
	MetaStar	4.0 - 8.0 pt	4		
	Previcur Flex	1:1000 stock sol.	28		
	Ranman	2.1 - 2.75 fl oz	21		
	Tanos	8.0 - 10.0 oz	11/27		
	Presidio	3.0 - 4.0 fl oz	43		
Revus	8.0 fl oz	40			
Bacterial Fruit Blotch	Examples:				
	Actigard	0.5 – 1.0 oz	P	0	Apply at least every 7 days.

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
WATERMELON (continued)					
Bacterial Fruit Blotch (cont.)	ManKocide	2.5 lb	M	5	<p>Use disease-free seed and transplants. Most copper containing fungicides can reduce the spread of fruit blotch. Begin sprays prior to bloom and continue until fruit are mature.</p> <p>Tank mix copper fungicides with maneb or mancozeb products (EBDC's) to broaden foliar disease control spectrum and to increase copper activity against bacteria. Studies have shown that ½ rate of copper materials applied weekly is as effective as applying the full rate on a 14 day schedule.</p> <p>Suppression only. Tank mix with copper.</p>
	Nordox 75WG	1 - 1.25 lb	M	0	
	Champ 2F	1.3 pt	M	0	
	Champ DP	1.3 lb	M	0	
	Nu-Cop 3L	1.0 - 4.0 pt	M	0	
	Kocide DF	2.0 lb	M	0	
	Kocide 4.5LF	1.3 pt	M	0	
	Kocide 3000	0.5 - 1.25 lb	M	0	
	Cuprofix Disperss	2.5 lb	M	0	
Tanos	8.0 - 10.0 oz.	11/27	3		
Downy Mildew	Pristine	12.5 - 18.5 oz	7/11	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray.
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadri, Cabrio, or Flint.
	Quadris Opti	3.2 pts	11/M	1	
	Quadris Top	10 - 14 fl oz	11/3	1	Rotate to other chemistry after 1 application.
	Cabrio	8.0 - 12.0 oz	11	0	
	Flint	4.0 oz/acre	11	0	See Label.
	Manex	1.2 - 1.6 qt	M	5	Apply every 7-14 days.
	Manex II	1.6 - 2.4 qt	M	5	Apply when disease threatens and every 7 days.
	Inspire Super	16 - 20 fl oz	3/9	7	No more than 2 sequential applications.
	Maneb 80WP	1.0 - 2.0 lb	M	5	
	Maneb 75DF	1.0 - 2.0 lb	M	5	
	Manzate 75DF	2.0 - 3.0 lb	M	5	
	Penncozeb 80WP	2.0 - 3.0 lb	M	5	
	Penncozeb 75DF	2.0 - 3.0 lb	M	5	
	Dithane F-45	1.6 - 2.4 qt	M	5	Greenhouse approved.
	Dithane M-45	2.0 - 3.0 lb	M	5	Greenhouse approved.
	Dithane DF	2.0 - 3.0 lb	M	5	Greenhouse approved.
	Dithane DF Rain Shield	2.0 - 3.0 lb	M	5	
Ridomil Gold MZ	2.5 lb	4/M	5		

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
WATERMELON (continued)					
Downy Mildew (cont.)	Ranman	2.1 - 2.75 fl oz	M	0	Tank mix with organosilicone surfactant.
	Reason	5.5 fl oz	11	14	Rotate with non-strobilurins.
	Forum	6.0 fl oz	40	0	Tank-mix Forum with other fungicides.
	Presidio	3.0 - 4.0 fl oz	43	2	Tank-mix with protectant fungicides.
	Revus	8.0 fl oz	40	0	Tank-mix w/ protectants + surfactants.
	Gavel	1.5 - 2.0 lb	22/M	0	
	Tanos	8.0 oz	11/27	5	Tank-mix with mancozeb or chlorothalonil.
	Previcur Flex	1.2 pt	28	3	See label.
	Curzate	3.2 oz	27	2	Tank mix with mancozeb or chlorothalonil.
	Ridomil Gold Bravo	2.0 lb	4/M	3	Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.
	Flouronil	2.0 lb	4/M	0	
	Actigard	0.5 - 1.0 oz	P	1	Apply at least every 7 days.
	Bravo Weather Stik	1.5 - 2.0 pt	M	0	
	Echo 720	1.5 - 2.0 pt	M	0	
	Bravo 500	2 ¼ - 2 ¾ pt	M	0	
	Equus 720	1.5 - 2.0 pt	M	0	
	Aliette	2.0 - 5.0 lb	33	0	
	Aliette/Maneb 2 + 2	4.0 lb	33/M	0	Apply every 7 - 10 days as needed.
	ManKocide	2.0 - 3.0 lb	M	0	
	Nordox 75WG	1 - 1.25 lbs	M	0	
	Kocide DF	2.0 lb	M	0	
	Kocide LF	2.6 pt.	M	0	
	Kocide 4.5LF	1.3 pt	M	0	
	Kocide 2000	1.5 lb.	M	0	
	Nu-Cop 3L	1.0 - 4.0 pt	M	0	
	Nu-Cop 50DF	1.5 - 3.0 lb	M	0	
	Champ DP	1.3 lb.	M	0	
	Champ 2F	1.3 pt	M	0	
	Champ F	2.6 pt	M	0	
	Cuprofix Disperss	2.5 lb	M	0	
Catamaran	4 pts	M/33	7		

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
WATERMELON (continued)					
Gummy Stem Blight	Pristine	12.5 - 18.5 oz	7/11	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray.
	Folicur 3.6 F	8.0 fl oz	3	7	Rotate with non-group 3 fungicides.
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris or Cabrio.
	Inspire Super	16 - 20 fl oz	3/9	7	No more than 2 consecutive applications.
	Cabrio	12.0 - 16.0 oz	11	0	
	Quadris Top	10 - 14 fl oz	11/3	1	Rotate to other chemistry after 1 application.
	Quadris Opti	3.2 pts	11/M	1	
	Topsin M 70W	4.0 - 8.0 oz	1	0	Use western-grown seed. Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.
	T-Methyl 70W	4.0 - 8.0 oz	1	0	
	Topsin 4.5L	10.0 fl oz	1	0	
	T-Methyl 4.5L	10.0 fl oz	1	0	
	Switch	11.0 - 14.0 oz	9/12	1	
	Manex	1.2 - 1.6 qt	M	5	
	Manex II	1.6 - 2.4 qt	M	5	
	Maneb 80WP	1.0 - 2.0 lb	M	5	
	Maneb 75DF	1.0 - 2.0 lb	M	5	
	Manzate 75DF	2.0 - 3.0 lb	M	5	
	Penncozeb 80WP	2.0 - 3.0 lb	M	5	
	Penncozeb 75DF	2.0 - 3.0 lb	M	5	
	Dithane F-45	1.6 - 2.4 qt	M	5	Greenhouse approved.
	Dithane M-45	2.0 - 3.0 lb	M	5	Greenhouse approved.
	Dithane DF	2.0 - 3.0 lb	M	5	Greenhouse approved.
	Dithane DF Rain Shield	2.0 - 3.0 lb	M	5	
	Ridomil Gold Bravo	2.0 - 3.0 lb	4/M	0	
	Flouronil	2.0 - 3.0 lb	4/M	0	Apply fungicides when true leaves fully expand. Continue every 7-14 days until harvest.
	Bravo Weather Stik	2.0 - 3.0 pt	M	0	
	Echo 720	2.0 - 3.0 pt	M	0	
	Bravo 500	2 ¼ - 2 ¾ pt	M	0	
	Equus 720	2.0 - 3.0 pt	M	0	
	ManKocide	2.0 - 3.0 lb	M	5	

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
WATERMELON (continued)					
Gummy Stem Blight (cont.)	Nordox 75WG	1 - 1.25 lbs	M	0	Apply every 7 - 10 days as needed.
	Kocide 4.5LF	1.3 pt	M	0	
	Kocide 3000	0.5 - 1.25 lb	M	0	
	Nu-Cop 3L	1.0 - 4.0 pt	M	0	
	Champ DP	1.3 lb.	M	0	
	Champ 2F	1.3 pt	M	0	
	Cuprofix Disperss	2.5 lb	M	0	
	Catamaran	4 pts	M/33	7	
Powdery Mildew	Pristine	12.5 - 18.5 oz	7/11	0	Apply prior to disease onset and on a 7 - 14 day schedule. Alternate to a fungicide with a different mode of action after one spray.
	Inspire Super	16 - 20 fl oz	3/9	7	No more than 2 sequential applications.
	Quadris (Amistar)	11.0 - 15.4 fl oz (3.5 - 5.0 oz)	11	1	Apply every 7-14 days. Alternate to a fungicide with a different mode of action after one spray of Quadris, Cabrio, or Flint.
	Quadris Top	10 - 14 fl oz	11/3	1	
	Cabrio	12.0 - 16.0 oz	11	0	
	Flint	1.5 - 2.0 oz/acre	11	0	Spray preventively when conditions are favorable for disease and repeat every 7-10 days.
	Nova or Rally	2.5 - 5.0 oz	3	0	Apply at first sign of disease and continue every 7 -10 days. Rotate with non-group 3 fungicides.
	Procure	4.0 - 8.0 oz	3	0	Apply at first sign of disease and continue every 7 -10 days. Rotate with non-group 3 fungicides.
	Folicur 3.6 F	4.0 - 6.0 fl oz	3	7	Apply at first sign of disease and continue every 7 -10 days. Rotate with non-group 3 fungicides.
	Quintec	4.0 - 6.0 fl oz	13	3	See label.
	Topsin M 70WP	4.0 - 8.0 oz	1	0	Apply when disease threatens and alternate Topsin with chlorothalonil products or other mode of action. Continue every 7-14 days until disease is no longer a problem. Apply every 10 -14 days.
	T-Methyl 70WP	4.0 - 8.0 oz	1	0	
	Topsin 4.5L	10.0 fl oz	1	0	
	T-Methyl 4.5L	10.0 fl oz	1	0	
	Switch	11.0 - 14.0 oz	9/12	1	
	Bravo Weather Stik	2.0 - 3.0 pt	M	0	
	Echo 720	2.0 - 3.0 pt	M	0	Apply every 7-10 days as needed.
	Bravo 500	2 ¼ - 2 ¾ pt	M	0	Do not apply when temperatures exceed 95EF.
Equus 720	2 - 3 pt	M	0		

VEGETABLE DISEASE CONTROL (continued)

COMMODITY DISEASE	RATE OF MATERIAL TO USE			MINIMUM DAYS TO HARVEST	METHOD, SCHEDULE REMARKS
	MATERIAL	FORMULATED	FRAC CODE		
WATERMELON (continued)					
Powdery Mildew (cont.)	Cuprofix Disperss	2.5 lb	M	0	Apply at least every 7 days.
	Actigard	0.5 – 1.0 oz	P	1	

Always check label for proper rates.

FRAC CODE = Fungicide Resistance Action Committee fungicide code used for rotating fungicides based on mode of action
(www.frac.info/frac/content.htm).

(H) - Homeowner.

EFFICACY OF FUNGICIDES/BACTERICIDES FOR CONTROLLING FOLIAR DISEASES OF BEANS¹

David Langston, Extension Plant Pathologist

	DISEASES													
	Common rust	Asian soybean rust	Anthraxnose	Cercospora	Downy mildew	Powdery mildew	Foliar bacterial diseases	White mold (Sclerotinia)	Southern stem rot (<i>S. rolfsii</i>)	Pythium damping-off	Pythium cottony leak	Rhizoctonia sore shin	Aerial Rhizoctonia	Fusarium crown rot
REGISTERED FUNGICIDES ²														
Endura (boscalid)	U	U	U	U	N	U	N	E	P	N	N	U	U	N
Headline (Pyraclostrobin)	E	E	G	E	U	U	N	N	G-F	N	FV	F	G	N
Quadris/Amistar (azoxystrobin)	E	E	G	G	U	U	N	N	E	N	FV	G	E	N
Switch (cyprodinil + fludioxinil)	U	U	U	G	N	U	N	F	N	N	N	U	U	N
Ridomil Gold Copper (mefenoxam + cupric hydroxide)	P	P	P	P	G-F	N	G-F	N	N	P	GV	N	N	N
Rildomil Gold SC (mefenoxam)	N	N	N	N	N	N	N	N	N	G	P	N	N	N
Rovral (iprodione)	N	N	N	N	N	N	N	G	N	N	N	F	P	N
Terraclor (PCNB)	N	N	N	N	N	N	N	N	G-F	N	N	G	N	N
Fixed copper ³	P	P	P	P	N	P	G	N	N	N	P	N	N	N
Bravo/Equus (chlorothalonil)	G	F	F	G	G	P	N	N	N	N	N	N	P	N
Folicur/Tebuconazole	G	G	P	G	N	G-F	N	P	G	N	N	U	F	N
Rally (myclobutanil)	E	E	N	G-F	N	G	N	N	N	N	N	U	F	N
Topsin (thiophanate methyl)	U	U	G-F	G	N	U	N	F	N	N	N	P	P	P
Omega 500	U	U	U	U	G	N	N	E	F	P	P	P	P	N

¹ Ratings for products were conducted at the 2005 Southeast Extension Vegetable Workers Conference in Fletcher, NC. Efficacy ratings do not necessarily indicate a labeled use.

V = Variable levels of control.

R = Pathogen resistance (insensitivity) may be present at some locations.

E = Excellent disease suppression, G = Good disease suppression,

F = Fair disease suppression,

P = Poor to no disease suppression

U = Unknown efficacy

N = No efficacy

EFFICACY OF FUNGICIDES/BACTERICIDES FOR CONTROLLING FOLIAR DISEASES OF BRASSICA VEGETABLES¹

David Langston, Extension Plant Pathologist

	DISEASES										
	Black rot	Bacterial soft rot	Black leg	Club root	Downy mildew	Powdery mildew	Cercospora/Cercoporella	Alternaria leaf spot	Raisin head (<i>Sclerotinia</i>)	Pythium damping-off	Wirestem & Bottom rot (<i>Rhizoc.</i>)
REGISTERED FUNGICIDES²											
Endura (boscalid)	N	N	G	N	N	G	E	E	G	N	U
Cabrio (Pyraclostrobin)	N	N	U	N	P	F	E	E	N	N	U
Quadris/Amistar (azoxystrobin)	N	N	U	N	P	F	G	E	N	N	G
Presidio (fluopicolide)	N	N	N	N	GC	N	N	N	N	N	N
Revus (mandipropamid)	N	N	N	N	GC	N	N	N	N	N	N
Aliette (fosetyl – Al)	N	N	N	N	F-P	N	N	N	N	N	N
Forum (dimethomorph)	N	N	N	N	GC	N	N	N	N	N	N
Reason (fenamidone)	N	N	N	N	G	N	G	F	N	U	N
Switch (cyprodinil + fludioxinil)	N	N	N	N	N	G	F	E	P	N	N
Ridomil Gold Bravo (mefenoxam + chlorothalonil)	N	N	N	N	G	N	G	G	N	F	N
Rildomil Gold SC (mefenoxam)	N	N	N	N	N	N	N	N	N	G	N
Rovral (iprodione)	N	N	G*	G-F	N	N	N	G*	G*	N	F
Terraclor (PCNB)	N	N	N	N	N	N	N	N	N	N	F
Fixed copper ³	F	N	N	N	F	N	N	P	N	N	N
Actigard (acibenzolar-S-methyl)	F-P	N	N	N	F	P	U	U	N	U	U
Maneb/mancozeb	N	N	N	N	F	N	P	P	N	N	N
Bravo/Equus (chlorothalonil)	N	N	N	N	G-F	N	G	G	N	N	N
Folicur/Tebuzaol (tebuconazole)	N	N	N	N	N	U	E-G	F	N	N	F
Procure (triflumizole)	N	N	N	N	N	G	U	N	N	N	N
Inspire Super	N	N	U	N	N	G	G	E	F	N	U
Quadris Top	N	N	U	N	U	G	G	E	F	N	G

¹ Ratings for products were conducted at the 2009 Southeast Extension Vegetable Workers Conference in Fletcher, NC. Efficacy ratings do not necessarily indicate a labeled use.

² Fungicides registered specifically on cole crops (cabbage, cauliflower, broccoli) include chlorothalonil, iprodione, and mefenoxam + chlorothalonil. Aliette is not labeled on turnips. Please refer to the appropriate sections of the Pest Management Handbook for details on product labeling.

³ Phytotoxicity observed when Aliette is tank-mixed with copper..

C = When used in combination with Aliette or maneb,

V = Variable levels of control,

R = Pathogen resistance (insensitivity) may be present at some locations,

E = Excellent disease suppression,

G = Good disease suppression, F = Fair disease suppression,

P = Poor to no disease suppression, U = Unknown efficacy,

N = No efficacy,

* = Applications of iprodione (Rovral) made for black leg may suppress Alternaria, Sclerotinia, and wirestem on broccoli only.

EFFICACY OF FUNGICIDES/BACTERICIDES AGAINST FOLIAR DISEASES OF CUCURBITS¹

David Langston, Extension Plant Pathologist

	DISEASES												
	Anthraxnose	Alternaria leaf spot and blight	Gummy Stem Blight	Target Spot	Plectosporium blight	Powdery mildew	Downy mildew	Bacterial fruit blotch	Angular leaf spot	Phytophthora fruit and crown rot	Pythium cottony leak	Rhizoctonia belly rot	Southern stem blight (<i>S. roffsii</i>)
REGISTERED FUNGICIDES ²													
Pristine (boscalid + pyraclostrobin)	E-G	E	ER	G	G	ER	PR	N	N	N	N	P	P
Cabrio (pyraclostrobin)	E-G	E	ER	G	G	FR	PR	N	N	N	N	P	P
Quadris/Amistar (azoxystrobin)	E-G	E	ER	G	G	FR	PR	N	N	N	N	E	G
Flint (trifloxystrobin)	G	E	ER	G	G	FR	PR	N	N	N	N	P	P
Ranman (cyazofamid)	N	N	N	N	N	N	E	N	N	N	U	N	N
Presidio (fluopicolide)	N	N	N	N	N	N	E	N	N	G	P	N	N
Revus (mandipropamid)	N	N	N	N	N	N	P	N	N	G-F	U	N	N
Aliette (fosetyl – Al)	P	P	N	P	P	P	P	N	N	N	P	N	N
Forum (dimethomorph)	N	N	N	N	N	N	P	N	N	F	U	N	N
Gavel (zoxamide + mancozeb)	G-F	P	P	G-F	N	N	G	N	N	U	U	N	N
Tanos (famoxate + cymoxanil)	P	G	P	P	U	N	E-G	P	N	P	P	N	N
Reason (fenamidone)	N	N	N	N	N	N	GR	N	N	P	P	N	N
Previcur Flex	N	N	N	N	N	N	G-F	N	N	N	P	N	N
Switch (cyprodinil + fludioxinil)	G	E	G	U	U	G	N	N	N	N	N	N	N
Ridomil Gold Bravo (mefenoxam + chlorothalonil)	G-F	G-F	G-F	G	G	F	GR	N	N	GR	F	P	P
Ridomil Gold MZ (mefenoxam + mancozeb)	G	P	P	F	F	N	GR	N	N	GR	F	P	P
Ridomil Gold Copper (meneoxam + Cu hydroxide)	N	N	N	N	N	N	GR	G	G	GR	F	P	P
Rildomil Gold SC (mefenoxam)	N	N	N	N	N	N	N	N	N	GR	P	N	N
Rally (myclobutanil)	N	N	N	N	N	G-F	N	N	N	N	N	N	N
Quintec (quinoxifen)	N	N	N	N	N	E	N	N	N	N	N	N	N
Fixed copper ³	P	P	P	P	P	P	F-P	G	G	F-P	P	N	N
Actigard (acibenzolar-S-methyl)	U	U	U	U	U	F	F	G	G	U	U	N	N
Maneb/mancozeb	G	P	P	G-F	F	P	G	P	P	P	P	N	N
Bravo/Equus (chlorothalonil)	G	G	G	G	G	F	G	N	N	P	P	P	N
Topsin (thiophanate methyl)	GC	F-P	GR	G-F	U	FR	N	N	N	N	N	P	N
Folicur/Tebuconazole	P	F	G	U	U	F	N	N	N	N	N	F	F
Procure (triflumizole)	N	N	N	N	N	G	N	N	N	N	N	N	N
Inspire Super	G	E	E	G	U	G	N	N	N	N	N	N	N
Quadris Top	E	E	E	G	U	G	N	N	N	N	N	N	N

¹ Information in this table was mostly taken from ratings developed at the 2009 Southeast Vegetable Workers Conference in Fletcher, NC. Ratings for products do not necessarily indicate a labeled use.

² Copper can be phytotoxic to most cucurbits, especially if applied at a tank PH below 6.0.

³ Phytotoxicity observed. (some western-grown cantaloupe varieties are sulfur tolerant).

C = When used in combination with other fungicides/bactericides such as chlorothalonil and mancozeb. V = Variable levels of control, R = Pathogen resistance (insensitivity) may be present at some locations. E = Excellent disease suppression, G = Good disease suppression, F = Fair disease suppression, P = Poor to no disease suppression, U = Unknown efficacy.

EFFICACY OF FUNGICIDES/BACTERICIDES ON ONION DISEASES¹

David Langston, Extension Plant Pathologist

	DISEASES												
	Pythium damping-off	Onion smut	Botrytis leaf blight	Purple blotch	Stemphylium blight	Downy mildew	Erwinia soft rot	Fusarium basal rot	Pink root	Center rot	Bacterial streak	White rot (<i>Sclerotium</i>)	Twister (Anthracnose)
REGISTERED FUNGICIDES ²													
Pristine (boscalid + pyraclostrobin)	P	U	E	E	E-G	F	N	U	G	N	N	U	G
Cabrio (pyraclostrobin)	P	U	G-F	E-G	G	F	N	U	P	N	N	U	G
Quadris/Amistar (azoxystrobin)	P	U	G-F	E-G	G	F	N	U	P	N	N	U	G
Endura (boscalid)	P	U	G	E-G	G	N	N	U	G	N	N	U	P
Presidio (fluopicolide)	P	N	N	N	N	G	N	N	N	N	N	N	N
Revus (mandipropamid)	P	N	N	N	N	G	N	N	N	N	N	N	N
Aliette (fosetyl – Al)	P	N	N	N	N	G-F	N	N	N	N	N	N	N
Forum (dimethomorph)	P	N	N	N	N	G	N	N	N	N	N	N	N
Scala (pyrimethanil)	N	U	G	G	G	N	N	U	U	N	N	U	U
Rovral (iprodione)	N	P	G-F	G	G-F	N	N	N	N	N	N	N	N
Reason (fenamidone)	P	N	N	F-P	F-P	F	N	N	N	N	N	N	N
Switch (cyprodinil + fludioxinil)	N	U	G	G	G	N	N	N	U	N	N	U	G-F
Ridomil Gold Bravo (mefenoxam + chlorothalonil)	F	F-P	G-F	G-F	G-F	GR	N	N	N	N	N	N	G-F
Ridomil Gold MZ (mefenoxam + mancozeb)	F	F-P	G-F	G-F	G-F	GR	N	N	N	N	N	N	G-F
Ridomil Gold Copper (mefenoxam + Cu hydroxide)	F	P	P	P	P	P	P	N	N	F	G	N	P
Ridomil Gold SC (mefenoxam)	G	N	N	N	N	F-P	N	N	N	N	N	N	N
Fixed copper ³	N	P	P	P	P	P	P	N	N	F	G	N	P
Actigard (acibenzolar-S-methyl)	U	U	P	P	P	U-G	U	U	P	U	U	P	U
Maneb/mancozeb	N	U	P	P	P	G-F	N	N	N	N	N	N	G-F
Bravo/Equus (chlorothalonil)	N	F-P	G-F	G-F	G-F	F	N	N	N	N	N	N	G-F
Folicur/Tebuzol (tebuconazole)	N	U	F	G-F	G-F	N	N	N	N	N	N	G	P
Inspire Super	N	U	G	E	E	N	N	N	U	N	N	U	G
Quadris Top	N	U	G	E	E	U	N	N	U	N	N	U	G
Omega 500	P	U	G	E	E	G	N	N	U	N	N	F	U

¹ Information in this table was partly derived from ratings given at the IR-4 Bulb Vegetable Crop Group Workshop held during the 1999 American Phytopathological Society annual meeting in Montreal, Canada. Ratings for products do not necessarily indicate a labeled use.

C = When used in combination with mancozeb.

V = Variable levels of control.

R = Pathogen resistance (insensitivity) may be present at some locations.

E = Excellent disease suppression,

G = Good disease suppression,

F = Fair disease suppression,

P = Poor to no disease suppression

U = Unknown efficacy

EFFICACY OF FUNGICIDES/BACTERICIDES AGAINST PEPPER DISEASES¹

David Langston, Extension Plant Pathologist

	DISEASES						
	Anthracnose of fruit	Botrytis fruit rot	Bacterial spot	Phytophthora (root and crown)	Phytophthora (fruit and foliage)	Pythium crown rot	Southern blight
REGISTERED FUNGICIDES ²							
Endura (boscalid)	N	G	N	N	N	N	N
Quadris/Amistar (azoxystrobin)	G	P	N	N	N	N	G
Cabrio (pyraclostrobin)	E	P	N	N	N	N	N
Tanos (famoxate + curzate)	P	P	P	N	P	N	N
Presidio (fluopicolide)	N	P	N	F	E-G	N	N
Revus (mandipropamid)	N	P	N	P	E-G	N	N
Forum (dimethomorph)	N	P	N	P	P	N	N
Maneb/mancozeb	P	P	P	N	N	N	N
Ridomil Gold SC (mefenoxam)	N	P	N	ER	N	E	N
Ridomil Gold Copper (mefenoxam + Cu hydroxide)	N	P	F-PR	N	E-G	P	N
Terraclor (PCNB)	N	P	N	N	N	N	G
Previcur Flex (propamocarb)	N	P	N	N	N	N	N
Bravo, Echo (chlorothalonil)	P	F	N	N	N	N	N
fixed copper	P	P	G-FR	N	N	N	N
Actigard (acibenzolar-S-methyl) ^{2,3}	U	U	G	U	U	N	N
Streptomycin sulfate ⁴	U	U	GR	N	N	N	N
Quadris Top	G	N	N	N	N	N	G

¹ Information in this table was mostly taken from ratings developed at the 2009 Southeast Vegetable Workers Conference in Fletcher, NC. Ratings for products do not necessarily indicate a labeled use.

² Actigard is labeled for chili pepper only.

³ Phytotoxicity observed. Follow label carefully.

⁴ Streptomycin is labeled for transplants only. Not labeled for field use.

C = When used in combination with other fungicides/bactericides such as chlorothalonil and mancozeb,

V = Variable levels of control.

R = Pathogen resistance (insensitivity) may be present at some locations,

E = Excellent disease suppression,

G = Good disease suppression,

F = Fair disease suppression,

P = Poor to no disease suppression,

U = Unknown efficacy.

EFFICACY OF FUNGICIDES/BACTERICIDES AGAINST TOMATO DISEASES¹

David Langston, Extension Plant Pathologist

REGISTERED FUNGICIDES ²	DISEASES												
	Bacterial canker <i>Clavibacter michiganensis</i>	Bacterial speck <i>Pseudomonas syringae pv. tomato</i>	Bacterial spot <i>Xanthomonas campestris pv. vesicatoria</i>	Botrytis gray mold and Sclerotinia	Crystalline leaf spot	Target spot	Early blight	Late blight	Powdery mildew	Septoria leaf spot	Southern stem rot <i>Sclerotium rolfsii</i>	Pythium collar rot	Tomato Spotted Wilt Virus
Endura (boscalid)	N	N	N	G	P	G	E	N	U	P	U	N	N
Cabrio (pyraclostrobin)	N	N	N	P	U	U	E	G-F	E-G	E-G	G	P	N
Quadris/Amistar (azoxystrobin)	N	N	N	P	U	U	E	G-F	E-G	E-G	G	P	N
Flint (trifloxystrobin)	N	N	N	P	U	U	E	G-F	E-G	E-G	G	P	N
Ranman (cyazofamid)	N	N	N	N	N	N	F	G	N	N	N	N	N
Presidio (fluopicolide)	N	N	N	N	N	N	N	G	N	N	P	N	N
Revus Top (mandipropamid + difenoconazole)	N	N	N	N	N	N	F	G	U	U	U	N	N
Previcur Flex (propamocarb)	N	N	N	N	N	N	N	G-F	N	N	N	P	N
Aliette (fosetyl – Al)	N	N	N	N	N	N	N	F	N	N	N	N	N
Forum (dimethomorph)	N	N	N	N	N	N	N	GC	N	N	N	N	N
Gavel (zoxamide + mancozeb)	N	N	N	N	N	N	G-F	G-F	N	G-F	N	N	N
Tanos (famoxate + cymoxanil)	P	P	P	N	U	F	E-G	G	P	P	N	N	N
Reason (fenamidone)	N	N	N	N	U	U	G	G	N	F	N	N	N
Switch (cyprodinil + fludioxinil)	N	N	N	G	U	U	G	N	G	U	N	N	N
Ridomil Gold Bravo (mefenoxam + chlorothalonil)	N	N	N	F	P	F	G	GR	P	G	N	F-P	N
Ridomil Gold MZ (mefenoxam + mancozeb)	P	P	P	P	P	G	P	GR	P	F	N	F-P	N
Ridomil Gold Copper (mefenoxam + Cu hydroxide)	G-F	G-F	G-F	P	P	P	P	GR	P	P	N	F-P	N
Ridomil Gold SC (mefenoxam)	N	N	N	N	N	N	N	N	N	N	N	G	N
Rally (myclobutanil)	N	N	N	N	E-G	N	N	N	E	N	N	N	N
Actigard (acibenzolar-S-methyl) ³	U	G-F	G-F	P	P	P	P	F-P	P	P	P	P	F-P
Maneb/mancozeb	P	P	P	P	P	G	P	G-F	P	G-F	P	P	P
Bravo/Equus (chlorothalonil)	N	N	N	F	P	F	G	GR	P	G	N	F-P	N
Scala (pyrimethanil)	N	N	N	GR	U	N	G	P	P	P	N	N	N
Streptomycin sulfate ²	GR	GR	GR	N	N	N	N	N	N	N	N	N	N
Inspire Super	N	N	N	G	U	G	G	N	G	E	U	N	N
Quadris Top	N	N	N	N	U	G	G	G	G	E	G	N	N

¹ Information in this table was mostly taken from ratings developed at the 2009 Southeast Vegetable Workers Conference in Fletcher, NC. Ratings for products do not necessarily indicate a labeled use.

² Streptomycin may only be used in plant beds, not registered for field use.

³ Phytotoxicity observed. Follow label carefully.

C = When used in combination with other fungicides/bactericides such as chlorothalonil and mancozeb,

V = Variable levels of control.

R = Pathogen resistance (insensitivity) may be present at some locations,

E = Excellent disease suppression,

G = Good disease suppression,

F = Fair disease suppression,

P = Poor to no disease suppression,

U = Unknown efficacy

VEGETABLE NEMATODE CONTROL

David Langston, Extension Plant Pathologist

Follow manufacturer's label in all cases.					
COMMODITY	MATERIAL	APPLICATION METHOD FOR GIVEN SOILS	FORMULATED (AMT/ACRE)	FORMULATED (OZ/100 FT ROW) (OR 100 SQ FT)	SCHEDULE AND REMARKS
Most Vegetables		Broadcast, mineral soil	9 to 15 gals	2.6 to 5.3 ozs	Fall application usually preferred to spring application. Wait 3 weeks before planting; longer if soil is cold or very wet. Chisels should be spaced 12 inches and inserted 6 to 8 inches deep (8 to 12 inches deep in very sandy soils).
	Dichloropropene (Telone II)	Broadcast, peat or muck soil	24 to 36 gals	7.0 to 10.6 ozs	
		Row, mineral soil	5.3 to 10.8 gals	4.5 to 6 ozs	
		Row, peat or muck soil	14.3 to 21.6 gals	14.2 to 21.2 ozs	
Telone EC	Drip tape application	9 to 18 gals	--	See label for specific details for application of Telone EC.	
Most vegetables (multi-purpose fumigants)	Metam-Sodium (Vapam, Sectagon)	Broadcast	37.5 to 75 gals	7.2 to 14.4 ozs	Fall application often is preferred to spring application. Wait 3 weeks before planting or longer in cold, wet soil, or if odor persists. Read label for row application use in organic soils, chisel depth and spacing, exact rates, and special uses. Vapam and K-Pam can also be used in a sprinkling system. When used with plastic covers, all products are more effective and lower rates can be used. Terr-O-Gas fumigants are mixtures of methyl bromide and chloropicrin. Terr-O-Gas 35, 50, 57, 70, 75, and 80 formulations are also available; use amount specified in label.
	Metam-Potassium (K-Pam)	Broadcast	30 to 60 gals	5.8 to 11.5 ozs	
	Chloropicrin	Broadcast, mineral soil	37 to 82 gals	11 to 24 ozs	
		Row	15 to 25 gals	4.4 to 7.3 ozs	
	Telone C-17	Broadcast	12 to 20 gals	3.5 to 5.9 ozs	
	Terr-O-Gas 67	Broadcast	270 to 360	--	
Inline	Drip tape application	13 to 20.5	--		
Broccoli, cauliflower, eggplant, cantaloupe, pepper, tomato	(methyl bromide 67%, chloropicrin 33%)	Broadcast	270 to 360		
(multipurpose fumigants) (All Vegetable Transplants)					
	Methyl bromide	Broadcast	215 to 430	1.0 to 2.0 lbs.	
Beans (Snap and Lima)	Mocap 10% G	Row treatment 36 inches	20 to 30 lbs	2.3 to 3.2 ozs	Make application in a band 12-15 inches wide on the row. Follow label directions.
	Mocap EC	Broadcast Row, 36 inches	1 to 1 1/3 gals 1 1/2 to 2 qts		
Cucumber	Mocap 10%G	Row, 7 ft	20 lbs		
	Mocap EC	Row, 7 ft	1 to 1 1/3 qts		
	Vydate L	preplant broadcast foliar	1.0 - 2.0 gal. 2.0 - 4.0 pts.		Vydate is labeled on many other vegetable crops. See label for application details.
Okra	Nemacur 15% G	Band	14.7 to 18.4 ozs per 1,000 ft of row (or 13.4 to 16.7 lbs per acre on 36 inch rows)		Apply in front of planter shoe as a 12-15 inch band. Incorporate 2-6 inch Use low rate in 12 inch band. Use high rate in 15 inch band.
		Broadcast	40 lbs		Distribute granules uniformly over the entire area to be treated and immediately incorporate to a depth of 2-6 inches by disking or tilling.

VEGETABLE NEMATODE CONTROL (continued)

Follow manufacturer's label in all cases.					
COMMODITY	MATERIAL	APPLICATION METHOD FOR GIVEN SOILS	FORMULATED (AMT/ACRE)	FORMULATED (OZ/100 FT ROW) (OR 100 SQ FT)	SCHEDULE AND REMARKS
Sweet potato	Mocap 10% G	Broadcast	60 to 80 lbs		
		Row treatment 42-inch	30 to 40 lbs	4.0 to 5.0 ozs	Apply on row 12 to 15 inch band, incorporate 4 to 8 inches deep, plant to 3 weeks later.
	Mocap EC	Row, 42-inch	2 to 3 2/3 qts		
		Broadcast	1 to 1 1/3 gals		
Temik 15% G	Row, 48" row spacing	14-20 lbs	21-30 ozs	Apply granules - 12" band in open row. Cover immediately with soil by hilling up 8-10 inches. Plant in center of treated zone.	
Sweet Corn	Mocap 10% G	Row, 40-inch	15 to 20 lbs	1.8 to 2.4 ozs	Apply on row 12 to 15-inch band for row application. Incorporate 2 to 4 inches, plant immediately or 3 days later.
		Broadcast	60 lbs		
	Mocap EC	Row, 40-inch	2/3 qt		
		Broadcast	1 gal		
Sweet and Popcorn	Counter 15G	8 ozs/100 ft row	1/2 oz/1,000 ft row	.12 oz	Place granules directly in the seed furrow behind planter shoe
	Furadan 4F	Row	1 qt. (40-inch row spacing)		Apply at planting directly in seed furrow.
Cabbage (transplants & direct seed)	Mocap EC	Row, 36-inch	1 to 1 1/3 qts		Incorporate in soil 6 inches deep.
		Broadcast 3 1/3 qt.			
Irish potatoes	See Telone II or multipurpose fumigants				
Carrot, Cucurbits, Eggplant, Onion, Pepper (all), Potato, Sweet Potato, Tomato Nematodes only on most vegetables.	Vydate L	Preplant	2.0 - 4.0 gal		Broadcast in 20 gal water (carrot).
		In-furrow	1.0 - 2.0 gal		Apply in seed furrow (carrot)
		Pre-plant/plant	1.0 - 2.0 gal		Incorporate 2 - 4" in soil (cucurbits, eggplant)
		Foliar	2.0 - 4.0 pt		Apply 2 - 4 weeks after planting and again 2 - 3 weeks later (cucurbits, eggplant).
		Transplant water	2.0 - 4.0 pt in 40 - 200 gallons		Transplant is for pepper only. Use in 40 - 200 gallons water/acre.
		Drip irrigation	2.0 - 4.0 pt		
		Foliar	2.0 - 4.0 pt		Can use up to 8.0 pt/acre on large tomatoes (see label). Foliar applications for pepper & tomato.

COMMERCIAL VEGETABLES – WEED CONTROL

A. Stanley Culpepper, Extension Agronomist-Weed Science
Lynn M. Sosnoskie, Weed Science

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
ASPARAGUS					
Preemergence (PRE) (seeded and new crown plantings)	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.7 to 2.7 pt 2.5 to 4.0 pt	0.64 to 1.0	Apply to emerged weeds but before crop emergence. Add 1 qt NIS or 1 gal COC/100 gal spray mix.
	Most emerged weeds except for resistant pigweed, stale seedbed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds but before crop emergence. Do not apply within a week of when spears emerge. Perennial weeds may require higher rates. The need for an adjuvant depends on brand used.
Postemergence (POST) (seeded and new crown plantings)	Annual grasses and small-seeded broadleaf weeds	linuron (Lorox DF) 50 WDG	1 to 2 lb	0.5 to 1	Apply when ferns are 6 to 18 in and weeds are less than 4 in. Do not use a surfactant or fertilizer solution in spray mixture. Use the lower rate on coarse soils. Not recommended on sand or loamy sand soils. Repeat applications may be made, but do not exceed 4 lb/A/yr.
	Annual and perennial grasses only	fluzazifop-P-butyl (Fusilade DX) 2 EC	6 to 16 oz	0.1 to 0.25	Apply to actively growing grasses. With sethoxydim, add 1 qt COC/A. With fluzazifop-P, add 1 qt NIS or 1 gal COC/100 gal of spray mix. Do not apply more than 48 oz/A/season fluzazifop; do not apply more than 5 pt/A/season sethoxydim. Do not mix with other pesticides.
		sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.29	
		clethodim (SelectMax) 0.97 EC (TapOut) 0.97 EC	9 to 16 fl oz 9 to 16 fl oz	0.07 to 0.12	Apply to actively growing grasses. Add NIS at 1qt/100 gal spray mix. Do not apply more than 64 oz/A/season. Do not apply within 1 d of harvest. Do not mix with other pesticides.
Postemergence (POST) (transplant crowns or established beds)	Nutsedge; non-ALS resistant pigweed, ragweed, wild radish	halosulfuron (Sanda) 75 DF	0.5 to 1.0 oz	0.024 to 0.048	Apply before, during, or after harvest season. For 1st year transplants, apply no sooner than six weeks after fern emergence. Do not use an additive as injury can occur. Sequential applications can be made as long as they are at least 21 days apart. Do not make more than 2 applications/ crop cycle; do not exceed 2 oz/A/year. Contact with fern may cause yellowing. Try on limited acreage as there is no GA research.
Preemergence (PRE) (established - at least 2 yr old)	Annual grasses, including Texas millet, and small-seeded broadleaf weeds	trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	1 to 3 pt 1 to 3 pt	0.5 to 1.5	Apply to dormant asparagus in winter or early spring after removing mature ferns. Do not apply after new spears begin to emerge. Do not apply more than 2 pt/A on coarse soils. Split applications (before and after harvest) may also be utilized. Treflan must be incorporated within 8 hours of application with 0.5 in of rainfall/irrigation.
	Annual grasses and small-seeded broadleaf weeds	napropamide (Devrinol) 50 DF	8 lb	4	Apply to the soil surface in spring before weed and spear emergence. Do not exceed 8 lbs/A/year.
		linuron (Lorox DF) 50 WDG	2 to 4 lb	1 to 2	Apply prior to spear emergence. Do not use a surfactant or fertilizer solution in spray mixture. Use the lower rate on coarse soils. Not recommended for sand or loamy sand soils. Repeat applications may be made, but do not exceed 4 lb/A/yr.
	Annual broadleaf and grass weeds	diuron (Karmex) 80 DF (Karmex) 80 XP (Direx) 4 L	1 to 2 lb 1 to 2 lb 0.8 to 1.6 qt	0.8 to 1.6	Apply in spring no earlier than 4 wk before spear emergence and no later than early cutting period. A second application may be made immediately after last harvest but do not exceed 3 lb (Karmex) or 2.4 qt (Direx) /A/season. Low rates are more suitable on most GA soils.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
ASPARAGUS (cont.)					
Preemergence (PRE) (established - at least 2 yr old) (cont.)	Annual broadleaf and grass weeds (cont.)	terbacil (Sinbar) 80 WP	0.25 to 0.5 lb	0.2 to 0.4	Apply in spring before weeds emerge and before new growth, or in the fall after plants become dormant. Rates listed are lower than those on label. Higher rates can be used on some soils, see label. Not recommended for soils containing less than 1% organic matter. Do not allow Sinbar to come into contact with exposed roots. Do not harvest within 5 d after application. See label about rotation restrictions.
		metribuzin (Dimetric, Metribuzin, Metri) 75 DF (Metri) 4 F	1.3 to 2.67 lb 2 to 4 pt	1 to 2	Make a single application to small emerged weeds and soil surface in early spring (Plantings at least 1 yr old) before spear emergence. Low rates are suggested for most GA soils; see label. Do not apply within 14 d of harvest or after spear emergence. Apply POST only after the last spears are harvested. Do not exceed 2 lb ai/A/year.
Postemergence (POST) (established - at least 2 yr old)	Broadleaf weeds	2,4-D (Amine 4) 3.8 SL	1.5 to 2 qt	1.4 to 1.8	Apply in spring before spear emergence or immediately following a clean cutting. Also may apply after last harvest but prior to emergence. Postharvest sprays should be directed under ferns, avoiding contact with ferns, stems, or emerging spears. Do not make more than 2 applications/season (2 lbs ae/A). Applications should be spaced at least 30 d apart. <u>Do not apply if sensitive crops are planted nearby or if conditions favor drift.</u>
	Contact kill of emerged weeds, suppression of emerged perennial weeds, and contact kill of volunteer ferns	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.7 to 2.7 pt 2.5 to 4.0 pt	0.64 to 1.0	Apply to control emerged weeds (including volunteer ferns) at least 6 d after last harvest only. Add 1 qt NIS or 1 gal COC/100 gal spray mix. Do not make more than 3 applications/yr.
	Most emerged weeds except for resistant pigweed; established volunteer ferns	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds up to 1 week before spear emergence, or immediately after last cutting has removed all above-ground parts, or as a directed spray under mature ferns. <u>Direct contact of the spray with asparagus may result in serious crop injury.</u> For spot treatment, apply immediately after cutting, but prior to emergence of new spears. The need for an adjuvant depends on brand used.
	Nutsedge, wild radish, non-ALS resistant pigweed, cocklebur, ragweed	halosulfuron (Sandea) 75 DF	0.5 to 1.5 oz	0.024 to 0.072	Postemergence. Apply before or during the harvesting season. <u>Do not use a non-ionic surfactant or crop oil or unacceptable crop injury may occur.</u> Without the addition of a NIS, postemergence weed control may be reduced. Do not harvest within 24 hours of application. Post Harvest. Apply after final harvest with drop nozzles to limit contact with crop. Contact with the fern may result in temporary yellowing. Add a NIS at 1 qt/100 gal of spray mixture. Under heavy nutsedge pressure, split applications will be more effective, see label for details. Do not exceed 2 oz/A/yr; do not make more than 2 applications/crop cycle.
	Annual grasses and small-seeded broadleaf weeds	linuron (Lorox DF) 50 WDG	1 to 2 lb	0.5 to 1	Apply before weeds exceed 3 in and before cutting or immediately after cutting. Do not use a surfactant or fertilizer solution in spray mixture. Do not apply within 1 d of harvest. Not recommended for sand or loamy sand soils. Do not exceed 4 lb/A/yr, including PRE applications.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
ASPARAGUS (cont.)					
Postemergence (POST) (established - at least 2 yr old) (cont.)	Annual and peren- nial grasses only	clethodim (SelectMax) 0.97 EC (TapOut) 0.97 EC	9 to 16 fl oz 9 to 16 fl oz	0.07 to 0.12	Apply to actively growing grasses. Add NIS at 1qt/100 gal spray mix. Do not apply more than 64 oz/A/season. Do not apply within 1 d of harvest. Do not mix with other pesticides.
		fluazifop-P-butyl (Fusilade DX) 2 EC	8 to 16 oz	0.13 to 0.25	Apply to actively growing grasses. For fluazifop- P, add 1 qt NIS or 1 gal COC/100 gal of spray mix. For sethoxydim, add 1 qt COC/A. Do not apply more than 48 oz/A/season of fluazifop; do not apply more than 5 pt/A/season sethoxydim. Do not apply either herbicide within 1 d of har- vest. Do not mix with other pesticides.
		sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.29	
Recommended Herbicide Uses in Specific Bean Crops			Bean Type		
Herbicide	Application Method*	Dry	Lima	Snap	Southern Pea
carfentrazone (Aim EC)	Preplant	X	X	X	X
paraquat (numerous brands)	Preplant		X	X	X
glyphosate (Roundup, others)	Preplant	X	X	X	X
EPTC (Eptam)	PPI	X		X	
ethalfuralin (Sonalan)	PPI	X			
pendimethalin (Prowl, others)	PPI	X	X	X	X
trifluralin (Treflan, others)	PPI	X	X	X	X
dimethenamid (Outlook)	PPI or PRE	X			
imazethapyr (Pursuit)	PPI or PRE	X	X	X	X
S-metolachlor (Dual Magnum)	PPI or PRE	X	X	X	X
fomesafen (Reflex)	PRE	X		X	
halosulfuron (Sanda)	PRE	X	X	X	
clomazone (Command 3 ME)	PRE		X	X	X
bentazon (Basagran)	POST	X	X	X	X
clethodim (SelectMax, TapOut)	POST	X	X	X	X
dimethenamid (Outlook)	POST	X			
fluazifop (Fusilade)	POST	X			
fomesafen (Reflex)	POST	X		X	
halosulfuron (Sanda)	POST		X	X	
imazethapyr (Pursuit)	POST	X			X
quizalofop-P-ethyl (Assure II, Targa)	POST	X		X	X
sethoxydim (Poast)	POST	X	X	X	X
carfentrazone (Aim EC)	Row Middle Only	X	X	X	X
glyphosate (Roundup, others)	Row Middle Only	X	X	X	X
halosulfuron (Sanda)	Row Middle Only	X	X	X	

* PPI = preplant incorporated; PRE = Preemergence; POST = Postemergence.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
BEANS (DRY)					
Preplant	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds before seeding. Perennial weeds may require higher rates. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply prior to or within 24 h of planting to weeds less than 3 in. Coverage is essential for control. Add 1.5 - 2 gal COC/100 gal of spray mix. May mix with glyphosate, see label.
Preplant incorporated (PPI)	Annual grasses including Texas millet and small-seeded broadleaf weeds	ethalfuralin (Sonalan HFP) 3 EC	1.5 to 2 pt	0.6 to 0.75	Apply PPI 2 - 3 in. into the soil before planting in the spring. Fall applications may be made only with dry bulk fertilizer (according to the label). Use lower rates on coarse soils.
		pendimethalin (Prowl) 3.3 EC (Prowl H20) 3.8 AS	1.8 to 2.4 pt 1.5 to 2.0 pt	0.75 to 1 0.72 to 0.95	Apply PPI 2 - 3 in. into the soil before planting. <u>Must incorporate to avoid crop injury.</u> Rates lower than some products recommend (1.2 to 1.5 pt/A) are suggested for sandy soils with low organic matter or when Dual Magnum will follow PRE.
		trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	1 to 1.5 pt	0.5 to 0.75	Apply PPI 2 - 3 in. into the soil before spring plantings. Must incorporate within 8 hr of application. Rates lower than those labeled (0.75 pt/A) are suggested for sandy soils with low organic matter or when Dual Magnum will follow PRE.
	Annual grass, broadleaves, nutsedge suppression	EPTC (Eptam) 7 E	2.25 to 3.5 pt	2 to 3	Apply and soil incorporate 3 in deep into the soil before planting. Suggest mixing with pendimethalin or trifluralin; see label for recommendations and restrictions.
Preplant incorporated (PPI) or Preemergence (PRE)	Annual grass and broadleaf weeds; yellow nutsedge suppression; partial control of Texas millet	S-metolachlor (Dual Magnum) 7.62EC	0.75 to 1.3 pt	0.7 to 1.2	Apply PRE after planting, but before crop emergence, or apply preplant and soil incorporate 2 in deep into the soil before planting. PRE applications are strongly suggested. Irrigate within 48 hr of PRE applications. Use lower rates on sandy soils with low organic matter and when in a system with pendimethalin or trifluralin.
		dimethenamid (Outlook) 6.0 EC	8 to 12 fl oz	0.38 to 0.56	See label regarding permitted dry bean varieties. Apply PPI or PRE to the soil surface immediately after planting. Use lower rates on coarse soils and irrigate within 48 hr of PRE applications. Maximum 21 oz/A/season (includes POST).
	Annual grasses and broadleaf weeds including smallflower mg, non - resistant pigweed, and purslane	imazethapyr (Pursuit) 2 EC	2 to 3 fl oz	0.03 to 0.047	Apply PPI or PRE to the soil surface immediately after planting. Suggest mixing with a grass herbicide. Dry beans include navy great northern, red kidney, black turtle, cranberry, Pinto, and small white dry beans. <u>Rotational restrictions are a significant concern, see label.</u> Do not make more than 1 application Pursuit/yr.
Preemergence (PRE)	Nutsedge suppression; non -ALS resistant pigweed, ragweed, wild radish	halosulfuron (Sanda) 75 DF	0.5 to 0.67 oz	0.024 to 0.031	Apply within 1 d of planting; do not apply while soil cracking. Use lower rate on coarse soils with low organic matter. Do not exceed 2/3 oz/A/crop cycle (includes hooded applications). <u>Rotational restrictions are a significant concern, see label.</u>
	Pigweed species, bristly starbur, and yellow nutsedge	fomesafen (Reflex) 2 EC	0.75 to 1.0 pt	0.19 to 0.25	Apply as a PRE application within 1 d of planting. Overhead irrigate within 1 d of application and 2 d of planting in an effort to avoid splashing treated soil onto beans when they are emerging. <u>Rotational restrictions are a significant concern, see label.</u> Do not make more than 1 application per year (includes POST).

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
BEANS (DRY) (cont.)					
Postemergence (POST)	Annual broadleaf weeds such as cocklebur and smallflower morningglory	bentazon (Basagran) 4 SL	1 pt	0.5	Beans are tolerant after the first trifoliate leaf has fully expanded. Yellowing, bronzing, speckling or burning of leaves may occur. Tolerant beans include adzuki, navy, pinto, pink, greater northern, kidney, red, white, cranberry, black turtle soup, small lima, large lima, and snap beans. In Georgia, Basagran can not be applied alone. May be applied from 6 to 16 oz per acre to dry and succulent beans ONLY when mixed with Raptor or Pursuit, see labels. Raptor is not labeled on some beans grown in Georgia, see label. Use of oil additive with Basagran on snap beans may increase the leafburn and injury potential.
	Non-emerged annual grasses and small-seeded broadleaves, partial Texas millet control	dimethenamid (Outlook) 6.0 EC	8 to 12 fl oz	0.38 to 0.56	Refer to label about permitted dry bean varieties. Apply to beans between the first to third trifoliate leaf stage. Dry beans may be harvested 70 or more days after application. <u>Does not control emerged weeds.</u> Do not exceed 0.98 lb ai/season. See label about use of split applications. Do not apply more than 21 oz/A/season (includes PRE).
	Annual broadleaf weeds including morningglory and pigweed	fomesafen (Reflex) 2 EC	0.75 to 1.0 pt	0.19 to 0.25	Apply to beans with at least two fully expanded trifoliate leaves; add NIS at 1 qt/100 gal of spray. Minor injury will likely occur. Injury may be more severe if applied in the morning with an overcast sky and a heavy dew. Allow 7 d between an application of Reflex and a grass herbicide. Do not apply within 45 d of harvest. One application/yr. <u>Rotational restrictions are a significant concern, see label.</u>
		imazethapyr (Pursuit) 2 EC	3.0 fl oz	0.047	Apply after dry beans have at least one fully expanded trifoliate leaf. Add NIS at 1 qt/100 gal spray mixture; do not use COC. DO not make more than 1 application Pursuit/yr and do not harvest within 60 d of application. Dry beans include navy great northern, red kidney, black turtle, cranberry, pinto, and small white dry beans. <u>Rotational restrictions are a significant concern, see label.</u>
	Annual and perennial grasses	clethodim (Select) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 16 fl oz 12 to 32 fl oz 12 to 32 fl oz	0.09 to 0.25	Add NIS at 1qt/100 gal spray mix for Select Max and TapOut; add 1% v/v of crop oil with Select. Apply to actively growing grasses. Do not apply within 30 d of bean or plant harvest. Do not apply a POST broadleaf herbicide within 3 d of clethodim as reduced grass control may occur. Do not mix with other pesticides.
		quizalofop P-ethyl (Assure II) 0.88 EC (Targa) 0.88 EC	6 to 12 fl oz 6 to 12 fl oz	0.04 to 0.08	Apply to actively growing grasses. Add 1 qt NIS/100 gal spray. Do not apply within 30 d of harvest. Do not mix with other pesticides. Do not apply more than 24 oz/A Assure or 28 oz/A Targa/season.
		sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.29	Apply to actively growing annual grasses. Add COC at 1 qt/A; see label about use of other additives. Do not apply within 30 d of harvest. Adding crop oil may increase crop injury at high temperatures. Do not mix with other pesticides. Do not apply more than 4 pt/A/season sethoxydim.
		fluzifop-P-butyl (Fusilade DX) 2 EC	8 to 16 oz	0.13 to 0.25	Apply to actively growing grasses. Add 1 qt NIS or 1 gal COC/100 gal of spray mix. Do not apply more than 48 oz/A/season of fluzifop. Do not apply within 60 d of harvest. Do not mix with other pesticides.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
BEANS (DRY) (cont.)					
ROW MIDDLES ONLY Hooded spray	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply as a hooded spray in row middles avoiding contact with crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. Do not exceed 0.096 lb ai/A/yr, including preplant applications.
	Nutsedges, non ALS-resistant pigweed, cocklebur, ragweed, wild radish	halosulfuron (Sanda) 75 DF	0.5 to 1.0 oz	0.024 to 0.047	Apply between crop rows avoiding spray contact with crop. For emerged weeds add a NIS at 1 qt/100 gals of spray mix. Do not exceed 2/3 oz/A/crop cycle (includes PRE applications).
BEANS (LIMA)					
Preplant	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 to 2.7 pt 2.0 to 4.0 pt	0.49 to 1.0	Apply to emerged weeds but before crop emergence. Add 1 qt NIS or 1 gal COC/100 gal spray mix.
	Most emerged weeds except for resistant pigweed, stale seedbed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds before seeding. Perennial weeds may require higher rates. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply prior to or within 24 h of planting to weeds less than 3 in. Coverage is essential for control. Add 1.5 - 2 gal COC/100 gal of spray mix. May mix with glyphosate, see label.
Preplant incorporated (PPI)	Annual grasses including Texas millet and small-seeded broadleaf weeds	pendimethalin (Prowl) 3.3 EC (Prowl H20) 3.8 AS	1.8 to 2.4 pt 1.5 to 2.0 pt	0.75 to 1 0.72 to 0.95	Apply PPI 2 - 3 in. into the soil before planting. Must incorporate to avoid crop injury. Rates lower than some products recommend (1.2 to 1.5 pt/A) are suggested for sandy soils with low organic matter or when Dual Magnum will follow PRE.
		trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	1 pt	0.5	Apply PPI 2 - 3 in. into the soil before planting. Must incorporate within 8 hr of application. Rates lower than those labeled (0.75 pt/A) are suggested for sandy soils with low organic matter or when Dual Magnum will follow PRE.
Preplant incorporated (PPI) or Preemergence (PRE)	Annual grasses and broadleaf weeds, non-ALS resistant pigweed, smartweed, and purslane	imazethapyr (Pursuit) 2 EC	2 to 3 fl oz	0.03 to 0.047	Apply PPI or PRE to the soil surface immediately after planting. Suggest mixing with a grass herbicide. Do not make more than 1 application per year. <u>Rotational restrictions are a significant concern, see label.</u>
	Annual grass and broadleaf weeds; yellow nutsedge suppression; partial Texas millet control	S-metolachlor (Dual Magnum) 7.62EC	0.75 to 1.3 pt	0.7 to 1.2	Apply PRE after planting, but before crop emergence, or apply preplant and soil incorporate 2 in deep into the soil before planting. PRE applications are strongly suggested. Irrigate within 48 hr of PRE applications. Use lower rates on sandy soils with low organic matter and when in a system with pendimethalin or trifluralin.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
BEANS (LIMA) (cont.)					
Preemergence (PRE)	Annual grasses and broadleaf weed suppression	clomazone (Command) 3 ME	0.4 to 0.67 pt	0.15 to 0.25	Clomazone should be applied preemergence to the soil surface immediately after seeding. Offers weak pigweed control. See label for buffer and rotation restrictions. Limited research has been conducted in Georgia.
	Nutsedge suppression, non -ALS resistant pigweed, ragweed, wild radish control	halosulfuron (Sanda) 75 DF	0.5 to 1.0 oz	0.024 to 0.048	Apply within 1 d of planting; do not apply while soil cracking. Use lower rate on coarse soils with low organic matter. Do not apply more than 1 oz/A/crop cycle (includes POST and hooded applications). <u>Rotational restrictions are a significant concern, see label.</u>
Postemergence (POST)	Annual broadleaf weeds such as cocklebur and smallflower morningglory	bentazon (Basagran) 4 SL	1 pt	0.5	Beans are tolerant after the first trifoliolate leaf has fully expanded. Yellowing, bronzing, speckling or burning of leaves may occur. Tolerant beans include adzuki, navy, pinto, pink, greater northern, kidney, red, white, cranberry, black turtle soup, small lima, large lima, and snap beans. In Georgia, Basagran can not be applied alone. May be applied from 6 to 16 oz per acre to dry and succulent beans ONLY when mixed with Raptor or Pursuit, see labels. Raptor is not labeled on some beans grown in Georgia, see label. Use of oil additive with Basagran on snap beans may increase the leafburn and injury potential.
	Nutsedge, non-ALS resistant pigweed, ragweed, cocklebur, and wild radish	halosulfuron (Sanda) 75 DF	0.5 to 0.67oz	0.024 to 0.031	Apply after the 3rd trifoliolate stage but before flowering. Directed sprays are recommended. Do not apply within 30 d of harvest. Can cause temporary chlorosis and stunting thereby delaying maturity and harvest a few days. Add NIS at 1qt/100 gal spray mix. Do not exceed 1 oz/A/crop cycle (includes PRE and hooded applications). Label states use of Sandea is at the grower's risk. <u>Rotational restrictions are a significant concern, see label.</u>
	Annual and perennial grasses	clethodim (SelectMax) 0.97 EC (TapOut) 0.97 EC	9 to 16 fl oz 9 to 16 fl oz	0.07 to 0.12	Apply to actively growing grasses. Add NIS at 1qt/100 gal spray mix. Do not apply within 21 d of harvest. Do not make more than one application/season. Do not apply a POST broadleaf herbicide within 3 d of clethodim as reduced grass control may occur. Do not mix with other pesticides.
sethoxydim (Poast) 1.53 EC		1 to 1.5 pt	0.19 to 0.29	Apply to actively growing annual grasses. Add a COC at a rate of 1 qt/A; see label about use of other additives. Do not apply within 15 d of harvest. Adding crop oil may increase crop injury at high temperatures. Do not apply more than 4 pt/A/season sethoxydim. Do not mix with other pesticides.	

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
BEANS (LIMA) (cont.)					
ROW MIDDLES ONLY Hooded Spray	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury to crop, do not allow herbicide to contact any part of the crop including roots. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply as a hooded spray in row middles avoiding contact with crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. Do not exceed 0.096 lb ai/A/yr, including preplant applications.
	Nutsedge, wild radish, non-ALS resistant pigweed, ragweed, cocklebur	halosulfuron (Sanda) 75 DF	0.5 to 1.0 oz	0.024 to 0.048	Apply between crop rows avoiding spray contact with crop. For emerged weeds add a NIS at 1 qt/100 gals of spray. Do not exceed 1 oz/A/ crop cycle (includes PRE and POST applications). <u>Rotational restrictions are a significant concern, see label.</u>
BEANS (SNAP)					
Preplant	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 to 2.7 pt 2.0 to 4.0 pt	0.49 to 1.0	Apply to emerged weeds but before crop emergence. Add 1 qt NIS or 1 gal COC/100 gal spray mix.
	Annual and perennial grass and broadleaf weeds, stale seedbed application	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL	1.0 to 3.0 pt 0.8 to 2.4 pt 11 to 32 fl oz	0.5 to 1.5	Apply to emerged weeds before seeding. Perennial weeds may require higher rates. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply prior to or within 24 h of planting to weeds less than 3 in. Coverage is essential for control. Add 1.5 - 2 gal COC/100 gal of spray mix. May mix with glyphosate, see label.
Preplant incorporated (PPI)	Annual grasses including Texas millet and small-seeded broadleaf weeds	pendimethalin (Prowl) 3.3 EC (Pendimax) 3.3 EC (Prowl H20) 3.8 AS	1.8 to 2.4 pt 1.2 to 2.4 pt 1.5 to 2.0 pt	0.75 to 1 0.5 to 1 0.72 to 0.95	Apply PPI 2 - 3 in. into the soil before planting. <u>Must incorporate to avoid crop injury.</u> Rates lower than some products recommend (1.2 to 1.5 pt/A) are suggested for sandy soils with low organic matter or when Dual Magnum will follow PRE.
		trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	1 pt	0.5	Apply PPI 2 - 3 in. into the soil before planting. Must incorporate within 8 hr of application. Rates lower than those labeled (0.75 pt/A) are suggested for sandy soils with low organic matter or when Dual Magnum will follow PRE.
	Annual grass, broadleaf weeds, nutsedge suppression	EPTC (Eptam) 7 E	2.25 to 3.5 pt	2 to 3	Apply and soil incorporate 3 in. deep before planting. Suggested that one include pendimethalin or trifluralin, see label for recommendations and restrictions.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
BEANS (SNAP) (cont.)					
Preplant incorporated (PPI) or Preemergence (PRE)	Annual grass and broadleaf weeds; yellow nutsedge and Texas millet suppression	S-metolachlor (Dual Magnum) 7.62EC	0.75 to 1.3 pt	0.7 to 1.2	Apply PRE after planting, but before crop emergence, or apply preplant and soil incorporate 2 in deep into the soil before planting. PRE applications are strongly suggested. Irrigate within 48 hr of PRE applications. Use lower rates on sandy soils with low organic matter and when in a system with pendimethalin or trifluralin.
	Suppression of common purslane, eastern back night shade, non -ALS resistant pigweed, and wild mustard	imazethapyr (Pursuit) 2 EC	1.5 fl oz	0.023	Apply PPI or PRE to soil surface immediately after planting. Suggest mixing with a grass herbicide. This is a low rate of pursuit and should be used as part of a system. Do not apply after July 31 and do not make more than 1 application per year. <u>Rotational restrictions are a significant concern, see label.</u>
Preemergence (PRE)	Nutsedge suppression, non -ALS resistant pigweed, wild radish, ragweed	halosulfuron (Sanda) 75 DF	0.5 to 1.0 oz	0.024 to 0.048	Apply within 1 d of planting; do not apply while soil cracking. Use lower rate on coarse soils with low organic matter. Do not apply more than 1 oz/A/crop cycle (includes POST and hooded applications). <u>Rotational restrictions are a significant concern, see label.</u>
	Pigweed species, bristly starbur, and yellow nutsedge	fomesafen (Reflex) 2 EC	0.75 to 1.0 pt	0.19 to 0.25	Apply as a PRE application within 1 d of planting. Overhead irrigate within 1 d of application and 2 d of planting in an effort to avoid splashing treated soil onto beans when they are emerging. <u>One application/yr. Rotational restrictions are a significant concern, see label.</u>
	Annual grasses and broadleaf weed suppression	clomazone (Command) 3 ME	0.4 to 0.67 pt	0.15 to 0.25	Clomazone should be applied preemergence to the soil surface immediately after seeding. Offers weak pigweed control. See label for rotation restrictions. Limited research has been conducted in Georgia.
Postemergence (POST)	Annual broadleaf weeds such as cocklebur and smallflower morningglory; yellow nutsedge suppression	bentazon (Basagran) 4 SL	1 pt	0.5	Beans are tolerant after the first trifoliolate leaf has fully expanded. Yellowing, bronzing, speckling or burning of leaves may occur. Tolerant beans include adzuki, navy, pinto, pink, greater northern, kidney, red, white, cranberry, black turtle soup, small lima, large lima, and snap beans. In Georgia, Basagran can not be applied alone. May be applied from 6 to 16 oz per acre to dry and succulent beans ONLY when mixed with Raptor or Pursuit, see labels. Raptor is not labeled on some beans grown in Georgia, see label. Use of oil additive with Basagran on snap beans may increase the leaf burn and injury potential.
	Annual broadleaf weeds such as pigweed and morningglory	fomesafen (Reflex) 2 EC	0.75 to 1.0 pt	0.19 to 0.38	Apply to beans with at least two fully expanded trifoliolate leaves; add NIS at 1 qt/100 gal of spray. Minor injury will likely occur. Injury may be more severe if applied in the morning with an overcast sky and a heavy dew. Allow 3 d between an application of Reflex and a grass herbicide. Do not apply within 30 d of harvest. <u>One application/yr. Rotational restrictions are a significant concern, see label.</u>

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
BEANS (SNAP) (cont.)					
Postemergence (POST) (cont.)	Nutsedge, non-ALS resistant pigweed, ragweed, cocklebur, and wild radish	halosulfuron (Sanda) 75 DF	0.5 to 0.67oz	0.024 to 0.031	Apply after the 3rd trifoliate stage but before flowering. Directed sprays are recommended. Do not apply within 30 d of harvest. Can cause temporary chlorosis and stunting thereby delaying maturity and harvest by a few days. Add NIS at 1 qt/100 gal spray mix. Do not exceed 1 oz/A/crop cycle (includes PRE and hooded applications). Label states use of Sandea is at the grower's risk. <u>Rotational restrictions are a significant concern, see label.</u>
	Annual and Perennial grasses	clethodim (SelectMax) 0.97 EC (TapOut) 0.97 EC	9 to 16 fl oz 9 to 16 fl oz	0.07 to 0.12	Apply to actively growing grasses. Add NIS at 1qt/100 gal spray mix. Do not apply within 21 d of harvest. Do not make more than one application/season. Do not apply a POST broadleaf herbicide within 3 d of clethodim as reduced grass control may occur. Do not mix with other pesticides.
		quizalofop P-ethyl (Assure II) 0.88 EC (Targa) 0.88 EC	6 to 12 fl oz 6 to 12 fl oz	0.04 to 0.08	Apply higher rate for bermudagrass or johnsongrass. Apply to actively growing grasses. Add 1 qt NIS/100 gal spray mix. Do not apply within 15 d of harvest. Do not exceed 14 oz/A/season and do not mix with other pesticides.
		sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.29	Apply to actively growing annual grasses. Add a COC at a rate of 1 qt/A; see label about use of other additives. Do not apply within 15 d of harvest. Adding crop oil may increase crop injury at high temperatures. Do not apply more than 4 pt/A/season sethoxydim. Do not mix with other pesticides.
ROW MIDDLES ONLY Hooded spray	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply as a hooded spray in row middles avoiding contact with crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. Do not exceed 0.096 lb ai/A/yr, including preplant applications.
	Nutsedge, wild radish, non-ALS resistant pigweed, ragweed, cocklebur	halosulfuron (Sanda) 75 DF	0.5 to 1.0 oz	0.024 to 0.048	Apply between crop rows avoiding spray contact with crop. If weeds are emerged use a NIS at 1 qt/100 gals of spray mixture. Do not exceed 1 oz/A/crop cycle (includes PRE and POST applications). <u>Rotational restrictions are a significant concern, see label.</u>
BEANS (SOUTHERN PEA)					
Preplant	Annual and perennial grass and broadleaf weeds	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 to 2.7 pt 2.0 to 4.0 pt	0.5 to 1	Succulent peas only. Apply to emerged weeds but before crop emergence. Add 1 qt NIS or 1 gal COC/100 gal spray mix.
	Most emerged weeds except for resistant pigweed, stale seedbed application	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	0.013 to 0.03	0.5 to 1.5	Apply to emerged weeds before seeding. Perennial weeds may require higher rates. Do not feed crop residue to livestock for 8 weeks following treatment. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply prior to or within 24 h of planting to weeds less than 3 in. Coverage is essential for control. Add 1.5 - 2 gal COC/100 gal of spray mix. May mix with glyphosate, see label.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
BEANS (SOUTHERN PEA) (cont.)					
Preplant incorporated (PPI)	Annual grasses including Texas millet and small-seeded broadleaf weeds	pendimethalin (Prowl) 3.3 EC (Prowl H20) 3.8 AS	1.8 to 2.4 pt 1.5 to 2.0 pt	0.75 to 1 0.72 to 0.95	Apply PPI 2 – 3 in. into the soil before planting. <u>Must incorporate to avoid crop injury.</u> Rates lower than some products recommend (1.2 to 1.5 pt/A) are suggested for sandy soils with low organic matter or when Dual Magnum will follow PRE.
		trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	1 to 1.5 pt	0.5 to 0.75	Apply PPI 2 – 3 in. into the soil before spring planting. Must incorporate within 8 hr of application. Rates lower than those labeled (0.75 pt/A) are suggested for sandy soils with low organic matter or when Dual Magnum will follow PRE.
Preplant incorporated (PPI) or Preemergence (PRE)	Annual grass and broadleaf weeds; yellow nutsedge suppression; partial control of Texas millet	S-metolachlor (Dual Magnum) 7.62EC	0.75 to 1.3 pt	0.7 to 1.2	Apply PRE after planting, but before crop emergence, or apply preplant and soil incorporate 2 in deep into the soil before planting. PRE applications are strongly suggested. Irrigate within 48 hr of PRE applications. Use lower rates on sandy soils with low organic matter and when in a system with pendimethalin or trifluralin.
	Annual grasses and broadleaf weeds including smallflower mg, non -ALS resistant pigweed, and purslane	imazethapyr (Pursuit) 2 EC	3 to 4 fl oz	0.047 to 0.06	Apply PPI or PRE to the soil surface immediately after planting. Suggest mixing with a grass herbicide. Do not make more than 1 application Pursuit/yr. <u>Rotational restrictions are a significant concern. see label.</u>
Preemergence (PRE)	Annual grasses and broadleaf weed suppression	clomazone (Command) 3 ME	0.4 to 0.67 pt	0.15 to 0.25	Apply to the soil surface immediately after seeding. Offers weak pigweed control. See label rotation restrictions. Limited research has been conducted in Georgia.
Postemergence (POST)	Annual broadleaf weeds such as cocklebur and smallflower morningglory	bentazon (Basagran) 4 SL	1 pt	0.5	Garden, English and southern peas. Apply after 3 pairs of leaves are present. Injury such as yellowing, bronzing, speckling or burning of leaves may occur. In Georgia, Basagran can not be applied alone. May be applied from 6 to 16 oz per acre to dry and succulent peas ONLY when mixed with Raptor or Pursuit, see labels. Raptor is not labeled on some peas/beans grown in Georgia, see label. Do not add oil, do not apply within 10 days of succulent pea harvest and 30 days of dry pea harvest.
	Annual grasses and broadleaf weeds including morning-glory, non -ALS resistant pigweed, smartweed, and purslane	imazethapyr (Pursuit) 2 EC	3 to 4 fl oz	0.047 to 0.063	Apply small emerged weeds when Southern peas are at least 3 in, but prior to 5 nodes and before flowering. Add a NIS at a rate of 1 qt/100 gal spray mix; do not use COC. Do not make more than 1 application Pursuit/yr. and do not harvest within 30 d of application. <u>Rotational restrictions are a significant concern. see label.</u>

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
BEANS (SOUTHERN PEA) (cont.)					
Postemergence (POST) (cont.)	Annual and perennial grasses	clethodim (SelectMax) 0.97 EC (TapOut) 0.97 EC	9 to 16 fl oz 9 to 16 fl oz	0.07 to 0.12	Apply to actively growing grasses. Add NIS at 1qt/100 gal spray mix. Do not apply within 21 d of succulent pea harvest or 30 d of dry pea harvest. Do not apply a POST broadleaf herbicide within 3 d of clethodim as reduced grass control may occur. Do not mix with other pesticides.
		quizalofop P-ethyl (Assure II) 0.88 EC (Targa) 0.88 EC	6 to 12 fl oz 6 to 12 fl oz	0.04 to 0.08	Apply to actively growing grasses. Add 1 qt NIS/100 gal spray mix. Do not apply within 60 d of dry pea harvest or 30 d of succulent pea harvest. Do not exceed 14 oz/A/season and do not mix with any other pesticide.
		sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	Apply to actively growing annual grasses. Add a COC at a rate of 1 qt/A; see label about use of other additives. Do not apply within 30 d of dry pea harvest or 15 d of succulent pea harvest. Adding crop oil may increase crop injury at high temperatures Do not apply more than 4 pt/A/season sethoxydim. Do not mix with other pesticides.
ROW MIDDLES ONLY Hooded spray	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply as a hooded spray in row middles avoiding contact with crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. Do not exceed 0.096 lb ai/A/yr, including preplant applications.
BEEETS (GARDEN OR TABLE)					
Preplant	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Garden beets only. Apply to emerged weeds before seeding. Perennial weeds may require higher rates. The need for an adjuvant depends on brand used.
Preemergence (PRE)	Broadleaf weeds only including common ragweed, smartweed, and wild mustard	pyrazon (Pyramin) 65 DF	4.6 to 5.4 lb	3.1 to 3.7	Table beets only. Not recommended for use on sands or loamy sand soils as severe injury may occur. Use lower rates on coarse soils. Apply after planting before crop and weeds emerge. If rain does not occur within 5 d after application, beets should be irrigated. Do not mix with other pesticides.
Postemergence (POST)	A few broadleaf weeds including clover, nightshade, jimsonweed, and ragweed	clopyralid (Stinger) 3 EC	0.25 to 0.5 pt	0.09 to 0.19	Garden beets only. Apply to beets between the 2 to 8 leaf stage when weeds are small and actively growing. Do not apply within 30 d of harvest. <u>Limited research has been conducted</u> , try on small acreage first. Do not apply more than 0.5 pt/A/year and see label regarding rotational restrictions.
	Broadleaf weeds including mustard, purslane suppression	phenmedipham (Spin-Aid) 1.3 EC	3 to 6 pt	0.5 to 1.0	Garden beets only. Apply when beets have at least 6 true leaves and weeds have less than 2 leaves. Use higher rates only on well established plants not under stress. Do not apply within 60 d of harvest. Minor crop stunting may be observed for approximately 10 d. Do not use additional wetting agents.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
BEETS (GARDEN OR TABLE) (cont.)					
Postemergence (POST) (cont.)	Broadleaf weeds only	Pyrazon (Pyramin) 65 DF	5.4 lb	3.7	Table beets only. Not recommended for sand or loamy sand soils as severe injury can occur. Use lower rates on coarse soils. Do not mix with other pesticides. Apply after beets have expanded 2 true leaves.
	Annual and perennial grasses	clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 8 fl oz 9 to 16 fl oz 9 to 16 fl oz	0.09 to 0.12 0.07 to 0.12 0.07 to 0.12	Garden beets only. Apply to actively growing grasses. For Select, add 1 gal COC/100 gal spray mix. For SelectMax, add 1qt NIS/100 gal spray mix. Do not apply within 30 d of harvest. Controls annual bluegrass. Adding crop oil may increase crop injury at high temperatures. Do not mix with other pesticides. Application of a broadleaf herbicide within 3 d of clethodim may result in reduced grass control.
		sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.29	Garden beets only. Apply to actively growing annual grasses. Add 1 qt of COC/A. Do not apply within 60 d of harvest. Adding crop oil may increase crop injury at high temperatures. Do not apply more than 5 pt/A/season sethoxydim. Do not mix with other pesticides.
ROW MIDDLES ONLY Hooded spray	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply as a hooded spray in row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix.
CARROTS					
Preplant	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 to 2.7 pt 2.0 to 4.0 pt	0.49 to 1.0	Apply to emerged weeds but before crop emergence. Add 1 qt NIS or 1 gal COC/100 gal spray mix.
	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds before seeding. Perennial weeds may require higher rates. The need for an adjuvant depends on brand used.
Preplant incorporate (PPI)	Annual grasses and small-seeded broadleaf weeds	trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	1 to 1.5 pt	0.5 to 0.75	Apply preplant and soil incorporate 2 to 3 in deep before seeding. Incorporate within 8 hr of application. Use lower rates on coarse soils with less than 2% organic matter.
Postemergence (POST)	Annual broadleaf weeds and some grasses	metribuzin (Dimetric, Metribuzin, Metri) 75 DF (Metri) 4 F	0.33 lb 0.5 pt	0.25	Apply overtop when carrots have 5 to 6 true leaves but weeds are less than 1 in. Some injury may occur under cool, moist conditions. Avoid spraying after 3 or more cloudy d. Do not apply within 3 d of other pesticides. Do not apply within 60 d of harvest. Need for additive is not discussed on label. Do not exceed 0.5 lb ai/A/crop season.
		linuron (Lorox DF) 50 WDG	1.5 to 3 lb	0.75 to 1.5	Apply after carrots are at least 3 in., annual grasses do not exceed 2 in., and broadleaves do not exceed 4 in. Surfactant or COC can be used but some crop injury may occur, especially under hot, humid conditions. Avoid spraying after 3 or more cloudy d or when temperature exceeds 85° F. Repeat applications may be made, but do not exceed 4 lb product/A/yr. Do not apply within 14 d of harvest and do not mix with other pesticides.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
CARROTS (cont.)					
Postemergence (POST) (cont.)	Annual and peren- nial grasses only	clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 8 fl oz 9 to 16 fl oz 9 to 16 fl oz	0.09 to 0.12 0.07 to 0.12 0.07 to 0.12	Apply to actively growing grasses. For Select, add 1 gal COC/100 gal spray mix. For SelectMax, add 1qt NIS/100 gal spray mix. Controls annual bluegrass. Do not apply within 30 d of harvest. Adding crop oil may increase crop injury at high temperatures. Do not mix with other pesticides. Application of a broadleaf herbicide within 3 d of clethodim may result in reduced grass control.
		sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.29	Apply to actively growing annual grasses. Add 1 qt of COC/A. Do not apply within 30 d of harvest. Adding crop oil may increase crop injury at high temperatures. Do not apply more than 5 pt/A/season sethoxydim. Do not mix with other pesticides.
		fluzifop-P-butyl (Fusilade DX) 2 EC	6 to 16 oz	0.1 to 0.25	Apply to actively growing grasses. Add 1 gal COC or 1 qt NIS/100 gal spray mix. Do not apply within 45 d of harvest. Adding crop oil may increase crop injury at high temperatures. Do not mix with other pesticides. Do not apply more than 48 oz/A/season.
ROW MIDDLES ONLY Hooded spray	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including mornninglory, spi- derwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply as a hooded spray in row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix.
CELERY					
Preplant	Most emerged weeds except for resistant pigweed; stale seedbed ap- plication	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds before seeding. Perennial weeds may require higher rates. The need for an adjuvant depends on brand used.
	Primrose, gera- nium, henbit and a few grasses	oxyfluorfen (Goaltender) 4 F (Goal 2 XL) 2 EC	up to 1 pt up to 2 pt	up to 0.5 lb	Transplants only. Apply to soil surface of pre-formed beds at least 30 d prior to transplanting. <u>NO research has been conducted in Georgia, try on a small acreage first.</u>
Preplant incorporate (PPI) or Preemer- gence (PRE)	Annual grasses and small-seeded broadleaf weeds	trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	1 to 1.5 pt	0.5 to 0.75	May be applied to direct seeded or transplant celery before planting, at planting, or immediately after planting. Incorporate within 8 hr of application. Use lower rates on coarse soils with less than 2% organic matter.
		bensulide (Prefar) 4-E	5 to 6 qt	5 to 6	Transplants only. Apply PRE after planting, irrigate immediately after application. See label about rotation restrictions.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
CELERY (cont.)					
Postemergence (POST)	Annual grasses and broadleaf weeds	linuron (Lorox DF) 50 WDG	1.5 to 3 lb	0.75 to 1.5	Make a single application after transplants are established but before celery is 8 in tall. Grasses should be less than 2 in and broadleaf weeds should be less than 4 in. Do not use surfactant or crop oil. Avoid spraying after 3 or more cloudy d or when temperature exceeds 85° F. Not recommended for sands or loamy sand soil. Do not apply within 45 d of harvest. Do not apply within 1 wk of other pesticides.
	Annual and perennial grasses only	clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 8 fl oz 9 to 16 fl oz 9 to 16 fl oz	0.09 to 0.12 0.07 to 0.12 0.07 to 0.12	Apply to actively growing grasses. For Select, add 1 gal COC/100 gal spray mix. For SelectMax, add 1qt NIS/ 100 gal spray mix. Controls annual bluegrass. Do not apply within 30 d of harvest. Adding crop oil may increase crop injury at high temperatures. Do not mix with other pesticides. Application of a broadleaf herbicide within 3 d of clethodim may result in reduced grass control.
		sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	Apply to actively growing annual grasses. Add 1 qt of COC/A. Do not apply within 30 d of harvest. Adding crop oil may increase crop injury at high temperatures. Do not apply more than 3 pt/A/season. Do not mix with other pesticides.
ROW MIDDLES ONLY Hooded spray	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply as a hooded spray in row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix.
COLE CROPS (BROCCOLI, CABBAGE, CAULIFLOWER)					
Preplant	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 to 2.7 pt 2.0 to 4.0 pt	0.49 to 1.0	Apply to emerged weeds but before crop emergence. Add 1 qt NIS or 1 gal COC/100 gal spray mix. If applying over plastic, must wash off with 0.5 in of rain or irrigation prior to planting.
	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply before seeding or at least 3 d before transplanting. If applying over plastic, must wash off with 0.5 in of rain or irrigation prior to planting. The need for an adjuvant depends on brand used.
Preplant incorporate (PPI) or Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds	bensulide (Prefar) 4 E	5 to 6 qt	5 to 6	Also labeled for, but not limited to, Chinese broccoli, broccoli rabb, brussels sprouts, Chinese cabbage, Chinese mustard cabbage, and kohirabi. Apply PPI or PRE after planting. With PPI, incorporate to 1 in. With PRE application, irrigate immediately after application. Check replant restrictions for small grains and other crops on label.
		trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	0.75 to 1.5 pt	0.38 to 0.75	Transplants: Apply preplant and incorporate into the soil 2 to 3 in. within 8 hr of application. Use lower rates on coarse soils with low organic matter. Direct Seeded: Apply preplant and incorporate 2 to 3 in. into the seed bed within 8 hr. Suggests not exceeding 1 pt/A. If soil conditions are cool and wet, reduced stands and stunting may occur.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
COLE CROPS (BROCCOLI, CABBAGE, CAULIFLOWER) (cont.)					
Preplant incorporate (PPI) or Preemergence (PRE) (cont.)	Annual grasses and small-seeded broadleaf weeds (cont.)	DCPA (Dacthal) W-75 6 F	≤ 6 to 8 lb ≤ 6 to 8 pt	≤ 4.5 to 6	Also labeled for greens, mustard spinach, arugula (Roquette), cardoon, cress (upland, garden), endive (escarole), parsley, and radicchio (red chickory), see label. Apply to soil surface immediately after seeding or transplanting. May also be incorporated. Rates may be increased for heavy soil types, see label.
Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds including common ragweed and smartweed	napropamide (Devrinol) 50 DF	2 to 4 lb	1 to 2	Apply to weed-free soil surface just after seeding or transplanting as a surface application. Light cultivation, rainfall, or irrigation will be needed within 24 hr to activate the herbicide. Label recommends up to 4 lb of product/A, but this rate may be too high for seeded crops.
	Many broadleaf weeds including henbit, common ragweed, purslane, smartweed, primrose and pigweed	oxyfluorfen (Goal 2 XL) 2 EC (Galigan) 2 E (Goaltender) 4 F (Galigan H2O) 4 F	1.0 to 2 pt 1.0 to 2 pt 0.5 to 1 pt 0.5 to 1 pt	0.25 to 0.5	Transplants only. Prepare land, apply oxyfluorfen, irrigate, and then wait 1 to 3 d (need a sunny day) before transplanting. <u>Do not apply over-the-top of crop.</u> Do not incorporate or knock the bed off after application. Leaf cupping or crinkling may be observed. <u>The use of young (less than 5 wk old) or extremely succulent transplants grown in containers less than 1 in. square may increase the severity of crop injury.</u> Rates below 0.25 lb active are less than labeled recommendations but are needed on coarse low organic matter soils during cool wet conditions; during favorable environments rates between 0.25 and 0.38 lb active would be in order.
Postemergence (POST)	Annual grasses and broadleaf weeds, yellow nut-sedge suppression; partial control of Texas millet	S-metolachlor (Dual Magnum) 7.62 EC	10 to 14 fl oz	0.6 to 0.83	TRANSPLANTS: After transplanting in bareground, irrigate to seal soil around root ball. 5 to 10 d after sealing soil, apply Dual Magnum overtop. If applying in mulched systems, apply 10 d after transplanting. SEEDS: Apply overtop after crop reaches 3 in. May apply 1.25 pt/A in row middles as a banded application. Dual will not control emerged weeds; a preplant or preemergence herbicide application is required. This is a Section 24© local need label. Growers must obtain label from www.farmassist.com prior to making applications.
	Annual and perennial grasses only	sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	Apply to actively growing annual grasses. Add 1 qt of COC/A. Do not apply within 30 d of harvest. Adding crop oil may increase crop injury at high temperatures. Do not apply more than 3 pt/A/season sethoxydim. Do not mix with other pesticides.
		clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 8 fl oz 9 to 16 fl oz 9 to 16 fl oz	0.09 to 0.12 0.07 to 0.12 0.07 to 0.12	Apply to actively growing grasses. A section 24(c) state local need label allows an application of SelectMax without the addition of an adjuvant, which will greatly reduce the potential for leaf burn while giving up little weed control as long as annual grasses are less than 6 in. in height. The addition of NIS at 1 qt/100 gal spray mix is recommended for large grasses and goosegrass. For Select, a crop oil at 1 gal/100 gal spray mix is required for control. Do not apply either herbicide within 30 d of harvest. Do not mix with other pesticides. Application of a broadleaf herbicide within 3 d of clethodim may result in reduced grass control.
A few broadleaf weeds including sowthistle, clover, cocklebur, jimson-weed, ragweed	clopyralid (Stinger) 3 EC	0.25 to 0.5 pt	0.09 to 0.19	Labeled for broccoli, cabbage, cauliflower, broccoli raab, brussels sprouts, cavalo broccoli, Chinese cabbage (bok choy), Chinese broccoli, Chinese mustard, and Chinese cabbage (Napa). Apply to crop when weeds are small and actively growing. Will control most legumes. Do not apply within 30 d of harvest. Do not exceed 0.5 pt/A/yr. Review rotational restrictions.	

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions	
			Amount of Formulation	Pounds Active Ingredient		
COLE CROPS (BROCCOLI, CABBAGE, CAULIFLOWER) (cont.)						
ROW MIDDLES ONLY Hooded spray	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.	
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply as a hooded spray in the row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix.	
COLE CROPS (CABBAGE ONLY)						
Preemergence (PRE)	Annual grass and broadleaf weeds	clomazone (Command) 3 ME	0.67 to 0.75 pt	0.25 to 0.28	Transplanted cabbage only. Prepare land, apply clomazone, irrigate, and then wait 1 to 3 d (need a sunny day) before transplanting. Roots of the transplants must be below the chemical barrier. Some plant whitening will likely occur. See label about rotation restrictions.	
CUCURBITS						
Recommended Herbicide Uses in Specific Cucurbit Crops			Cucurbit			
Herbicide	Application Method*	Cantaloupe (muskmelon)	Cucumber	Pumpkin	Squash	Watermelon
carfentrazone (Aim EC)	Preplant	X	X	X	X	X
paraquat (numerous)	Preplant	X	X	X	X	X
pyraflufen (ET)	Preplant	X	X	X	X	X
glyphosate (Roundup, others)	Preplant	X	X	X	X	X
bensulide (Prefar)	PPI or PRE	X	X	X	X	X
ethalfuralin (Curbit)	PRE	X	X	X	X	X
clomazone (Command 3 ME)	PRE	X	X		X	X
ethalfuralin + clomazone (Strategy)	PRE	X	X	X	X	X
halosulfuron (Sanda)	PRE	X	X	X		X
halosulfuron (Sanda)	POST	X	X	X		
terbacil (Sinbar)	PRE					X
naptalam (Alanap)	PRE or POST	X	X			X
clethodim (Select, Select Max, TapOut)	POST	X	X	X	X	X
sethoxydim (Poast)	POST	X	X	X	X	X
carfentrazone (Aim EC)	Row middles only	X	X	X	X	X
flumioxazin (Chateau)	Row middles only	X	X	X	X	X
glyphosate (Roundup, others)	Row middles only	X	X	X	X	X
halosulfuron (Sanda)	Row middles	X	X	X	X	X
paraquat (Gramoxone Inteon)	Row middles only	X	X	X	X	X
trifluralin (Treflan HFP)	Row middles only	X	X	X	X	X

*PPI = preplant incorporated; PRE = preemergence; POST = postemergence.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
CUCURBITS (CANTALOUPE-MUSKMELON)					
Preplant	Suppression or control of most annual grasses and broadleaf weeds, full rate required for nutsedge control	metam sodium (Vapam HL) 42%	37.5 to 75 gal	15.7 to 31.5	Rates are dependent on soil type and weeds present. Apply when soil moisture is near field capacity (60 to 80%). Apply through soil injection by using a rotary tiller or injecting with knives no more than 4 in. apart; follow immediately with a roller to smooth and compact the soil surface or with mulch. May apply through drip irrigation prior to planting a second, third, or fourth crop on mulch. Plant back interval is often 14-21 d and can be 30 d in some environments.
	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 to 2.7 pt 2.0 to 4.0 pt	0.49 to 1.0	Apply to emerged weeds but before crop emergence or transplanting. Add 1 qt NIS or 1 gal COC/100 gal spray mix. If applying over plastic, must wash off with 0.5 in of rain or irrigation prior to planting.
	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	1 to 1.5	Apply to emerged weeds at least 3 d before seeding or transplanting. If applying over plastic, must wash off with 0.5 in of rain or irrigation prior to planting. Perennial weeds may require higher rate. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Transplant only. Apply prior to transplant to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. May mix with glyphosate, see label. If applied over plastic mulch, a single 0.5 in. irrigation/rain event plus a 7 d waiting period must occur before transplanting.
	Annual broadleaf weeds including morningglory and small pigweeds	pyraflufen ethyl (ET) 0.208 L	1.0 to 2.0 fl oz	0.0016 to 0.0032	Burndown: Wait 1 day following preplant burndown application before planting. Mulch Production. May apply over mulch; however, a single 0.5 inch irrigation/rain event plus a 7 d waiting period must occur before transplanting. Apply ET with a crop oil concentrate at 1% v/v to sensitive weeds that are less than 3 inches.
Preplant incorporate (PPI) or Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds such as pigweeds	bensulide (Prefar) 4 E	5 to 6 qt	5 to 6	Apply preplant and soil incorporate 1 in. deep before planting, or apply preemergence and follow with irrigation within 24 hr. Check replant restrictions for small grains and other crops on label.
Preemergence (PRE)	Broadleaf weeds including cocklebur, jimsonweed, ragweed, smartweed, pigweed	naptalam (Alanap) 2 EC	4 to 6 qt	2 to 3	Apply to the soil surface immediately after seeding or apply POST before plants begin to vine. May be applied overtop of plants and plastic mulch. Need to apply prior to weed emergence. Do not mix with liquid fertilizer or pesticides. Irrigate within 3 d if no rainfall occurs. <u>Alanap is no longer being produced and grower availability is nearing its end.</u>
		ethalfuralin (Curbit) 3 EC	1 to 1.5 pt	0.38 to 0.56	Apply immediately after seeding but before crop and weeds emerge. <u>Do not apply prior to seeding and do not incorporate. Do not use under mulch.</u> If rainfall does not occur within 2 d of application, irrigate as needed. Labels do not allow application over transplants; only in row middles of transplanted crop. If applying in row middles can use higher rate, see label. Avoid applications when periods of cool, moist conditions exist prior to emergence to prevent crop injury. Injury can also be observed if planted too shallow. Suggested use rates are lower than recommended due to injury potential. See label about rotation and buffer restrictions.
	Annual grasses and small-seeded broadleaf weeds such as pigweeds	ethalfuralin + clomazone (Strategy) 2.1 L	2 to 3 pt	0.4 to 0.6 + 0.13 to 0.18	

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
CUCURBITS (CANTALOUPE-MUSKMELON) (cont.)					
Preemergence (PRE) (cont.)	Suppression of annual grasses and some broad-leaf weeds; weak on pigweed and morningglory	clomazone (Command) 3 ME	0.4 to 0.67 pt	0.15 to 0.25	Apply immediately after seeding or just prior to transplanting. Roots of transplants must be below the chemical barriers when planting. See label for buffer and rotation restrictions. Command at this use rate should be only a component of a weed management system.
	Nutsedge suppression, non -ALS resistant pigweed, wild radish, and ragweed control	halosulfuron (Sanda) 75 DF	0.5 to 0.75 oz	0.024 to 0.036	Cantaloupe only. Apply 7 d prior to transplanting or seeding in plasticulture. Application may be made to preformed beds prior to laying plastic, do not disturb bed when laying plastic. In bareground production, apply after seeding but prior to soil cracking; for transplants, wait 7 d after application before transplanting. Stunting may occur but should be short lived with no noted yield effects in favorable growing conditions. Do not apply more than 2 oz/A/crop cycle and year (includes POST and hooded applications). <u>Rotational restrictions are a significant concern, see label.</u>
Postemergence (POST)	Broadleaf weeds including pigweed, lambsquarters, and common cocklebur	naptalam (Alanap) 2 EC	4 to 6 qt	2 to 3	Apply postemergence before crop is ready to vine for PRE weed control and postemergence control of very small pigweed. Use full rate if attempting to control emerged pigweed. May be applied overtop of plants and plastic mulch. <u>Do not mix with crop oil. Do not mix with pesticides or fertilizer.</u> Irrigate within 3 d if no rainfall occurs. <u>Alanap is no longer being produced and grower availability is nearing its end.</u>
	Nutsedge, non-ALS resistant pigweed, ragweed, cocklebur, and wild radish	halosulfuron (Sanda) 75 DF	0.5 to 0.67 oz	0.024 to 0.032	Cantaloupe only. Apply after seeded crop has reached the 3rd true leaf stage but before flowering. Apply to transplants no sooner than 14 d after transplanting. May apply overtop of plastic mulch. Add a NIS at 1 qt./100 gal of spray solution. <u>Plant stunting may be observed under cool growing conditions;</u> a delay in crop maturity with this application by 1 week has been noted. <u>Rotational restrictions are a significant concern, see label.</u> Do not exceed 2 oz/A/crop cycle and year (includes PRE and hooded applications). Do not apply within 57 days of harvest.
	Annual and perennial grasses only	clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 8 fl oz 9 to 16 fl oz 9 to 16 fl oz	0.09 to 0.12 0.07 to 0.12 0.07 to 0.12	Apply to actively growing grasses. A section 24(c) state local need label allows an application of SelectMax without the addition of an adjuvant, which will greatly reduce the potential for leaf burn while giving up little weed control as long as annual grasses are less than 6 in. in height. The addition of NIS at 1 qt/100 gal spray mix is recommended for large grasses and goosegrass. For Select, a crop oil at 1 gal/100 gal spray mix is required for control. Controls annual bluegrass. Do not apply within 14 d of harvest. Do not mix with other pesticides. Application of a broadleaf herbicide within 3 d of clethodim may result in reduced grass control.
sethoxydim (Poast) 1.53 EC			1 to 1.5 pt	0.19 to 0.3	Apply to actively growing annual grasses. Add 1 qt of COC/A. Adding crop oil may increase crop injury at high temps. Do not apply within 14 d of harvest, except for cantaloupe, which can be harvested within 3 d of last application. Do not apply more than 3 pt/A/season sethoxydim. Do not mix with other pesticides.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
CUCURBITS (CANTALOUPE-MUSKMELON) (cont.)					
ROW MIDDLES ONLY Shielded spray	Annual grasses and small-seeded broadleaf weeds	trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	1 to 1.5 pt	0.5 to 0.75	Apply as a directed spray in row middles when plants have reached the 3 to 4 true leaf stage of growth. Avoid crop contact. Incorporate immediately and do not apply within 30 d of harvest. Incorporation equipment may be set to move treated soil around the plant base.
ROW MIDDLES ONLY Hooded spray	Contact kill of emerged annual weeds	paraquat (Gramoxone) 2 SL	1.95 pt	0.5	Apply when weeds are succulent and less than 4 in. tall. Use precision hooded application equipment adjusted to prevent spray contact with crop plants. Add a NIS at a rate of 2 pt/100 gal of spray mix. Do not exceed 30 psi nozzle pressure or spray under conditions which may cause drift. Do not make more than 3 applications/yr.
	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spindewort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply as a hooded spray in row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. Do not exceed 0.096 lb ai/A/season, including preplant applications.
	Nutsedge, non-ALS resistant pigweed, wild radish, ragweed	halosulfuron (Sandea) 75 DF	0.5 to 1.0 oz	0.024 to 0.048	Apply between crop rows avoiding spray contact with crop. Add a NIS at 1 qt/100 gals of spray. <u>Rotational restrictions are a significant concern, see label.</u> Do not exceed 2 oz/A/crop cycle and year (includes PRE and POST applications).
	Excellent residual for pigweeds, purslane, beggarweed, and other broadleaf weeds	flumioxazin (Chateau) 51 WDG	Up to 4 oz	Up to 0.127	For row middle applications in RAISED BED (at least 24 in. wide) plasticulture. Third Party Indemnification Label Available ONLY Through The Georgia Fruit and Vegetable Growers Association. Growers must obtain label to receive the appropriate application procedures (and to be legal); failure to follow these procedures will likely result in crop death. 1. Do allow spray to come into contact with mulch. 2. Must apply before transplanting. 3. Hooded sprayer. 4. Rainfall needed after application but before transplanting.
CUCURBITS (CUCUMBER)					
Preplant	Suppression or control of most annual grasses and broadleaf weeds, full rate required for nutsedge control	metam sodium (Vapam HL) 42%	37.5 to 75 gal	15.7 to 31.5	Rates are dependent on soil type and weeds present. Apply when soil moisture near field capacity (60 to 80%). Apply through soil injection by using a rotary tiller or inject with knives no more than 4 in. apart; follow immediately with a roller to smooth and compact the soil surface or with mulch. May apply through drip irrigation prior to planting a second, third, or fourth crop on mulch. Plant back interval are often 14-21 d and can be 30 d in some environments. See label for all restrictions and additional information including fumigant management plan requirements.
	Contact kill of green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 to 2.7 pt 2.0 to 4.0 pt	0.49 to 1.0	Apply to emerged weeds but before crop emergence or transplanting. Add 1 qt NIS or 1 gal COC/100 gal spray mix. If applying over plastic, must wash off with 0.5 in of rain or irrigation prior to planting.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
CUCURBITS (CUCUMBER) (cont.)					
Preplant (cont.)	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds at least 3 d before seeding or transplanting. If applying over plastic, must wash off with 0.5 in of rain or irrigation prior to planting. Perennial weeds may require higher rate. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Transplant only. Apply prior to transplanting to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. May mix with glyphosate, see label. If applied over plastic mulch, a single 0.5 in. irrigation/rain event plus a 7 d waiting period must occur before transplanting.
	Annual broadleaf weeds including morningglory and small pigweeds	pyraflufen ethyl (ET) 0.208 L	1.0 to 2.0 fl oz	0.0016 to 0.0032	Bareground: Wait 1 day following preplant burn-down application before planting. Mulch Production. May apply over mulch; however, a single 0.5 inch irrigation/rain event plus a 7 d waiting period must occur before transplanting. Apply ET with a crop oil concentrate at 1% v/v to sensitive weeds that are less than 3 inches.
Preplant incorporated (PPI) or Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds such as pigweeds	bensulide (Prepar) 4 E	5 to 6 qt	5 to 6	Apply preplant and soil incorporate 1 in. deep before planting, or apply preemergence and follow with irrigation within 24 hr. Check replant restrictions for small grains and other crops on label.
Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds such as pigweeds	ethalfuralin (Curbit) 3 EC	1 to 1.5 pt	0.38 to 0.56	Apply immediately after seeding but before crop and weeds emerge. <u>Do not apply prior to seeding and do not incorporate. Do not use under mulch.</u> If rainfall does not occur within 2 d of application, irrigate as needed. Label does not allow application over transplants; only in row middles of transplanted crop. If applying in row middles can use higher rate, see label. Avoid applications when periods of cool, moist conditions exist prior to emergence to prevent crop injury. Injury can also be observed if planted too shallow. Suggested use rates are lower than recommended due to injury potential. See label about rotation and buffer restrictions.
		ethalfuralin +clomazone (Strategy) 2.1 L	2 to 3 pt	0.4 to 0.6 + 0.13 to 0.18	
	Suppression of annual grasses and broadleaf weeds; weak on pigweed and morningglory	clomazone (Command) 3 ME	0.4 to 1 pt	0.15 to 0.37	Apply immediately after seeding or just prior to transplanting. Seeds and root of transplants must be below the chemical barriers when planting. Command at this use rate should be only a component of a weed management system. Use lower rates on coarse soils. See label about rotation and buffer restrictions.
	Broadleaf weeds including cocklebur, jimsonweed, ragweed, smartweed, pigweed	naptalam (Alanap) 2 EC	4 to 6 qt	2 to 3	Apply to the soil surface immediately after seeding or apply POST before plants begin to vine. May be applied overtop of plants and plastic mulch. Do not mix with liquid fertilizer or pesticides. Irrigate within 3 d if no rainfall occurs. <u>Alanap is no longer being produced and grower availability is nearing its end.</u>

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
CUCURBITS (CUCUMBER) (cont.)					
Preemergence (PRE) (cont)	Nutsedge suppression, non -ALS resistant pigweed, wild radish, and ragweed control	halosulfuron (Sanda) 75 DF	0.5 to 1.0 oz	0.024 to 0.048	Apply 7 d prior to transplanting or seeding in plasticulture. Application may be made to preformed beds prior to laying plastic, do not disturb bed when laying plastic. In bareground production, apply after seeding but prior to soil cracking; wait 7 d after application before transplanting. Stunting may occur but should be short lived with no noted yield effects in favorable growing conditions. Do not apply more than 2 oz/A/crop cycle and year (includes POST and hooded applications). <u>Rotational restrictions are a significant concern, see label.</u>
Postemergence (POST)	Broadleaf weeds including pigweed, lambsquarters, and common cocklebur	naptalam (Alanap) 2 EC	4 to 6 qt	2 to 3	Apply postemergence before crop is ready to vine for PRE weed control and postemergence control of very small pigweed. Use full rate if attempting to control emerged pigweed. May be applied overtop of plants and plastic mulch. <u>Do not mix with crop oil. Do not mix with fertilizer or pesticides.</u> Irrigate within 3 d if no rainfall occurs. <u>Alanap is no longer being produced and grower availability is nearing its end.</u>
	Nutsedge, non-ALS resistant pigweed, ragweed, cocklebur, and wild radish	halosulfuron (Sanda) 75 DF	0.5 to 0.75 oz	0.024 to 0.036	Apply after seeded crop has reached the 3rd true leaf stage, but before flowering. Apply to transplants no sooner than 14 d after transplanting. May apply overtop of plastic mulch. A NIS is required at 1 qt/100 gal of spray solution. Stunting may be observed but should be short lived with no noted negative effects on yield or maturity in favorable growing conditions. <u>Rotational restrictions are a significant concern, see label.</u> Do not exceed 2 oz/A/crop cycle and year (includes PRE and hooded applications). Do not apply within 30 d of harvest.
	Annual and perennial grasses only	clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 8 fl oz 9 to 16 fl oz 9 to 16 fl oz	0.09 to 0.12 0.07 to 0.12 0.07 to 0.12	Apply to actively growing grasses. A section 24(c) state local need label allows an application of SelectMax without the addition of an adjuvant, which will greatly reduce the potential for leaf burn while giving up little weed control as long as annual grasses are less than 6 in. in height. The addition of NIS at 1 qt/100 gal spray mix is recommended for large grasses and goosegrass. For Select, a crop oil at 1 gal/100 gal spray mix is required for control. Controls annual bluegrass effectively. Do not apply within 14 d of harvest. Do not mix with other pesticides. Application of a broadleaf herbicide within 3 d of clethodim may result in reduced grass control.
		sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	Apply to actively growing annual grasses. Add 1 qt of COC/A. Adding crop oil may increase crop injury at high temperatures. Do not apply within 14 d of harvest. Do not apply more than 3 pt/A/season sethoxydim. Do not mix with other pesticides.
ROW MIDDLES ONLY Shielded spray	Residual control of annual grasses and small-seeded broadleaf weeds	trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	1 to 1.5 pt	0.5 to 0.75	Apply as a directed spray in row middle when plants have reached the 3 to 4 true leaf stage of growth. Avoid crop contact. Incorporate immediately and do not apply within 30 d of harvest. Incorporation equipment may be set to move treated soil around the plant base.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
CUCURBITS (CUCUMBER) (cont.)					
ROW MIDDLES ONLY Hooded spray	Contact kill of emerged annual weeds	paraquat (Gramoxone) 2 SL	1.95 pt	0.5	Apply when weeds are succulent and weed growth is less than 4 in. Use hooded application equipment adjusted to prevent spray contact with crop plants. Add a NIS at a rate of 2 pt/100 gal of spray mix. Do not exceed 30 psi nozzle pressure or spray under conditions which may cause drift. Do not make more than 3 applications/yr.
	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply as a hooded spray in row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. Do not exceed 0.096 lb ai/A/season, including preplant applications.
	Nutsedge, non-ALS resistant pigweed, wild radish, ragweed	halosulfuron (Sanda) 75 DF	0.5 to 1.0 oz	0.024 to 0.048	Apply between crop rows avoiding spray contact with the crop. Add a NIS at 1 qt/100 gals of spray mixture. <u>Rotational restrictions are a significant concern, see label.</u> Do not exceed 2 oz/A/crop cycle and year (includes PRE and POST applications).
	Excellent residual control for pigweeds, purslane, beggarweed, and other broadleaf weeds	flumioxazin (Chateau) 51 WDG	Up to 4 oz	Up to 0.127	For row middle applications in RAISED BED (at least 24 in. wide) plasticulture. Third Party Indemnification Label available ONLY through the Georgia Fruit and Vegetable Growers Association. Growers must obtain label to receive the appropriate application procedures (and to be legal); failure to follow these procedures will likely result in crop death. 1. Do allow spray to come into contact with mulch. 2. Must apply before transplanting. 3. Hooded sprayer. 4. Rainfall needed after application but before transplanting.
CUCURBITS (PUMPKIN)					
Preplant	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 to 2.7 pt 2.0 to 4.0 pt	0.49 to 1.0	Apply to emerged weeds but before crop emergence or transplanting. Add NIS at 1 qt/100 gal spray mix or 1 gal approved COC/100 gal spray mix.
	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds at least 3 d before planting. Perennial weeds may require higher rate. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Transplants only. Apply prior to transplanting to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. May mix with glyphosate, see label. If applied over plastic mulch, a single 0.5 in. irrigation/rain event plus a 7 d waiting period must occur before transplanting.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
CUCURBITS (PUMPKIN) (cont.)					
Preplant (cont.)	Annual broadleaf weeds including morningglory and small pigweeds	pyraflufen ethyl (ET) 0.208 L	1.0 to 2.0 fl oz	0.0016 to 0.0032	Bareground: Wait 1 day following preplant burn-down application before planting. Mulch Production. May apply over mulch; however, a single 0.5 inch irrigation/rain event plus a 7 d waiting period must occur before transplanting. Apply ET with a crop oil concentrate at 1% v/v to sensitive weeds that are less than 3 inches.
Preplant incorporated (PPI) or Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds such as pigweeds	bensulide (Prefar) 4 E	5 to 6 qt	5 to 6	Apply preplant and soil incorporate 1 in. deep before planting, or apply preemergence and follow with irrigation within 24 hr. Check replant restrictions for small grains and other crops on label.
Preemergence (PRE)	Annual grass and broadleaf weeds; yellow nutsedge suppression; partial control of Texas millet	S-metolachlor (Dual Magnum) 7.62 EC	0.75 to 1.3 pt	0.7 to 1.2	Apply before weeds emerge as an inter-row or inter-hill application. Leave 1 ft of untreated area over the row or 6 in. on either side of the planted hill and any pumpkin foliage. Do not apply within 30 d of harvest. Use lower rates on sandy soils and soils with low organic matter.
	Annual grasses and small-seeded broadleaf weeds such as pigweeds	ethalfuralin (Curbit) 3 EC	1 pt	0.38	Apply immediately after seeding but before crop and weeds emerge. <u>Do not apply prior to seeding and do not incorporate. Do not use under mulch.</u> If rainfall does not occur within 2 d of application, irrigate as needed. Can not apply over transplants; only in row middles of transplanted crop. If applying in row middles can use higher rate, see label. Avoid applications when periods of cool, moist conditions exist prior to emergence to prevent crop injury. Injury can also be observed if planted too shallow. Suggested use rates are lower than recommended due to injury potential. See label about buffer and rotation restrictions. <u>Certain pumpkin cultivars may have potential for injury or loss due to this ethalfuralin; therefore, low rates are recommended.</u>
		ethalfuralin + clomazone (Strategy) 2.1 L	2 pt	0.4 + 0.13	
	Yellow and purple nutsedge suppression, non -ALS resistant pigweed, wild radish, and ragweed control	halosulfuron (Sandea) 75 DF	0.5 to 0.75 oz	0.024 to 0.036	In bareground production, apply after seeding but prior to soil cracking; wait 7 d after application before transplanting. In plasticulture, apply 7 d prior to transplanting or seeding. Application may be made to preformed beds prior to laying plastic, do not disturb bed when laying plastic. Stunting will likely occur; on sandy soils delayed maturity is often noted. Use lower rates in cool conditions or on sandy soils. Do not apply more than 1 oz/A/crop cycle and year. Do not apply more than 1 oz/A/crop cycle and year (includes POST and hooded applications). <u>Rotational restrictions are a significant concern, see label.</u>
Postemergence (POST)	Annual and perennial grasses only	clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 8 fl oz 9 to 16 fl oz 9 to 16 fl oz	0.09 to 0.12 0.07 to 0.12 0.07 to 0.12	Apply to actively growing grasses. For Select, add 1 gal COC/100 gal spray mix. A section 24(c) state local need label allows an application of SelectMax without the addition of an adjuvant, which will greatly reduce the potential for leaf burn while giving up little weed control as long as annual grasses are less than 6 in. in height. The addition of NIS at 1 qt/100 gal spray mix is recommended for large grasses and goosegrass. For Select, a crop oil at 1 gal/100 gal spray mix is required for control. Controls annual bluegrass. Do not apply within 14 d of harvest. Do not mix with other pesticides. Application of a broadleaf herbicide within 3 d of clethodim may result in reduced grass control.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
CUCURBITS (PUMPKIN) (cont.)					
Postemergence (POST) (cont.)	Annual and perennial grasses only (cont.)	sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	Apply to actively growing annual grasses. Add 1 qt of COC/A. Adding crop oil may increase crop injury at high temperatures. Do not apply within 14 d of harvest. Do not apply more than 3 pt/A/season sethoxydim. Do not mix with other pesticides.
	Nutsedge, non-ALS resistant pigweed, ragweed, cocklebur, and wild radish	halosulfuron (Sanda) 75 DF	0.5 oz	0.024	Apply after seeded crop has reached the 4th to 5th true leaf stage but before flowering. Apply to transplants no sooner than 14 d after transplanting. May be applied overtop of plastic mulch. A NIS is required at 1 qt/100 gal of spray solution. <u>Significant plant stunting may be observed depending on environment; vigorous pumpkin plants are more tolerant.</u> A delay in crop maturity may occur, especially under cool growing conditions. <u>Suggest that halosulfuron be applied as a directed application to minimize contact with crop.</u> Rotational restrictions are a significant concern, see label. Do not exceed 1 oz/A/ crop cycle and 2 oz/year (includes PRE and row middle applications).
ROW MIDDLES ONLY Shielded spray	Residual control of annual grasses and small-seeded broadleaf weeds	trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	1 to 1.5 pt	0.5 to 0.75	Apply as a directed spray in row middle when plants are in 3 to 4 leaf stage. Avoid contact with crop. Incorporate immediately and do not apply within 30 d of harvest. Incorporation equipment may be set to move treated soil around the base of the plants.
	Nutsedge, wild radish, non-ALS resistant pigweed, ragweed	halosulfuron (Sanda) 75 DF	0.5 to 1.0 oz	0.024 to 0.048	Apply to row middles as a PRE or POST spray. Minimize spray contact on the crop. For POST applications, add a NIS at 1 qt/100 gal spray solution. <u>Rotational restrictions are a significant concern, see label.</u> Do not exceed 1 oz/A/ crop cycle and 2 oz/year (includes PRE and POST applications). Do not apply with in 30 d of harvest.
ROW MIDDLES ONLY Hooded spray	Contact kill of emerged annual weeds	paraquat (Gramoxone) 2 SL	1.95 pt	0.5	Apply when weeds are succulent and weed growth is less than 4 in. Use precision hood application equipment adjusted to prevent spray contact with crop plants. Add a NIS at a rate of 2 pt/100 gal of spray mix. Do not exceed 30 psi nozzle pressure or spray under conditions which may cause drift. Do not make more than 3 applications/yr.
	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.
	Annual broad-leaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply as a hooded spray in row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. Do not exceed 0.096 lb ai/A/ season, including preplant applications. May mix with glyphosate, see label.
	Excellent residual control for pigweeds, purslane, beggarweed, and other broadleaf weeds	flumioxazin (Chateau) 51 WDG	Up to 4 oz	Up to 0.127	For row middle applications in RAISED BED (at least 24 in. wide) plasticulture. Third Party Indemnification Label available ONLY through the Georgia Fruit and Vegetable Growers Association. Growers must obtain label to receive the appropriate application procedures (and to be legal); failure to follow these procedures will likely result in crop death. 1. Do allow spray to come into contact with mulch. 2. Must apply before transplanting. 3. Hooded sprayer. 4. Rainfall needed after application but before transplanting.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
CUCURBITS (SQUASH)					
Preplant	Suppression or control of most annual grasses and broadleaf weeds, full rate required for nut-sedge control	metam sodium (Vapam HL) 42%	37.5 to 75 gal	15.7 to 31.5	Rates are dependent on soil type and weeds present. Apply when soil moisture is near field capacity (60 to 80%). Apply through soil injection using a rotary tiller or inject with knives no more than 4 in. apart; follow immediately with a roller to smooth and compact the soil surface or with mulch. May apply through drip irrigation prior to planting a 2nd, 3rd, or 4th crop on mulch. Plant back interval is often 14-21 d and can be 30 d in some environments, see label for restrictions including fumigant management plan requirements.
	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 to 2.7 pt 2.0 to 4.0 pt	0.49 to 1.0	Apply to emerged weeds but before crop emergence or transplanting. Add 1 qt NIS or 1 gal COC/100 gal spray mix. If applying over plastic, wash off with 0.5 in of rain or irrigation prior to planting.
	Most emerged weeds except for resistant pigweed, stale seedbed application	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds at least 3 d before seeding or transplanting. If applying over plastic, must wash off with 0.5 in of rain or irrigation prior to planting. Perennial weeds may require higher rate. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Transplants only. Apply prior to transplanting to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. May mix with glyphosate, see label. If applied over plastic mulch, a single 0.5 in. irrigation/rain event plus a 7 d waiting period must occur before transplanting.
	Annual broadleaf weeds including morningglory and small pigweeds	pyraflufen ethyl (ET) 0.208 L	1.0 to 2.0 fl oz	0.0016 to 0.0032	Bareground: Wait 1 day following preplant burndown application before planting. Mulch Production. May apply over mulch; however, a single 0.5 inch irrigation/rain event plus a 7 d waiting period must occur before transplanting. Apply ET with a crop oil concentrate at 1% v/v to sensitive weeds that are less than 3 inches.
Preplant incorporated (PPI) or Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds such as pigweeds	bensulide (Prefar) 4 E	5 to 6 qt	5 to 6	Apply preplant and soil incorporate 1 in deep before planting, or apply preemergence and follow with irrigation within 24 hr. Check replant restrictions for small grains and other crops on label.
Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds	ethalfluralin (Curbit) 3 EC	1 to 1.5 pt	0.36 to 0.56	Apply immediately after seeding but before crop and weeds emerge. <u>Do not apply prior to seeding and do not incorporate. Do not use under mulch.</u> If rainfall does not occur within 2 d of application, irrigate as needed. Label does not allow applications over transplants; only in row middles of transplanted crop. If applying in row middles can use higher rate, see label. Avoid applications when periods of cool, moist conditions exist prior to emergence to prevent crop injury. Injury can also be observed if planted too shallow. Suggested use rates are lower than recommended due to injury potential. See label about rotation and buffer restrictions. Herbicide sensitivity may vary between varieties.
		ethalfluralin +clomazone (Strategy) 2.1 L	2 to 3 pt	0.4 to 0.6 + 0.13 to 0.18	
	Suppression of annual grasses and broadleaf weeds; weak on pigweed and morningglory	clomazone (Command) 3 ME	0.67 to 1.3 pt	0.25 to 0.48	Apply immediately after seeding or prior to transplanting. Seeds and roots of transplants must be below the chemical barriers when planting. Command should only be applied between rows when squash is grown on plastic. Some cultivars may be sensitive to Command. Use lower rates on coarse soils. See label about rotation restrictions.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
CUCURBITS (SQUASH) (cont.)					
Post-emergence (POST)	Annual and perennial grasses only	clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 8 fl oz 9 to 16 fl oz 9 to 16 fl oz	0.09 to 0.12 0.07 to 0.12 0.07 to 0.12	Apply to actively growing grasses. A section 24(c) state local need label allows an application of SelectMax without the addition of an adjuvant, which will greatly reduce the potential for leaf burn while giving up little weed control as long as annual grasses are less than 6 in. in height. The addition of NIS at 1 qt/100 gal spray mix is recommended for large grasses and goosegrass. For Select, a crop oil at 1 gal/100 gal spray mix is required for control. Controls annual bluegrass effectively. Do not apply within 14 d of harvest. Do not mix with other pesticides. Application of a broadleaf herbicide within 3 d of clethodim may result in reduced grass control.
		sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	Apply to actively growing annual grasses. Add 1 qt of COC/A. Adding crop oil may increase crop injury at high temps. Do not apply within 14 d of harvest. Do not apply more than 3 pt/A/season of sethoxydim. Do not mix with other pesticides.
ROW MIDDLES ONLY Shielded spray	Residual annual grasses and small-seeded broadleaf weeds	trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	1 to 1.5 pt	0.5 to 0.75	Apply as a directed spray in row middle when plants have reached the 3 to 4 true leaf stage of growth. Avoid contact with crop. Incorporate immediately and do not apply within 30 d of harvest. Incorporation equipment may be set to move treated soil around the plant base.
	Yellow and purple nutsedge, wild radish, non -ALS resistant pigweed, ragweed	halosulfuron (Sandea) 75 DF	0.5 to 1.0 oz	0.024 to 0.048	Apply to row middles as a PRE or POST spray. Do not allow spray to contact the crop. In plasticulture, do not allow spray to contact plastic. For postemergence applications, add a NIS at 1 qt/100 gal spray solution. <u>Rotational restrictions are a significant concern, see label.</u> Do not apply more than 1 oz/A/crop cycle and 2 oz/yr.
ROW MIDDLES ONLY Hooded spray	Contact kill of emerged annual weeds	paraquat (Gramoxone) 2 SL	1.95 pt	0.5	Apply when weeds are succulent and weed growth is less than 4 in. Use precision hooded spray application equipment adjusted to prevent spray contact with crop plants. Add a NIS at a rate of 2 pt/100 gal of spray mix. Do not exceed 30 psi nozzle pressure or spray under conditions which may cause drift. Do not make more than 3 applications/yr.
	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury to crop, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply as a row middle hooded spray. Do not allow spray to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. Do not exceed 0.096 lb ai/A/season, including preplant applications.
	Excellent residual control for pigweeds, purslane, beggarweed, and other broadleaf weeds	flumioxazin (Chateau) 51 WDG	Up to 4 oz	Up to 0.127	For row middle applications in RAISED BED (at least 24 in. wide) plasticulture. Third Party Indemnification Label available ONLY through the Georgia Fruit and Vegetable Growers Association. Growers must obtain label to receive the appropriate application procedures (and to be legal); failure to follow these procedures will likely result in crop death. 1. Do allow spray to come into contact with mulch. 2. Must apply before transplanting. 3. Hooded sprayer. 4. Rainfall needed after application but before transplanting.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
CUCURBITS (WATERMELON)					
Preplant	Suppression or control of most annual grasses and broadleaf weeds, full rate required for nutsedge control	metam sodium (Vapam HL) 42%	37.5 to 75 gal	15.7 to 31.5	Rates are dependent on soil type and weeds present. Apply when soil moisture is near field capacity (60 to 80%). Apply through soil injection using a rotary tiller or inject with knives no more than 4 in. apart; follow immediately with a roller to smooth and compact the soil surface or with mulch. May apply through drip irrigation prior to planting a second, third, or fourth crop on mulch. Plant back interval is often 14-21 d and can be 30 d in some environments. See label for all restrictions including fumigant management plan requirements.
	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 to 2.7 pt 2.0 to 4.0 pt	0.49 to 1.0	Apply to emerged weeds in 20 gal of water before crop emergence or transplanting. Add NIS at 1 qt/100 gal spray mix or 1 gal approved COC/100 gal spray mix. If applying over plastic, must wash off with 0.5 in of rain or irrigation prior to planting.
	Most emerged weeds except for resistant pigweed, stale seedbed application	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds at least 3 d before seeding or transplanting. If applying over plastic, must wash off with 0.5 in of rain or irrigation prior to transplanting or seeding. Perennial weeds may require higher rates. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Transplants only. Apply prior to transplanting when weeds are less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. May mix with glyphosate, see label. If applied over plastic mulch, a single 0.5 in. irrigation/rain event plus a 7 d waiting period must occur before transplanting.
	Annual broadleaf weeds including morningglory and small pigweeds	pyraflufen ethyl (ET) 0.208 L	1.0 to 2.0 fl oz	0.0016 to 0.0032	Bareground: Wait 1 day following preplant burndown application before planting. Mulch Production. May apply over mulch; however, a single 0.5 inch irrigation/rain event plus a 7 d waiting period must occur before transplanting. Apply ET with a crop oil concentrate at 1% v/v to sensitive weeds that are less than 3 inches.
Preplant incorporated (PPI) or Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds such as pigweeds	bensulide (Prefar) 4 E	5 to 6 qt	5 to 6	Apply preplant and soil incorporate 1 in deep before planting, or apply preemergence and follow with irrigation within 24 hr. Check replant restrictions for small grains and other crops on label.
Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds such as pigweeds	ethalfuralin (Curbit) 3 EC	1.0 to 1.5 pt	0.38 to 0.56	Apply immediately after seeding but before crop and weeds emerge. <u>Do not apply prior to seeding and do not incorporate. Do not use under mulch.</u> If rainfall does not occur within 2 d of application, irrigate as needed. Label does not allow application over transplants; only in row middles of transplanted crop. If applying in row middles can use higher rate, see label. Avoid applications when periods of cool, moist conditions exist prior to emergence to prevent crop injury. Injury can also be observed if planted too shallow. Suggested use rates are lower than recommended due to injury potential. See label about rotation and buffer restrictions.
		ethalfuralin +clomazone (Strategy) 2.1 L	2 to 3 pt	0.4 to 0.6 + 0.13 to 0.18	

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
CUCURBITS (WATERMELON) (cont.)					
Preemergence (PRE) (cont.)	Suppression of annual grasses and broadleaf weeds; weak on pigweed and morningglory	clomazone (Command) 3 ME	0.4 to 0.67 pt	0.15 to 0.25	Apply immediately after seeding or just prior to transplanting. Seeds and roots of transplants must be below the chemical barriers when planting. See label for rotation restrictions. Command at this use rate should be only a component of a weed management system.
	Broadleaf weeds including cocklebur, jimsonweed, ragweed, smartweed, and pigweed	naptalam (Alanap) 2 EC	4 to 6 qt	2 to 3	Apply to the soil surface immediately after seeding or apply POST before plants begin to vine. May be applied overtop of plants and plastic mulch. Do not mix with liquid fertilizer or pesticides. Irrigate within 3 d if no rainfall occurs. <u>Alanap is no longer being produced and grower availability is nearing its end.</u>
	Nutsedge suppression, non -ALS resistant pigweed, wild radish and ragweed control	halosulfuron (Sanda) 75 DF	0.5 to 0.75 oz	0.024 to 0.036	Apply after seeding but before cracking or apply 7d prior to transplanting crop. Application may be made to preformed beds prior to laying of plastic, do not disturb beds. If application is made prior to planting, wait 7 d after application to seed or transplant. Stunting may occur but should be short lived with no noted negative effects on yield or maturity in favorable growing conditions. Rotational restrictions are a significant concern, see label. Do not exceed 1 oz/A/crop and 2 oz/A/yr.
	Broadleaf weeds including morningglory and pigweed	terbacil (Sinbar) 80 WP	2 to 4 oz	0.1 to 0.2	Apply prior to transplanting or immediately after seeding. DO NOT apply overtop of the crop. May be applied under plastic mulch (avoid soil movement while laying plastic). May also be applied over mulch prior to transplanting or punching holes in the mulch. Do not apply after transplanting or after holes are punched in the mulch. If applied over mulch, must wash off mulch surface with at least 0.5 in rain/irrigation in a single event prior to punching holes or transplanting. May be applied to row middles. Use lower rates on coarse soils. Use as part of a weed control system.
Postemergence (POST)	Broadleaf weeds including pigweed, lambsquarters, and common cocklebur	naptalam (Alanap) 2 EC	4 to 6 qt	2 to 3	Apply postemergence before crop is ready to vine for PRE weed control and POST control of very small pigweed. Use full rate if attempting to control emerged pigweed. May be applied overtop of plants and plastic mulch. <u>Do not mix with crop oil. Do not mix with fertilizers or pesticides.</u> Irrigate within 3 d if no rainfall occurs. <u>Alanap is no longer being produced and grower availability is nearing its end.</u>
	Annual and perennial grasses only	clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 8 fl oz 9 to 16 fl oz 9 to 16 fl oz	0.09 to 0.12 0.07 to 0.12 0.07 to 0.12	Apply to actively growing grasses. A section 24(c) state local need label allows an application of SelectMax without the addition of an adjuvant, which will greatly reduce the potential for leaf burn while giving up little weed control as long as annual grasses are less than 6 in. in height. The addition of NIS at 1 qt/100 gal spray mix is recommended for large grasses and goosegrass. For Select, a crop oil at 1 gal/100 gal spray mix is required for control. Controls annual bluegrass effectively. Do not apply within 14 d of harvest. Do not mix with other pesticides. Application of a broadleaf herbicide within 3 d of clethodim may result in reduced grass control.
		sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	Apply to actively growing annual grasses. Add 1 qt of COC/A. Adding crop oil may increase crop injury at high temps. Do not apply within 14 d of harvest. Do not apply more than 3 pt/A/season sethoxydim. Do not mix with other pesticides.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
CUCURBITS (WATERMELON) (cont.)					
ROW MIDDLES ONLY Shielded spray	Annual grasses and small-seeded broadleaf weeds	trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	1 to 1.5 pt	0.5 to 0.75	Apply as a directed spray in row middle when plants have reached the 3 to 4 true leaf stage of growth. Avoid contact with crop. Incorporate immediately and do not apply within 60 d of harvest. Incorporation equipment may be set to move treated soil around the base of the plants.
	Nutsedge, wild radish, non-ALS resistant pigweed, ragweed	halosulfuron (Sanda) 75 DF	0.5 to 1.0 oz	0.024 to 0.048	Apply to row middles as a preemergence or postemergence spray. Do not allow spray to contact the crop. In plasticulture, do not allow spray to contact plastic. Do not apply within 57 d of harvest. For postemergence applications, add a NIS at 1 qt/100 gal spray solution. <u>Rotational restrictions are a significant concern, see label.</u> Do not exceed 1 oz/A/crop and 2 oz/A/yr.
ROW MIDDLES ONLY Hooded spray	Contact kill of emerged annual weeds	paraquat (Gramoxone) 2 SL	1.95 pt	0.5	Apply when weeds are succulent and weed growth is less than 4 in. Use hooded application equipment adjusted to prevent spray contact with crop plants. Add a NIS at a rate 2 pt/100 gal of spray mix. Do not exceed 30 psi nozzle pressure or spray under conditions which may cause drift. Do not make more than 3 applications/yr.
	Most emerged weeds excluding resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply as a hooded spray in row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. Do not exceed 0.096 lb ai/A/season, including preplant applications.
	Excellent residual control for pigweeds, purslane, beggarweed, and other broadleaf weeds	flumioxazin (Chateau) 51 WDG	Up to 4 oz	Up to 0.127	For row middle applications in RAISED BED (at least 24 in. wide) plasticulture. Third Party Indemnification Label available ONLY through the Georgia Fruit and Vegetable Growers Association. Growers must obtain label to receive the appropriate application procedures (and to be legal); failure to follow these procedures will likely result in crop death. 1. Do allow spray to come into contact with mulch. 2. Must apply before transplanting. 3. Hooded sprayer. 4. Rainfall needed after application but before transplanting.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
EGGPLANT					
Preplant	Suppression or control of most annual grasses and broadleaf weeds, full rate required for nutsedge control	metam sodium (Vapam HL) 42%	37.5 to 75 gal	15.7 to 31.5	Rates are dependent on soil type and weeds present. Apply when soil moisture is near field capacity (60 to 80%). Apply through soil injection using a rotary tiller or inject with knives no more than 4 in. apart; follow immediately with a roller to smooth and compact the soil surface or with mulch. May apply through drip irrigation prior to planting a second, third, or fourth crop on mulch. Plant back interval is often 14-21 d and can be 30 d in some environments. Chloropicirn (150 lb/A broadcast) will also be needed to obtain nutsedge control when laying first crop mulch. See label restrictions including fumigant management plan requirements.
	Contact kill of all green foliage; stale bed application	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 to 2.7 pt 2.0 to 4.0 pt	0.49 to 1.0	Apply to emerged weeds but before crop emergence or transplanting. Add 1 qt NIS or 1 gal COC/100 gal spray mix. If applying over plastic, must wash off with 0.5 in of rain or irrigation prior to planting.
	Most emerged weeds except for resistant pigweed, stale seedbed application	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds at least 3 d before seeding or transplanting. If applying over plastic, must wash off with 0.5 in of rain or irrigation prior planting. Perennial weeds may require higher rates. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Transplants only. Apply prior to transplant to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. May mix with glyphosate, see label. If applied over plastic mulch, a single 0.5 in. irrigation/rain event plus a 7 d waiting period must occur before transplanting.
	Annual broadleaf weeds including morningglory and small pigweeds	pyraflufen ethyl (ET) 0.208 L	1 to 2 fl oz	0.0016 to 0.0032	Bareground: Wait 1 day following preplant burn-down application before planting. Mulch Production. May apply over mulch; however, a single 0.5 inch irrigation/rain event plus a 7 d waiting period must occur before transplanting. Apply ET with a crop oil concentrate at 1% v/v to sensitive weeds that are less than 3 inches.
Preplant incorporated (PPI)	Annual grasses and some broadleaf weeds such as ragweed, smartweed, and galinsoga	napropamide (Devrinol) 50 DF	2 to 4 lb	1 to 2	Transplants only. Label notes to apply preplant and incorporate into the soil 1 to 2 in. before transplanting. Use the lower rate on coarse soils. See label about rotational concerns, including small grains. A label is being developed for use in mulch systems.
	Annual grasses and small-seeded broadleaf weeds	trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	≤ 1 pt ≤ 1 pt	≤ 0.5	Apply and incorporate before transplanting. Avoid transplanting until temperatures have warmed up in late spring. BE AWARE that any tillage practices that concentrates trifluralin in the root zone will cause significant stunting and delayed maturity. <u>Eggplant tolerance to trifluralin is marginal at best.</u> NOT RECOMMENDED FOR MULCH SYSTEMS!
Preplant incorporated (PPI) or Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds	bensulide (Prefar) 4 E	5 to 6 qt	5 to 6	Apply PPI (1 in incorporation) or PRE after planting. With PRE application, irrigate immediately after application. See label for more directions and rotational restrictions.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
EGGPLANT (cont.)					
Postemergence (POST)	Residual annual grass and small-seeded broadleaf weed control	DCPA (Dacthal) W-75 6 F	6 to 8 lb 6 to 8 pt	4.5 to 6	Can be applied over-the-top of transplants 4 to 6 weeks after transplanting. Can also be applied after direct seeded plants that are 4 to 6 in tall. Does not control emerged weeds.
	Annual and perennial grasses only	clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 8 fl oz 9 to 16 fl oz 9 to 16 fl oz	0.09 to 0.12 0.07 to 0.12 0.07 to 0.12	Apply to actively growing grasses. A section 24(c) state local need label allows an application of SelectMax without the addition of an adjuvant, which will greatly reduce the potential for leaf burn while giving up little weed control as long as annual grasses are less than 6 in. in height. The addition of NIS at 1 qt/100 gal spray mix is recommended for large grasses and goosegrass. For Select, a crop oil at 1 gal/100 gal spray mix is required for control. Controls annual bluegrass. Do not apply within 20 d of harvest. Do not mix with other pesticides. Application of a broadleaf herbicide within 3 d of clethodim may result in reduced grass control.
		sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	Apply to actively growing annual grasses. Add 1 qt of COC/A. Adding crop oil may increase crop injury at high temperatures. Do not apply within 20 d of harvest. Do not apply more than 4.5 pt/A/season. Do not mix with other pesticides.
ROW MIDDLES ONLY Shielded spray	Nutsedge, wild radish, non-ALS resistant pigweed, ragweed	halosulfuron (Sandea) 75 DF	0.5 to 1.0 oz	0.024 to 0.048	Apply to row middles as a preemergence or post-emergence spray. Do not allow spray to contact the crop. In plasticulture, do not allow spray to contact plastic. Do not apply within 30 d of harvest. Add a NIS at 1 qt/100 gal spray solution. Rotational restrictions are a significant concern, see label.
ROW MIDDLES ONLY Hooded spray	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 pt 2.0 pt	0.5	Apply when weeds are succulent and weed growth is less than 4 in. Use hooded application equipment adjusted to prevent spray contact with crop plants. Add a NIS at a rate 2 pt/100 gal of spray mix. Do not exceed 30 psi nozzle pressure or spray under conditions which may cause drift. Do not make more than 3 applications/season.
	Most emerged weeds excluding resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. Do not apply within 14 d of harvest. The need for an adjuvant depends on brand used.
	Excellent residual control for pigweeds, purslane, beggarweed, and other broadleaf weeds	flumioxazin (Chateau) 51 WDG	Up to 4 oz	Up to 0.127	For row middle applications in RAISED BED (at least 24 in. wide) plasticulture. Third Party Indemnification Label available ONLY through the Georgia Fruit and Vegetable Growers Association. Growers must obtain label to receive the appropriate application procedures (and to be legal); failure to follow these procedures will likely result in crop death. 1. Do allow spray to come into contact with mulch. 2. Must apply before transplanting. 3. Hooded sprayer. 4. Rainfall needed after application but before transplanting.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply as a hooded spray in row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. Do not exceed 0.096 lb ai/A/season, including preplant applications.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
GARLIC					
Preplant	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.7 to 2.7 pt 2.5 to 4.0 pt	0.64 to 1.0	Apply to emerged weeds but before crop emergence or transplanting. Add 1 qt NIS or 1 gal COC/100 gal spray mix.
	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds at least 3 d before seeding or transplanting. Perennial weeds may require higher rate. The need for an adjuvant depends on brand used.
Preplant incorporated (PPI) or Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds	bensulide (Prefar) 4 E	5 to 6 qt	5 to 6	Apply PPI to a depth of 1 inch or apply PRE after planting. With PRE applications, irrigate immediately. Poor growing conditions may increase the potential for reduced stands and vigor.
Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds	pendimethalin (Prowl) 3.3 EC (Prowl H20) 3.8 AS	1.8 to 2.4 pt 1.5 to 2.0 pt	0.75 to 1.0 0.72 to 0.95	Apply PRE after planting but before weed and crop emergence. Pendimethalin can be applied sequentially by applying PRE followed by a POST application, see label. Does not control emerged weeds. Use lower rates on coarse soils. Do not apply within 45 d of harvest.
Postemergence (POST)	Residual control of annual grasses and small-seeded broadleaf weeds	pendimethalin (Prowl) 3.3 EC (Pendimax) 3.3 EC (Prowl H20) 3.8 AS	1.8 to 2.4 pt 1.2 to 2.4 pt 1.5 to 2.0 pt	0.75 to 1.0 0.5 to 1.0 0.72 to 0.95	Apply to garlic in the 1- to 5-leaf stage but before weed emergence. Can be applied sequentially by applying a PRE followed by a POST application, see label. Use lower rates on coarse soils. Do not apply within 45 d of harvest.
		oxyfluorfen (Goal 2XL) 2EC (Galigan) 2E (Goaltender) 4F ((Galigan H20) 4F	0.5 to 2 pt 0.5 to 2 pt 0.25 to 1 pt 0.25 to 1 pt	0.125 to 0.5	Seeded dry bulb only. Apply 8 fl oz of Goal 2 XL or Galigan 2 E (4 oz for Goaltender) to seeded garlic that has at least two true leaves. Multiple applications may be made but do not exceed total of 2 pt/A (1 pt/A for Goaltender). Do not apply within 60 d of harvest. Transplant dry bulb only. Suggest making a single application using up to 2.0 pt/A of Goal 2XL or Galigan (1.0 pt/A of Goaltender) within 2 d of transplanting but after an irrigation to seal the soil around the root ball. <u>Do not wait longer than 2 d to make this application.</u> Do not exceed 2 pt/A of Goal 2XL or Galigan (1 pt/A of Goaltender) per crop season. <u>A program with Prowl has shown excellent season long control.</u> Do not apply within 60 d of harvest.
	Residual control of annual grasses and small-seeded broadleaves	dimethenamid -P (Outlook) 6 EC	12 fl oz	0.56	Apply after 2 leaf stage. If garlic is transplanted, wait until soil has settled around the plants and the transplants have had several d to recover. Application may be split, see label for details. Do not apply within 30 days of harvest.
Annual and perennial grasses only		clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 16 fl oz 9 to 32 fl oz 9 to 32 fl oz	0.09 to 0.25 0.07 to 0.25 0.07 to 0.25	Apply to actively growing grasses. For Select add 1 gal COC/100 gal spray mix. Adding crop oil may increase the likelihood of crop injury at high temperatures. For SelectMax add 1qt NIS per 100 gal spray mix. Do not apply within 45 d of harvest. Effective on annual bluegrass. Do not mix with other pesticides. Application of a broadleaf herbicide within 3 d of clethodim may result in reduced grass control.
		fluazifop-P-butyl (Fusilade DX) 2 EC	6 to 16 fl oz	0.1 to 0.25	Apply to actively growing grasses. Add 1 gal COC or 1 qt NIS/100 gal spray mix. Adding crop oil may increase crop injury at high temperatures. Do not apply within 45 d of harvest. Do not mix with other pesticides. Do not apply more than 48 oz/A/season.
		sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	Apply to actively growing grasses. Add 1 qt of COC/A. Adding crop oil may increase crop injury at high temperatures. Do not apply within 30 d of harvest. Do not apply more than 4.5 pt/A/season. Do not mix with other pesticides.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
GARLIC (cont.)					
ROW MIDDLES ONLY Hooded spray	Most emerged weeds excluding resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spindewort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.031	Apply as a hooded spray in row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix.
GREENS (COLLARD, KALE, MUSTARD, TURNIP)					
Recommended Herbicide Uses in Specific Greens		Crop			
Herbicide	Application Method*	Collard	Kale	Mustard	Turnip
paraquat (numerous)	Preplant	X			X
glyphosate (Roundup, others)	Preplant	X	X	X	X
bensulide (Prefar)	PPI or PRE	X	X	X	
trifluralin (Treflan HFP, others)	PPI	X	X	X	X
DCPA (Dacthal)	PRE or PPI	X	X	X	X
clethodim (Select, SelectMax, TapOut)	POST	X	X	X	X
clopyralid (Stinger)	POST	X	X	X	X
S-metolachlor	POST	X			
sethoxydim (Poast)	POST	X	X	X	
carfentrazone (Aim EC)	Row middles only	X	X	X	X
glyphosate (Roundup, others)	Row middles only	X	X	X	X

*PPI = preplant incorporated; PRE = preemergence; POST = postemergence.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
GREENS (COLLARD, KALE, MUSTARD, TURNIP) (cont.)					
Preplant	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 to 2.7 pt 2.0 to 4.0 pt	0.49 to 1.0	Collard and turnip only. Apply to emerged weeds but before crop emergence or transplanting. Add 1 qt NIS or 1 gal COC/100 gal spray mix.
	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds at least 3 d before seeding or transplanting. Perennial weeds may require higher rates. Do not feed crop residue to livestock for 8 weeks following treatment. The need for an adjuvant depends on brand used.
Preplant incorporated (PPI)	Annual grasses and small-seeded broadleaf weeds	trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	≤ 1 to 1.5 pt	≤ 0.5 to 0.75	Apply and incorporate 2 in deep before planting. <u>Lower than labeled rates (< 1 pt/A) are needed on sandier soils with low organic matter during cool wet conditions.</u> Incorporate within 8 hr. of application. Do not use on turnip roots that are to be consumed.
Preplant incorporated (PPI) or Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds	DCPA (Dacthal) W-75 6 F	≤ 6 to 8 lb ≤ 6 to 8 pt	≤ 4.5 to 6	Apply immediately after seeding. May also be incorporated. Does not control emerged weeds. Also labeled for broccoli rabb, mizuna, mustard spinach, hanover salad, and rape greens. <u>Lower than labeled use rates on seeded crops may be needed for sandier soils during cool wet conditions.</u>
Postemergence (POST)	A few broadleaf weeds including clover, sowthistle, cocklebur, jimson-weed, ragweed	clopyralid (Stinger) 3 EC	0.3 to 0.5 pt	0.11 to 0.19	Also labeled on mizuna, mustard spinach, and rape. Apply to crop when weeds are small and actively growing. Will control most legumes. For kale, collards, mustard and turnip roots do not apply within 30 d of harvest. For turnip tops, do not apply within 15 d of harvest. One application/yr. See label for rotational issues. <u>Minor mustard green injury has been observed in some research trials.</u> See label about rotation restrictions.
	Annual and perennial grasses	clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	9 to 8 fl oz 9 to 16 fl oz 9 to 16 fl oz	0.09 to 0.13 0.07 to 0.12 0.07 to 0.12	Apply to actively growing grasses. A section 24(c) state local need label allows an application of SelectMax without the addition of an adjuvant, which will greatly reduce the potential for leaf burn while giving up little weed control as long as annual grasses are less than 6 in. in height. The addition of NIS at 1 qt/100 gal spray mix is recommended for large grasses and goosegrass. For Select, a crop oil at 1 gal/100 gal spray mix is required for control. Controls annual bluegrass. Do not apply within 14 d of harvest. Do not apply within 30 d of harvest for turnip grown for root. Do not mix with other pesticides. Application of a broadleaf herbicide within 3 d of clethodim may result in reduced grass control.
		sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	Not labeled on turnip. Apply actively growing annual grasses. Add 1 qt of COC/A. Adding crop oil may increase crop injury at high temperatures. Do not apply within 30 d of harvest except for mustard, which may be harvested 14 d after application. Do not apply more than 3 pt/A/season. Do not mix with other pesticides.
	Annual grasses and broadleaf weeds, yellow nutsedge suppression; partial control of Texas millet	S-metolachlor (Dual Magnum) 7.62 EC	10 to 14 fl oz	0.6 to 0.83	THIS IS FOR COLLARDS ONLY. TRANSPLANTS: After transplanting into bare soil, irrigate to seal soil around root ball. 5 to 10 d after sealing soil, apply Dual Magnum overtop. If applying in mulched systems, apply 10 d after transplanting. SEEDED: Apply overtop after collards reach 3 in. May apply 1.25 pt/A in row middles as a banded application. Dual will not control emerged weeds; a preplant or preemergence herbicide application is required. This is a Section 24© local need label. Growers must obtain label from www.farmassist.com prior to making applications.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
GREENS (COLLARD, KALE , MUSTARD)					
Preplant or Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds	bensulide (Prefar) 4 E	5 to 6 qt	5 to 6	Not labeled for turnip. Apply PPI to a 1 in. depth or apply PRE after planting. With PRE application, irrigate immediately. Also labeled for, but not limited to, rape greens, mustard spinach, arugula, cress, endive, parsley, and radicchio. See label about rotation restrictions.
ROW MIDDLE ONLY Hooded spray	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply as a hooded spray in row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix.
LETTUCE					
Preplant	Suppression or control of most annual grasses and broadleaf weeds, full rate required for nutsedge control	metam sodium (Vapam HL) 42%	37.5 to 75 gal	15.7 to 31.5	Rates are dependent on soil type and weeds present. Apply when soil moisture is near field capacity (60 to 80%). Apply through soil injection using a rotary tiller or inject with knives no more than 4 in. apart; follow immediately with a roller to smooth and compact the soil surface or with mulch. May apply through drip irrigation prior to planting a second, third, or fourth crop on mulch. Plant back interval is often 14-21 d and can be 30 d in some environments.
	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 to 2.7 pt 2.0 to 4.0 pt	0.49 to 1.0	Apply to emerged weeds before crop emergence or transplanting. Add 1 qt NIS or 1 gal COC/100 gal spray mix.
	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds at least 3 d before seeding or transplanting. Do not feed crop residue to livestock for 8 weeks following treatment. The need for an adjuvant depends on brand used.
Preplant incorporated (PPI) or Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds	bensulide (Prefar) 4 E	5 to 6 qt	5 to 6	Apply PPI to a depth of 1 in. or apply PRE after planting. With PRE application, irrigate immediately. See label for more directions and rotational restrictions.
		benefin (Balan) 60 DF	2 to 2.5 lb	1.2 to 1.5	Apply preplant and incorporate 2 to 3 in. deep before seeding or transplanting. Use lower rate on coarse soils. Do not make more than 1 application/yr and see label regarding rotational restrictions.
	Most annual grasses and broadleaf weeds	pronamide (Kerb) 50 W (Kerb) 3.3 SC	2 to 4 lb 2.5 to 5 pt	1 to 2	Head lettuce only. Make one preplant or PRE application. Use lower rates on coarse soil textures and use less than 3 lb on val temp, grande verde and prima verde varieties of crisp head lettuce, or on endive, escarole, or radicchio greens. Consult label for rotational restrictions which are significant.
Postemergence (POST)	Most annual grasses and broadleaf weeds	pronamide (Kerb) 50 W (Kerb) 3.3 SC	2 to 4 lb 2.5 to 5 pt	1 to 2	Head lettuce only. Apply before weed germination if possible, no later than weeds in the two-leaf stage. Use lower rates on coarse soil textures and use less than 3 lb on val temp, grande verde and prima verde varieties of crisp head lettuce, or on endive, escarole, or radicchio greens. Do not apply within 55 d of harvest. Make only one application/crop. Consult label for rotational restrictions which are significant.
	Annual and perennial grasses only	sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	Apply to actively growing annual grasses. Add 1 qt of COC/A. Adding crop oil may increase crop injury at high temperatures. Do not apply within 30 d of harvesting head lettuce or within 15 d of harvesting leaf lettuce. Do not apply more than 3 pt/A/season. Do not mix with other pesticides.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
LETTUCE (cont.)					
Postemergence (POST) (cont.)	Annual and perennial grasses only	clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 8 fl oz 9 to 16 fl oz 9 to 16 fl oz	0.09 to 0.12 0.07 to 0.12 0.07 to 0.12	Leaf lettuce only. Apply to actively growing grasses. For Select, add 1 gal COC/100 gal spray mix. Adding crop oil may increase crop injury at high temperatures. For SelectMax, add 1qt non-ionic surfactant/100 gal spray mix. Do not apply within 14 d of harvest. Do not mix with other pesticides. Application of a broadleaf herbicide within 3 d of clethodim may result in reduced grass control.
ROW MIDDLES ONLY Hooded spray	Most emerged weeds except for resistant pigweed Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	glyphosate (numerous brands) 4 SL 5.5 SL carfentrazone (Aim EC) 2.0 EC	16 to 30 fl oz 11 to 22 fl oz 0.8 to 2 fl oz	0.5 to 0.94 0.013 to 0.031	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used. Apply as a hooded spray in row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix.
OKRA					
Preplant	Most emerged weeds except for resistant pigweed, stale seedbed application Contact kill of green foliage. Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL paraquat (Gramoxone) 2 SL carfentrazone (Aim EC) 2.0 EC	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz 2.0 to 4.0 pts 0.8 to 2 fl oz	0.5 to 1.5 0.5 to 1.0 0.013 to 0.03	Apply to emerged weeds but before crop emergence. Perennial weeds may require higher rates. The need for an adjuvant depends on brand used. Preemergence applications must be made within 24 hours of planting. Add 1 qt NIS or 1 gal COC per 100 gal of spray mix. Transplants ONLY. Apply prior to transplanting to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. May mix with glyphosate, see label.
Preplant incorporated (PPI)	Annual grasses and small-seeded broadleaf weeds	trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	1 to 1.5 pt	0.5 to 0.75	Apply and soil incorporate 2 to 3 in. deep before planting. Incorporate within 8 hr of application. <u>Use lower rates on coarse soils.</u>
Postemergence (POST)	Annual and perennial grasses only	sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	Apply to emerged, actively growing grasses. Add 1 qt of COC/A. Adding crop oil may increase the likelihood of crop injury at high temperatures. Do not apply within 14 d of harvest. Do not apply more than 5 pt/A/season. Do not mix with any other pesticides.
ROW MIDDLES ONLY (Hooded spray)	Most emerged weeds except for resistant pigweed Contact kill of green foliage. Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	glyphosate (numerous brands) 4 SL 5.5 SL paraquat (Gramoxone) 2 SL carfentrazone (Aim EC) 2.0 EC	16 to 30 fl oz 11 to 22 fl oz 2.0 pts 0.8 to 2 fl oz	0.5 to 0.94 0.5 0.013 to 0.031	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact foliage, green shoots, stems, exposed roots, or fruit of crop. The need for an adjuvant depends on brand used. Spray must not contact okra plants. Hooded sprayers must be used. Two applications can be made, allow 14 day interval between the two applications. Add 1 qt NIS or 1 gal COC per 100 gal of spray mix. Apply as a hooded spray in row middles. Do not allow spray to contact crop. Apply to weeds less than 3 in. Add 1.5 - 2 gal COC/100 gal of spray mix. Do not exceed 0.096 lb ai/A/season, including preplant applications.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
OKRA (cont.)					
ROW MIDDLES ONLY (Hooded spray) (cont.)	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	flumioxazin (Chateau) 51 WDG	up to 4 oz	up to 0.127	<p>For row middle applications in RAISED BED (at least 24 in. wide) plasticulture. Third Party Indemnification Label available ONLY through the Georgia Fruit and Vegetable Growers Association. Growers must obtain label to receive the appropriate application procedures (and to be legal); failure to follow these procedures will likely result in crop death.</p> <p>1. Do allow spray to come into contact with mulch. 2. Must apply before transplanting. 3. Hooded sprayer. 4. Rainfall needed after application but before transplanting.</p> <p>Not labeled for bareground production at this time.</p>
ONIONS (DRY BULB AND GREEN)					
Preplant	Suppression or control of most annual grasses and broadleaf weeds, full rate needed for nutsedge control	metam sodium (Vapam HL) 42%	37.5 to 75 gal	15.7 to 31.5	Rates are dependent on soil type and weed present. Apply when soil moisture is near field capacity (60 to 80%) through soil injection using a rotary tiller or inject with knives no more than 4 in. apart; follow immediately with a roller to smooth and compact the soil surface. Plant back interval is at least 14-21 d and can be 30 d in some environments. See label for all restrictions and additional information including fumigant management plan requirements.
	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.7 to 2.7 pt 2.5 to 4.0 pt	0.64 to 1.0	Seeded Onion Only. Apply to emerged weeds before crop emergence. Add 1 qt NIS or 1 gal COC/100 gal spray mix. Do not harvest within 60 d of application.
	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds before seeding or 3 d before transplanting. Perennial weeds may require higher rates. The need for an adjuvant depends on brand used.
Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds	DCPA (Dacthal) W-75 6 F	≤ 6 to 8 lb ≤ 6 to 8 pt	≤ 4.5 to 6	Apply uniformly over soil after seeding. Incorporate using 0.25 in irrigation; PPI is not recommended for onions. Contact your local extension office for the most effective weed management program using DCPA. These rates applied after seeding may cause crop stunting and delayed maturity. Injury can occur when onion emergence is delayed under cool or wet conditions; lower than labeled rates may be required.
Postemergence (POST)	Annual grasses and broadleaf weeds, yellow nutsedge suppression; partial control of Texas millet	S-metolachlor (Dual Magnum) 7.62 EC	8 to 16 fl oz	0.47 to 0.96	<p>SEEDING: Do not apply before 4 leaf stage. Once onion has reached the 4 leaf stage, apply 8 oz/A. When onions reach 6 leaf stage, rate can be increased to 12 oz/A.</p> <p>TRANSPLANT DRY BULB: Transplant and then irrigate to seal soil around the root ball. Apply within 48 hrs of planting. Rates of 12 to 16 fl oz are recommended.</p>
	Annual and perennial grasses only	sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	Apply to actively growing annual grasses. Add 1 qt of COC/A. Adding crop oil may increase crop injury at high temperatures. Do not apply within 30 d of harvest. Do not apply more than 4.5 pt/A/season. Do not mix with other pesticides.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
ONIONS (DRY BULB ONLY)					
Preplant incorporated (PPI) or Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds	bensulide (Prefar) 4 E	5 to 6 qt	5 to 6	Apply PPI to a depth of 1 in. or apply PRE after planting. With PRE treatment irrigate immediately. Prefar may reduce onion vigor under cool wet growing conditions.
Postemergence (POST)	Residual control of annual grasses and small-seeded broadleaf weeds including purslane	pendimethalin (Prowl) 3.3 EC (Prowl H20) 3.8 AS	1.8 to 2.4 pt 1.5 to 2.0 pt	0.75 to 1.0 0.72 to 0.95	<p>Seedbed or direct seeded: Apply when onions have two to nine true leaves but prior to weed emergence. Use lower rates for applications to very young onions.</p> <p>Transplants: Apply to onions after soil has settled (watered) around transplants and no cracks are present. If no rainfall occurs within 3 d after application, irrigate as needed.</p> <p>Do not apply within 45 d of harvest. Does not control emerged weeds.</p>
	Most annual broadleaf weeds including henbit, swinecress and very small primrose but much less effective on chickweed	oxyfluorfen (Goal 2 XL) 2EC (Galigan) 2E (Goaltender) 4F (Galigan H20) 4F	3 to 32 fl oz 3 to 32 fl oz 1.5 to 16 fl oz 1.5 to 16 fl oz	0.05 to 0.5	<p>Seeded dry bulb onions: Apply 3 to 8 oz/A of Goal 2XL (1.5 to 4 oz/A of Goaltender) in a minimum of 40 GPA and with no less than 20 psi. Apply when onions have at least 3 true leaves, when weeds are 1 in. or smaller, and when conditions are not cool, wet, and/or cloudy. Use lower rates on younger onions with 3 to 4 oz/A of Goal 2XL ideal for onion in the 3- to 4-leaf stage. Sequential applications may be made but do not exceed 2.0 pt/A/season of Goal 2 XL or Galigan (1.0 pt/A for Goaltender).</p> <p>Transplanted onions: Suggest making a single application using up to 2.0 pt/A of Goal 2XL or Galigan (1.0 pt/A of Goaltender) within 2 d of transplanting but after irrigating to seal soil around root ball. <u>Do not wait longer than 2 d to make this application.</u> Do not exceed 2 pt/A of Goal 2XL or Galigan (1 pt/A of Goaltender) per crop season. <u>A tank mix with Prowl has shown excellent season long control.</u></p> <p>NOTE: Never use surfactant or crop oil with oxyfluorfen or serious onion damage may occur. Do not apply if onions are under stress. Do not apply within 60 d of harvest. Do not tank mix with fertilizer.</p>
	Annual and perennial grasses only	clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 16 fl oz 9 to 32 fl oz 9 to 32 fl oz	0.09 to 0.25 0.07 to 0.25 0.07 to 0.25	Apply to actively growing grasses. For Select, add 1 gal COC/100 gal spray mix. Adding crop oil may increase crop injury at high temperatures. For SelectMax, add 1qt NIS/100 gal spray mix. Do not apply within 45 d of harvest. Effective on annual bluegrass. Do not mix with other pesticides. Do not apply a broadleaf herbicide within 3 d of clethodim as reduced grass control may occur.
		fluazifop-P-butyl (Fusilade DX) 2 EC	6 to 16 oz	0.1 to 0.25	Apply to actively growing grasses. Add 1 gal COC or 1 qt NIS/100 gal spray mix. Adding crop oil may increase crop injury at high temperatures. Do not apply within 45 d of harvest. Do not mix with other pesticides. Do not apply more than 48 oz/A/season.
ROW MIDDLES ONLY	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.
Hooded spray	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.031	Apply as a hooded spray in row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
PEAS, GREEN (Note: For southern pea recommendations, see bean section.)					
Preplant	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 to 2.7 pt 2.0 to 4.0 pt	0.49 to 1.0	Apply to emerged weeds before crop emergence. Add 1 qt NIS or 1 gal COC/100 gal spray mix.
	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds but before crop emergence. Do not feed crop residue to livestock for 8 weeks following treatment. Perennial weeds may require higher rates. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply prior to planting or before crop emergence to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. May mix with glyphosate, see label.
Preplant incorporated (PPI) or Preemergence (PRE)	Annual grasses and broadleaf weed suppression	clomazone (Command) 3 ME	0.4 to 0.67 pt	0.15 to 0.25	Succulent peas only. Apply to the soil surface immediately after seeding. Provides poor pigweed control. See label for further instruction and rotational concerns. Must be used as part of a weed management system. <u>Limited GA research.</u> See label for buffer and rotation restrictions.
	Annual grasses and small-seeded broadleaf weeds such as pigweeds and purslane	pendimethalin (Prowl) 3.3 EC (Pendimax) 3.3 EC (Prowl H20) 3.8 AS	1.8 to 2.4 pt 1.2 to 2.4 pt 1.5 to 2.0 pt	0.75 to 1 0.5 to 1 0.72 to 0.95	Apply PPI 2 – 3 in. into the soil before planting. <u>Must incorporate to avoid crop injury.</u> Rates lower than some products recommend (1.2 to 1.5 pt/A) are suggested for sandy soils with low organic matter or when following with Dual Magnum PRE.
		trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	1 to 1.5 pt	0.5 to 0.75	Apply PPI 2 – 3 in. into the soil before spring planting. Must incorporate within 8 hr of application. Rates lower than those labeled (0.75 pt/A) are suggested for sandy soils with low organic matter or when following with Dual Magnum PRE.
	Annual grasses, small-seeded broadleaves, and suppression of yellow nutsedge and Texas millet	S-metolachlor (Dual Magnum) 7.62EC	0.75 to 1.3 pt	0.7 to 1.3	Label specifies use in English peas, only. Apply to soil surface immediately after seeding. Irrigate within 2 d of application. Use lower rates on sandy soils with low organic matter and when in a system with pendimethalin or trifluralin.
	Annual broadleaves including smallflower morningglory, pigweed, smartweed, and purslane	imazethapyr (Pursuit) 2 EC	2 to 3 fl oz	0.03 to 0.047	English pea only. Apply preplant incorporated or to soil surface immediately after planting. Suggest mixing with a grass herbicide. Do not make more than 1 application Pursuit/yr. <u>Rotational restrictions are a significant concern, see label.</u>

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
PEAS, GREEN (Note: For southern pea recommendations, see bean section.) (cont.)					
Postemergence (POST)	Broadleaves such as cocklebur and smallflower morningglory and suppression of yellow nutsedge	bentazon (Basagran) 4 SL	1 to 2 pt	0.5 to 1	Garden, English and southern peas. Apply after 3 pairs of leaves are present. Injury such as yellowing, bronzing, speckling or burning of leaves may occur. In Georgia, Basagran can not be applied alone. May be applied from 6 to 16 oz per acre to dry and succulent peas ONLY when mixed with Raptor or Pursuit, see labels. Raptor is not labeled on some peas/beans grown in Georgia, see label. Do not add oil, do not apply within 10 days of succulent pea harvest and 30 days of dry pea harvest.
	Annual broadleaf weeds including morningglory, non -ALS resistant pigweed, smartweed, and purslane	imazethapyr (Pursuit) 2 EC	3.0 fl oz	0.047	English pea only. Apply to 1 to 3 in. weeds when peas are at least 3 in tall but prior to 5 nodes. Add NIS at 1 qt/100 gal of spray mix. Do not use COC. Do not harvest within 30 d of application. Do not make more than 1 application per year. <u>Rotational restrictions are a significant concern, see label.</u>
	Annual and perennial grasses only	clethodim (SelectMax) 0.97 EC (TapOut) 0.97 EC	9 to 16 fl oz 9 to 16 fl oz	0.07 to 0.12 0.07 to 0.12	Apply to actively growing grasses. Add NIS at 1qt/100 gal spray mix. Apply only one application before bloom but no later than 21 d before harvest. Do not mix with other pesticides. Do not apply a broadleaf grass herbicide within 3 d of clethodim as reduced grass control may occur.
		quizalofop p-ethyl (Assure II) 0.88 EC (Targa) 0.88 EC	6 to 12 fl oz 6 to 12 fl oz	0.04 to 0.08	Apply to actively growing grasses. With sethoxydim, add 1 qt of COC/A; see label about use of other additives. With quizalofop, 1 qt NIS/100 gal spray mix. DO NOT apply with other herbicides. Do not apply quizalofop within 30 d of harvest. Do not apply sethoxydim within 30 d of harvest for dry peas or 15 d of harvest for succulent peas. Do not mix with other pesticides. Do not exceed 14 oz/A/season quizalofop. Do not apply more than 4 pt/A/season sethoxydim. Do not mix with other pesticides.
		sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	
ROW MIDDLES ONLY Hooded spray	Most emerged weeds except resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.031	Apply as a hooded spray in row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix.
PEPPERS					
Preplant	Suppression or control of most annual grasses and broadleaf weeds, full rate required for nutsedge control	metam sodium (Vapam HL) 42%	37.5 to 75 gal	15.7 to 31.5	Rates are dependent on soil type and weeds present. Apply when soil moisture is near field capacity (60 to 80%). Apply through soil injection using a rotary tiller or inject with knives no more than 4 in. apart; follow immediately with a roller to smooth and compact the soil surface or with mulch. May apply through drip irrigation prior to planting a second, third, or fourth crop on mulch. Plant back interval is often 14-21 d and can be 30 d in some environments. See label for all restrictions and additional information. Chloropicirn (150 lb/A broadcast) will also be needed when laying first crop mulch to control nutsedge. See label restrictions including fumigant management plan requirements.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
PEPPERS (cont.)					
Preplant (cont.)	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 to 2.7 pt 2.0 to 4.0 pt	0.49 to 1.0	Apply to emerged weeds before crop emergence. Add 1 qt NIS or 1 gal COC/100 gal spray mix. If applying over plastic, must wash off with 0.5 in rain or irrigation before transplant.
	Broadleaf weeds such as henbit, geranium, primrose and a few grasses	oxyfluorfen (Goal 2 XL) 2 EC (Goaltender) 4 F	up to 2 pt up to 1 pt	up to 0.5 lb	Plasticulture only. Apply to soil surface of pre-formed beds at least 30 d prior to transplanting. Plastic mulch can be applied anytime after application but do not disturb treated pre-formed bed.
	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds at least 3 d before seeding or transplanting. If applying over plastic, must wash off with 0.5 in rain or irrigation before transplant. Perennial weeds may require higher rate. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Transplants only. Apply prior to transplanting to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. May mix with glyphosate, see label. If applied over plastic mulch, a single 0.5 in. irrigation/rain event plus a 7 d waiting period must occur before transplanting.
	Annual broadleaf weeds including morningglory and small pigweeds	pyraflufen ethyl (ET) 0.208 L	1.0 to 2.0 fl oz	0.0016 to 0.0032	Bareground: Wait 1 day following preplant burndown application before planting. Mulch Production. May apply over mulch; however, a single 0.5 inch irrigation/rain event plus a 7 d waiting period must occur before transplanting. Apply ET with a crop oil concentrate at 1% v/v to sensitive weeds that are less than 3 inches.
Preplant or Preemergence (PRE)	Annual grasses and small-seeded broadleaf weeds	bensulide (Prefar) 4 E	5 to 6 qt	5 to 6	Apply PPI to a 1 in. depth or apply PRE after planting. With PRE application, irrigate immediately after application. See label for rotational restrictions.
		napropamide (Devrinol) 50 DF (Devrinol) 2 EC	2 to 4 lb 4 to 8 pt	1 to 2	Bareground: Apply preplant and incorporate into the soil 1 to 2 in. as soon as possible after application. Shallow cultivation or irrigation will improve control. Can be used on direct-seeded and transplanted peppers. Plasticulture: Apply to the soil surface of pre-formed beds immediately prior to laying plastic. Insure the plastic laying process does not incorporate or disturb the treated bed. Soil must be moist for activity. May also be used as a row middle application, see label. Use the lower rates on coarse soils. See label about crop rotation restrictions.
		trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	≤ 1 pt	≤ 0.5	Transplants only. Apply pre-transplant and incorporate to a depth of 2 to 3 in. within 8 hr. Use of high rates and/or deep incorporation WILL result in crop injury. <u>Lower than labeled rates may be needed on some GA soils. Any tillage practice that concentrates trifluralin in the root zone WILL cause significant injury. NOT SUGGESTED FOR USE IN MULCHED SYSTEMS.</u>

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
PEPPERS (cont.)					
Preplant or Preemergence (PRE) (cont.)	Annual grasses and small-seeded broadleaf weeds, morningglory suppression, poor pigweed control	clomazone (Command) 3 ME	0.7 to 2.67 pt	0.25 to 1.0	Not labeled for use on banana pepper. Apply to the soil surface of pre-formed beds immediately prior to laying plastic. Insure the plastic laying process does not incorporate or disturb the treated bed. Pepper has excellent tolerance but one should consult the label for rotational crop intervals and buffer zone requirements.
Preplant or Postemergence (POST)	Annual grass and broadleaf weeds plus yellow nutsedge suppression	S-metolachlor (Dual Magnum) 7.62EC	8 to 16 oz	0.47 to 0.94	Bell pepper transplants only. This is a Section 24(c) local needs label. Growers must obtain label prior to making Dual Magnum applications. Growers must obtain label at www.farmassist.com . Option 1: Apply 8 to 12 oz to the soil surface of pre-formed beds prior to laying plastic. Insure the plastic laying process does not incorporate or disturb the treated bed. Option 2: Preferred application is to apply 10 to 12 oz/A Dual Magnum overtop of bell pepper between 1 and 2 weeks after transplanting. Option 3: A split application (preplant followed by POST) is also labeled, but rates must be reduced to not exceed a total of 16 oz/A for both applications. Option 4: May also be applied in row middles at 1 pt/A.
Postemergence (POST)	Annual and perennial grasses only	clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 8 fl oz 9 to 16 fl oz 9 to 16 fl oz	0.09 to 0.12 0.07 to 0.12 0.07 to 0.12	Apply to actively growing grasses. A section 24(c) state local need label allows an application of SelectMax without the addition of an adjuvant, which will greatly reduce the potential for leaf burn while giving up little weed control as long as annual grasses are less than 6 in. in height. The addition of NIS at 1 qt/100 gal spray mix is recommended for large grasses and goosegrass. For Select, a crop oil at 1 gal/100 gal spray mix is required for control. Controls annual bluegrass. Do not apply within 20 d of harvest. Do not mix with other pesticides. Do not apply a broadleaf grass herbicide within 3 d of clethodim as reduced grass control may occur.
		sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	Apply to actively growing annual grasses. Add 1 qt COC/A. Adding crop oil may increase crop injury at high temperatures. Do not apply within 7 d of harvest. Do not apply more than 4.5 pt/A/season. Do not mix with other pesticides.
ROW MIDDLES ONLY Shielded spray	Nutsedge, wild radish, non-ALS resistant pigweed, ragweed	halosulfuron (Sanda) 75 DF	0.5 to 1.0 oz	0.024 to 0.048	Apply to row middles as a preemergence or postemergence spray. Do not allow spray to contact the crop or the plastic mulch. Do not apply within 30 d of harvest. Add a NIS at 1 qt/100 gal spray solution. Rotational restrictions are a concern, see label.
ROW MIDDLES ONLY Hooded spray	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 pt 2 pt	0.47	Apply when weeds are succulent and weed growth is less than 4 in. Use hooded application equipment adjusted to prevent spray contact with crop plants. Add a NIS at a rate 2 pt/100 gal of spray mix. Do not exceed 30 psi nozzle pressure or spray under conditions which may cause drift. Do not make more than 3 applications/season.
	Most emerged weeds except resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
PEPPERS (cont.)					
ROW MIDDLES ONLY Hooded spray (cont.)	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.031	Apply as a hooded spray in row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. Do not exceed 0.096 lb ai/A/season, including preplant applications.
	Excellent residual control for pigweeds, purslane, beggarweed, and other broadleaf weeds	flumioxazin (Chateau) 51 WDG	Up to 4 oz	Up to 0.127	For row middle applications in RAISED BED (at least 24 in. wide) plasticulture. Third Party Indemnification Label available ONLY through the Georgia Fruit and Vegetable Growers Association. Growers must obtain label to receive the appropriate application procedures (and to be legal); failure to follow these procedures will likely result in crop death. 1. Do allow spray to come into contact with mulch. 2. Must apply before transplanting. 3. Hooded sprayer. 4. Rainfall needed after application but before transplanting.
POTATO (IRISH)					
Preplant or Preemergence (PRE)	Contact kill of all green foliage; stale seedbed application	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 pt 2 pt	0.49	Apply to emerged weeds up before crop emergence. May be used instead of the drag-off operation to kill emerged weeds before the application of PRE herbicides. Add 1 qt NIS or 1 gal COC/100 gal spray mix.
	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds before crop emergence. Do not feed crop residue to livestock for 8 weeks following treatment. Perennial weeds may require higher rates. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply prior to planting up to 1 d after planting to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. May mix with glyphosate, see label. Do not contact any portion of the crop or severe injury will occur.
	Annual grasses and small-seeded broadleaves	pendimethalin (Prowl) 3.3 EC (Prowl H20) 3.8 AS	1.8 to 2.4 pt 1.5 to 2.0 pt	0.75 to 1 0.72 to 0.95	Apply just after planting or drag-off to weed-free soil before crop emerges. Incorporate into the top 1-2 in without damaging sprouts or seed pieces. Can also be applied early POST from crop emergence to the 6-inch stage of growth. Only one application can be made per season.
		trifluralin (Treflan HFP) 4 EC (others) 4 EC	1.0 to 1.5 pt	0.5 to 75	Apply and incorporate after planting but before emergence or immediately following dragoff or after plants have fully emerged.. Do not concentrate the herbicide in the bed during the incorporation process and do not damage sprouts or seed pieces.
	Annual grasses (suppresses Texas millet), small-seeded broadleaf weeds such as pigweeds, and suppression of yellow nutsedge	S-metolachlor (Dual Magnum) 7.62EC	1 to 1.66 pt	0.95 to 1.58	Apply immediately after drag-off to weed-free soil before crop emerges. Can also be applied at layby for residual control of late season weeds. Consult label for tank mixtures with metribuzin, linuron, pendimethalin, and EPTC. Consult label for proper rates on your soil type and other instructions. Injury can result with cool/wet soil conditions especially for early maturing cultivars such as 'Superior'. If applied at layby do not harvest within 40 d of application. Irrigate within 48 hr of application.
	Annual grasses, most broadleaf weeds, plus nutsedge suppression	EPTC (Eptam) 7 E	3.5 pt	3.1	Apply preplant and incorporate 2 to 3 in deep. The variety "Superior" has been shown to be sensitive to Eptam.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
POTATO (IRISH) (cont.)					
Preplant or Preemergence (PRE) (cont.)	Pigweeds, yellow nutsedge, eclipta, and wild poinsettia	fomesafen (Reflex) 2 L	12 to 16 fl oz	0.019 to 0.25	Apply after planting but before potato emergence. May mix with other registered herbicides. Do not preplant incorporate. Do not apply to emerged potato. Do not apply on sweet potato or yams. Do not harvest potato within 70 days of application. Limited research, try on few acres only.
	Most annual broadleaf weeds and some annual grasses	linuron (Lorox DF) 50 WDG	1.5 to 2.5 lb	0.75 to 1.25	Apply just after planting or drag-off or hilling but before crop emerges. If emerged weeds are present, add 1 pt NIS for each 25 gal spray mixture. Do not use on sand or loamy sand soils. Repeat applications may be made, but do not exceed 3 lb/A/yr. Weeds should be less than 3 in. when treated.
	Most annual broadleaf weeds and some annual grasses	metribuzin (Dimetric, Metribuzin, Metri) 75 DF (Metri) 4 F	0.3 to 1.3 lb 0.5 to 2 pt	0.25 to 1	Apply just after planting or drag-off, but before crop emerges. Refer to label for specific cultivar tolerances. <u>Not recommended for use on sand or sandy loam soils; do not apply more than 0.5 lb ai/A on sandy soils.</u> Refer to product label for specific rates and cultivar tolerances. See label for rotational restrictions.
		rimsulfuron (Matrix) 25 DF	1 to 1.5 oz	0.016 to 0.02	Apply after drag-off or hilling but before potatoes and weeds emerge. If emerged weeds are present, add 1 qt NIS per 100 gal of water. Limited research has been conducted!
	Annual broadleaf weeds including pigweeds, purslane, Florida pusley	flumioxazin (Chateau) 51 WDG	1.5 oz	0.048	Apply after drag-off or hilling but before potatoes and weeds emerge. A minimum of 2 in of soil must cover the potatoes or injury may occur. <u>Check label for proper sprayer clean out instructions.</u> Limited research has been conducted; try on a small acreage first.
Postemergence (POST)	Most annual broadleaf weeds and some annual grasses	metribuzin (Dimetric, Metribuzin, Metri) 75 DF (Metri) 4 F	0.3 to 0.67 lb 0.5 to 1 pt	0.25 to 0.5	Can be used on russet or white-skinned varieties that are not early maturing. Apply only if there have been at least three successive d of sunny weather before application. Treat before weeds are 1 in. tall. Treatment may cause some chlorosis or minor necrosis. <u>Do not apply more than 0.5 lb ai/A.</u> Do not apply within 60 d of harvest. See rotational restrictions.
		rimsulfuron (Matrix) 25 DF	1 to 1.5 oz	0.016 to 0.02	Apply to young actively growing weeds after crop emergence but before the crop exceeds 14 in. tall. Add 1 qt NIS/100 gal of water. Limited research has been conducted! Do not exceed 2.5 oz/A/yr. Do not apply within 60 d of harvest.
	Annual and perennial grasses only	sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	Apply to actively growing annual grasses; see label about use of other additives. Add 1 qt COC/A. Adding crop oil may increase crop injury at high temperatures. Do not apply within 30 d of harvest. Do not apply more than 5 pt/A/season. Do not mix with other pesticides.
		clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 16 fl oz 9 to 32 fl oz 9 to 32 fl oz	0.09 to 0.25 0.07 to 0.25 0.07 to 0.25	Apply to actively growing grasses. For Select add 1 gal COC/100 gal spray mix. Adding crop oil may increase crop injury at high temperatures. For SelectMax add 1qt NIS/100 gal spray mix. Effective on annual bluegrass. Do not apply either herbicide within 30 d of harvest. Do not mix with other pesticides. Do not apply a broadleaf grass herbicide within 3 d of clethodim as reduced grass control may occur.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
POTATO (IRISH) (cont.)					
ROW MIDDLES ONLY Hooded spray	Most emerged weeds except resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply as a hooded spray in row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. Ground speed should not exceed 3.5 mph. Do not apply within 7 d of harvest.
POTATO (SWEET)					
Preplant	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds before transplanting. Do not feed crop residue to livestock for 8 weeks following treatment. Perennial weeds may require higher rates. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including pigweeds, purslane, Fl. pusley	flumioxazin (Valor SX) 51 WDG (Chateau) 51 WDG	2.5 oz 2.5 oz	0.08	Apply 2 to 5 d prior to transplanting to the pre-formed row. Do not incorporate and minimize movement of soil during transplanting. Do not apply after transplanting or severe injury and crop death will occur. Do not use greenhouse grown transplants. If using a variety other than Beauregard, test a small area first before use. <u>See label for other precautions including tank clean out concerns.</u>
Post-transplant Preemergence	Annual grass and broadleaf weeds, morningglory suppression, weak on pigweed	clomazone (Command) 3 ME	1.5 pt	0.56	Post-transplant. Apply within 5 d of transplanting for preemergence control of annual grasses and broadleaf weeds. Place roots below soil surface where treatment will occur. Do not apply within 95 d of harvest. See label for regarding buffers and rotation restrictions.
	Annual grasses and small-seeded broadleaves	DCPA (Dacthal) W-75 6 F	6 to 8 lb 6 to 8 pt	4.5 to 6	Apply to soil surface immediately after transplanting or after drag off or at layby. Layby application can be made up to 6 weeks after planting. Will not control emerged weeds. Do not use in plant beds.
	Annual grass and broadleaf weeds	napropamide (Devrinol) 50 DF	2 to 4 lb	1 to 2	Plant beds: Apply to soil surface after sweet potato roots are covered with soil but prior to soil cracking and sweet potato plant emergence. Does not control emerged weeds. Production fields: Apply to soil surface immediately after transplanting. If rainfall does not occur within 24 hr, shallow incorporation or irrigate with sufficient water to wet the soil to a depth of 2 to 4 in.
Postemergence (POST)	Annual and perennial grasses	clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 16 fl oz 9 to 32 fl oz 9 to 32 fl oz	0.09 to 0.25 0.07 to 0.25 0.07 to 0.25	Apply to actively growing grasses. For Select add 1 gal COC/100 gal spray mix. Adding crop oil may increase crop injury at high temperatures. For SelectMax add 1 qt NIS/100 gal spray mix. Effective on annual bluegrass. Do not apply within 30 d of harvest. Do not mix with other pesticides. Do not apply a broadleaf grass herbicide within 3 d of clethodim as reduced grass control may occur.
		sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	Apply to actively growing grasses. With sethoxydim, add 1 qt COC/A. With fluzifop, add 1 gal of COC or 1 qt NIS/100 gal spray mix. Adding crop oil may increase crop injury at high temperatures. Do not apply sethoxydim within 30 d of harvest and do not apply fluzifop within 55 d of harvest. Do not apply more than 48 oz/A fluzifop/season. Do not apply more than 5 pt/A/season sethoxydim. Do not mix with other pesticides.
		fluzifop-P-butyl (Fusilade DX) 2 EC	6 to 16 fl oz	0.1 to 0.25	

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
POTATO (SWEET) (cont.)					
ROW MIDDLES ONLY Hooded spray	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.031	Apply as a hooded spray in row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix.
SPINACH					
Preplant	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds before seeding. Do not feed crop residue to livestock for 8 weeks following treatment. Perennial weeds may require higher rates. The need for an adjuvant depends on brand used.
Postemergence (POST)	Broadleaf weeds including clover, sowthistle, cocklebur, jimsonweed, ragweed	clopyralid (Stinger) 3 EC	0.25 to 0.33 pt	0.1 to 0.13	Apply to spinach in the 2- to 5-leaf stage when weeds are small and actively growing. Will control most legumes. Do not apply within 21 d of harvest. See label for rotational concerns. Do not exceed 0.5 pt/A/yr.
	Broadleaf weeds	phenmedipham (Spin-aid) 1.3 EC	3 to 6 pt	0.5 to 1	Processing spinach only. Do not use when expected high temperatures will be above 75° F. For best results, spray when weeds are in the two-leaf stage and crop has at least six true leaves. Use the 6 pt rate ONLY on well established crops that are not under stress. The application may be split, see label. Do not apply within 21 d of harvest. Additives are not required.
	Annual and perennial grasses only	sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	Apply to actively growing annual grasses. Add 1 qt COC/A. Adding crop oil may increase crop injury at high temperatures. Do not apply within 15 d of harvest. Do not apply more than 3 pt/A/season sethoxydim. Do not mix with other pesticides.
		clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 8 fl oz 9 to 16 fl oz 9 to 16 fl oz	0.09 to 0.12 0.07 to 0.12 0.07 to 0.12	Apply to actively growing grasses. For Select, add 1 gal COC/100 gal spray mix. Adding crop oil may increase crop injury at high temperatures. For SelectMax, add 1qt NIS/100 gal spray mix. Effective on annual bluegrass. Do not apply within 14 d of harvest. Do not mix with other pesticides. Do not apply a broadleaf grass herbicide within 3 d of clethodim as reduced grass control may occur.
ROW MIDDLES ONLY Hooded spray	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5.5 SL	16 to 30 fl oz 11 to 22 fl oz	0.5 to 0.94	Apply as a hooded spray or as a wiper application in row middles. To avoid severe injury, do not allow herbicide to contact any part of the crop including exposed roots. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply as a hooded spray in row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
SWEET CORN					
Preplant	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 to 2.7 pt 2.0 to 4.0 pt	0.49 to 1.0	Apply to emerged weeds but before crop emergence. Add 1 qt NIS or 1 gal COC/100 gal spray mix.
	Most emerged weeds except for resistant pigweed	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds before seeding. Do not feed crop residue to livestock for 8 weeks following treatment. Perennial weeds may require higher rates. The need for an adjuvant depends on brand used.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.031	Apply prior to planting to weeds less than 3 in. Coverage is essential for weed control. Add 1 qt NIS/100 gal of spray mix.
Preplant incorporated (PPI)	Most annual grass and broadleaf weeds including fall panicum, seedling johnsongrass, signalgrass, and nutsedge	EPTC (Eradicane) 6.7 EC	4.75 pt	4	Apply and incorporate immediately just prior to seeding sweet corn. Application and incorporation gives best control. A two pass incorporation required for nutsedge. Crop injury and reduced weed control may occur early in the growing season when conditions are cool and wet.
Preemergence (PRE)	Most annual grasses including fall panicum and broadleaf signalgrass; only suppression of Texas millet; also controls pigweed species and suppresses yellow nutsedge	alachlor (Micro-Tech) 4 FME	2 to 2.75 qt	2 to 2.75	Apply to soil surface immediately after planting. Use low rate on coarse textured soils and higher rates on medium textured soils. High rates improve control of ragweed and lambsquarters. Performance is improved if rainfall or irrigation is received within 7 d of application.
		dimethenamid (Outlook) 6 EC	12 to 16 oz	0.56 to 0.75	Apply to soil surface immediately after planting or postemergence to corn up to 12 in tall. Use lower rates on sandy soils. Do not apply as a layby application.
		S-metolachlor (Dual II Mag.) 7.64 EC	1 to 1.67 pt	0.95 to 1.6	Apply to soil surface immediately after planting. Use lower rates on coarse soils and/or if organic matter is less than 3%.
	Most annual broadleaf and grass weeds	atrazine (various brands) 4 L 90 WDG	1 to 2 qt 1.1 to 2.2 lb	1 to 2	Apply to the soil surface immediately after planting. Requires rainfall or shallow cultivation for good control. Does not control fall panicum or smooth crabgrass. Check label for rotational restrictions. Do not apply more than 2.5 lb ai/A/yr.
		simazine (Princep) 4 L (Princep Caliber 90) 90 WDG	1 to 1.2 qt 1.1 to 1.3 lb	1 to 1.2	Apply to soil surface immediately after planting. Requires rainfall or shallow cultivation for good control. See label for directions and rotational restrictions.
		alachlor + atrazine (Bullet) 4 F (Lariat) 4 F	2.5 to 3.75 qt 2.5 to 3.75 qt	1.5 to 2.3 + 0.9 to 1.4	Apply to soil surface immediately after planting. Requires rainfall or overhead irrigation within 7 d of application for activation. Use lower rates on coarse soils and/or with less than 3% organic matter. Do not make more than one application per year. Check label for rotational restrictions.
		dimethenamid + atrazine (Guardman MAX) 5 F	2.5 to 4 pt	0.53 to 0.95 + 1.0 to 1.6	Apply to soil surface immediately after planting. Requires rainfall or overhead irrigation within 7 d of application for activation. Use lower rates on coarse soils and/or with less than 3% organic matter. Check label for rotational restrictions.
		S-metolachlor + atrazine (Bicep II Magnum, Bicep II Magnum FC) 5.5 F	1.3 to 2.6 qt	0.78 to 1.56 + 1 to 2	Apply to soil surface immediately after planting. Requires rainfall or overhead irrigation within 2 d of application for activation. Use lower rates on coarse soils and/or with less than 3% organic matter. Check label for rotational restrictions.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
SWEET CORN (cont.)					
Preemergence (PRE) (cont.)	Most annual broadleaf and grass weeds	S-metolachlor + atrazine (Bicep Lite II Magnum) 6F	0.9 to 1.9 qt	0.75 to 1.6 + 0.60 to 1.27	Apply to soil surface immediately after planting. Requires rainfall or overhead irrigation within 2 d of application for activation. Use lower rates on coarse soils and/or with less than 3% organic matter. Check label for rotational restrictions.
		S-metolachlor + atrazine + mesotrione (Lexar) 3.75 F	3 qt	1.31 + 1.31 + 0.17	Apply to soil surface immediately after planting. Check label for rotational restrictions. Do not apply organophosphate or carbamate insecticides within 7 d of Lexar as severe injury can occur.
Postemergence (POST)	Most annual broadleaf and grass weeds	atrazine (various brands) 4 L 90 WDG	1 to 2 qt 1.1 to 2.2 lb	1 to 2	Apply overtop before corn exceeds 12 in. in height and weeds exceed 1.5 in. in height. Addition of COC improves activity on weeds but may result in some foliar burn of the crop. See label for rotational concerns and the amount of crop oil needed. If a PRE treatment was used, do not exceed a total of 2.5 lbs/ai/A per calendar year.
	Annual broadleaf weeds including pigweeds	mesotrione (Callisto) 4 L	3 fl oz	0.094	Apply overtop up to the 8-leaf stage of corn to actively growing small weeds (less than 4 in). Addition of NIS at 1 qt/100 gals of spray mix is recommended, however COC may be used at 1 gal/100 gals of spray mix. A crop oil will increase weed control but may increase corn injury. Rotation to peas, beans, cucurbits and most other vegetables is 18 months. Do not apply any organophosphate or carbamate insecticide within 7 d of mesotrione as severe injury can occur.
	Residual control of annual grasses and small-seeded broadleaf weeds	pendimethalin (Prowl) 3.3 EC (Prowl H20) 3.8 AS	1.8 to 2.4 pt 2.0 pt	0.75 to 1.0 0.95	May be applied from early postemergence until sweet corn is 20 to 24 in tall or has 8 visible leaf collars (V8), whichever is more restrictive. Drop nozzles would be more effective in larger corn. <u>Does not control emerged weeds.</u> Do not apply in reduced tillage programs. Do not make more than 1 application/season.
	Annual grasses including Texas millet and broadleaf weeds	pendimethalin (Prowl) 3.3 EC + atrazine (AAtrex) 4 F	1.8 to 2.4 pt + 1 to 2 qt	0.75 to 1.0 + 1 to 2	<u>When using Prowl:</u> Apply tank mix from early postemergence until corn is 12 in. tall or has 8 visible leaf collars whichever is more restrictive. Check label rotational restrictions.
	Most annual grasses and broadleaf weeds, Texas millet suppression	dimethenamid (Outlook) 6 EC + atrazine (AAtrex) 4 L 90 WDG	8 to 16 oz + 1 to 2 qt 1.1 to 2.2 lb	0.38 to 0.75 + 1 to 2	Apply overtop of corn (8 in. or less) before weeds exceed the two-leaf stage. Larger weeds will not be controlled. Also available as the commercial products Guardsman MAX. Check label for rotational restrictions. Do not harvest ears within 50 d of application. Do not make layby applications. Do not make more than one broadcast application of Outlook per year.
		S-metolachlor (Dual II Mag.) 7.64 EC + atrazine (AAtrex) 4 L 90 WDG	1 to 1.67 pt + 1 to 2 qt 1.1 to 2.2 lb	0.95 to 1.6 + 1 to 2	Apply overtop of corn (5 in. or less) before weeds exceed the two-leaf stage. Also available as the commercial product Bicep II Magnum. Check label for rotational restrictions. Do not harvest sweet corn ears within 30 days of application. Do not exceed a total of 2.5 lbs ai Atrazine/year.
	Cocklebur, common ragweed, jimsonweed, Pennsylvania smartweed, smallflower morningglory	bentazon (Basagran) 4 SL	1 to 2 pt	0.5 to 1.0	Apply when corn has 1 to 5 leaves. Add COC at 1 qt/A.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
SWEET CORN (cont.)					
Postemergence (POST) (cont.)	Broadleaf weeds including clover, sowthistle, cocklebur, jimsonweed, ragweed	clopyralid (Stinger) 3 EC	0.3 to 0.67 pt	0.13 to 0.25	Apply to sweet corn used for processing, only. Apply after sweet corn emergence up to 18 in. tall with weeds less than 5 leaf and actively growing. Will control most legumes. Do not apply within 30 d of harvest. Do not exceed 0.67 pt/A/year. See label about rotation restrictions.
	Cocklebur, pigweed, lambsquarters, morningglory, sicklepod, and many other annual broadleaf weeds	2,4-D amine (various brands) 3.8 SL	0.5 to 1 pt	0.24 to 0.48	Use 0.25 lb ai when corn is 4 to 5 in. tall and weeds are small. Increase rate to 0.5 lb ai as corn reaches 8 in. <u>Use drop nozzles and direct spray toward base of corn.</u> Do not apply overtop. Do not use additives. Reduce rate of 2,4-D if extremely hot and soil is wet. Do not cultivate for at least 10 d after application as corn may be brittle. Do not apply within two weeks of tasseling. Do not apply within 45 d of harvest. Do not make more than 1 POST application/season. Be careful to avoid drift to sensitive crops.
	Nutsedge, cocklebur, passionflower (maypop), non-ALS resistant pigweed, smartweed (Pennsylvania)	halosulfuron (Sanda) 75 DF	0.67 oz	0.032	Apply overtop or with drop nozzles to sweet corn from spike to layby for control of emerged weeds. Add NIS at 1qt/100 gal of spray mix. Not recommended for 'Jubilee'. Any injury arising from the use of halosulfuron is the responsibility of the grower. See label for tank mix partners including atrazine. <u>Rotational restrictions may be a concern, see label.</u> Do not make more than 2 applications/year.
	Small pigweeds and the best option for 1 to 2 inch Texas millet	tembotrione (Laudis) 3.5 SC	3 oz	0.082	Apply in sweet corn from emergence to V7 stage of growth. Only 1 application may be made. Can be tank-mixed with atrazine at 0.5 lb ai/A if corn is less than 12 in. Use a methylated seed oil at 1% v/v and nitrogen (1.5 qt/A UAN or 1.5 lb/A AMS). Rain-free period is 1 hour. Label rotational restrictions are 18 months to most vegetable crops. DO NOT apply to Merit or Shogun cultivars, limited data is available on other cultivars try limited acres first.
	Small pigweeds, nightshade, common ragweed, and crabgrass	topramezone (Impact) 2.8 L	0.75 fl oz	0.016	Apply to weeds 3 inches in height or less and not within 45 days of harvest. The addition of a methylated seed oil or crop oil concentrate which contains at least 14% emulsifiers and 80% oil must be used at a rate of 1.0 to 1.5% v/v. Rotation is 18 months to vegetables, 9 months to cotton, peanut, potato, sorghum, soybean, and 3 months to wheat, barely, oats, and rye. Mixtures with atrazine are far more effective than when applied alone. Limited research, try on few acres only.
Postemergence Directed application ONLY	Contact kill of annual grasses and broadleaf weeds	paraquat (Firestorm, Parazone) 3 SL (Gramoxone) 2SL	0.75 to 1.3 pt 1 to 2 pt	0.28 to 0.49	<u>Do not apply overtop or corn will likely be killed.</u> Suggest application only as hooded spray. Label allows for a directed spray after corn reaches at least 10 in. in height. Severe damage and/or complete kill is likely if spray contacts corn plants! Add a NIS at a rate of 2 pt/100 gal of spray mix.
	Small pigweed, night shade, morningglory, common lambsquarters	carfentrazone (Aim) 2.0 EC	0.5 to 1.0 fl oz	0.008 to 0.016	Suggest as directed application only. If leaf contact occurs, significant leaf speckling and necrosis will occur in hot, humid conditions; however, crop will fully recover. Apply to sensitive weeds 3 inches or less. Add 1 qt NIS/100 gal spray mix. Mixing with atrazine improves control. Do not apply more than 2 oz/A per season including preplant applications.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
TOMATO					
Preplant	Suppression or control of most annual grasses and broadleaf weeds, full rates required for nutsedge control	metam sodium (Vapam HL) 42%	37.5 to 75 gal	15.7 to 31.5	Rates are dependent on soil type and weeds present. Apply when soil moisture is near field capacity (60 to 80%) through soil injection using a rotary tiller or inject with knives no more than 4 in. apart; follow immediately with a roller to smooth and compact the soil surface or with mulch. May apply through drip irrigation prior to planting a second, third, or fourth crop on mulch. Plant back interval is often 14-21 d and can be 30 d in some environments. See label for all restrictions and additional information. Chloropicrin (150 lb/A broadcast) will also be needed to control nutsedge when laying first crop mulch. See label for restrictions including fumigant management plan requirements.
	Most emerged weeds except for resistant pigweed, stale seedbed application	glyphosate (numerous brands) 4 SL 5 SL 5.5 SL 6 SL	1 to 3 pt 0.8 to 2.4 pt 11 to 32 fl oz 10 to 30 fl oz	0.5 to 1.5	Apply to emerged weeds at least 3 d before seeding or transplanting. If applying over plastic, must wash off with 0.5 in rain or irrigation before transplant. The need for an adjuvant depends on brand used.
	Contact kill of green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 to 2.7 pt 2.0 to 4.0 pt	0.49 to 1.0	Apply to emerged weeds before transplanting. Add 1 qt NIS or 1 gal COC/100 gal spray mix. If applying over plastic, must wash off with 0.5 in of rain or irrigation before transplanting or seeding.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Transplants only. Apply prior to transplant to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. May mix with glyphosate, see label. If applied over plastic mulch, a single 0.5 in. irrigation/rain event plus a 7 d waiting period must occur before transplanting.
	Annual broadleaf weeds including morningglory and small pigweeds	pyraflufen ethyl (ET) 0.208 L	1.0 to 2.0 fl oz	0.0016 to 0.0032	Bareground: Wait 1 day following preplant burn-down application before planting. Mulch Production. May apply over mulch; however, a single 0.5 inch irrigation/rain event plus a 7 d waiting period must occur before transplanting. Apply ET with a crop oil concentrate at 1% v/v to sensitive weeds that are less than 3 inches.
	Broadleaf weeds and a few grasses including geranium and primrose	oxyfluorfen (Goaltender) 4 F (Goal 2 XL) 2 EC	up to 1 pt up to 2 pt	up to 0.5 lb	Plasticulture only. Apply to soil surface of pre-formed beds <u>at least 30 d prior to transplanting crop.</u> Plastic mulch can be applied anytime after application but do not disturb treated pre-formed bed when laying plastic.
	Yellow nutsedge suppression and broadleaf weeds including pigweed and purslane	S-metolachlor (Dual Magnum) 7.62EC	12 to 16 fl oz	0.7 to 0.95	Can be applied preplant to pre-formed beds just prior to laying plastic. Do not disturb treated bed when laying plastic. Can be applied post-directed to transplants after the first settling rain or irrigation. Can be applied post-directed to seeded tomatoes >4 inches tall. Minimize contact with crop. Do not apply within 30 d of harvest. Also can use in row middles.

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
TOMATO (cont.)					
Preplant (cont.)	Annual grasses and broadleaf weeds	napropamide (Devrinol) 50 DF (Devrinol) 2 EC	2 to 4 lb 4 to 8 pt	1 to 2	<p>Bareground: Apply preplant and incorporate into the soil 1 to 2 in. as soon as possible after application. Shallow cultivation or irrigation will improve control. Can be used on direct-seeded and transplanted tomatoes.</p> <p>Plasticulture: Apply to the soil surface of pre-formed beds immediately prior to laying plastic. Insure the plastic laying process does not incorporate or disturb the treated bed. Soil must be moist for activity. May also use in row middles.</p> <p>Use the lower rates on coarse soils.</p>
		trifluralin (Treflan HFP) 4 EC (other brands) 4 EC	≤ 1 pt	≤ 0.5	<p>Apply pre-transplant and incorporate to a depth of 2 to 3 in. within 8 hr. Use of high rates and/or deep incorporation WILL result in crop injury.</p> <p><u>Lower than labeled rates may be needed in some Georgia fields. Cultural practices that concentrate trifluralin in the root zone WILL cause tomato injury. NOT SUGGESTED FOR MULCH SYSTEMS.</u></p>
	Nutsedge suppression, non -ALS resistant pigweed, ragweed, and radish control	halosulfuron (Sanda) 75 DF	0.5 to 1.0 oz	0.024 to 0.048	<p>Transplants only: Apply after final bed forming and just prior to laying plastic mulch, do not disturb bed when laying mulch. May transplant into treated area 7 d after application. Do not exceed a total of 2 oz/A/yr. Rotational restrictions may be a concern, see label.</p>
	Annual grasses and broadleaf weeds including cocklebur, ragweed, smartweed, and velvetleaf	metribuzin (Dimetric, Metribuzin, Metri) 75 DF (Metri) 4 F	0.3 to 0.67 lb 0.5 to 1 pt	0.25 to 0.5	<p>Transplants only: Apply after final bed forming and just prior to laying plastic mulch, do not disturb bed when laying mulch. Place tomato transplant roots below herbicide layers to avoid injury. See label for other instructions.</p> <p>See rotational restrictions on label for all crops, a second crop of cucumber will likely be damaged.</p>
Postemergence (POST)	Annual grasses and broadleaf weeds including cocklebur, ragweed, smartweed, velvetleaf, and morningglory	metribuzin (Dimetric, Metribuzin, Metri) 75 DF (Metri) 4 F	0.3 to 0.5 lb 0.5 to 0.75 pt	0.25 to 0.37	<p>Seeded tomato must have at least five to six true leaves. For transplanted tomatoes, do not apply within 14 d of transplanting and until recovery from transplant shock and new growth is evident. Multiple treatments should be separated by at least 14 d. Apply only if there have been at least 3 successive d of sunny weather prior to application. Do not exceed 1 lb ai/yr. <u>Do not apply within 24 hours of application of other pesticides. Do not tank mix with other pesticides.</u> Do not apply within 7 d of harvest.</p> <p>See rotational restrictions on label for all crops, a second crop of cucumber will likely be damaged.</p>
	Residual control of annual grasses and small-seeded broadleaves	DCPA (Dacthal) W-75 6 F	6 to 8 lb 6 to 8 pt	4.5 to 6 lb	<p>Can be applied over-the-top of transplants 4 to 6 weeks after transplanting. Can also be applied after direct seeded plants are 4 to 6 in tall. Will not control emerged weeds.</p>
	Nutsedge, non ALS-resistant pigweed, ragweed, radish, and cocklebur control	halosulfuron (Sanda) 75 DF	0.5 to 0.75 oz	0.024 to 0.036	<p>Apply postemergence 14 d after transplanting but before first bloom. May apply over plastic mulch. Add NIS at 1qt/100 gal of spray mix.</p> <p>If a PRE under plastic application of halosulfuron was made, use halosulfuron as a POST spot treatment only. Do not exceed a total of 2 oz/A/yr.</p> <p>Rotational restrictions may be a concern, see for label.</p>
	Broadleaf weeds including wild radish, common purslane, non-ALS resistant pigweeds and some annual grasses	rimsulfuron (Matrix DF) 25 WDG	1 to 2 oz	0.015 to 0.03	<p>Apply in tomatoes after the crop has at least two true leaves and weeds are small (1 in or less) and actively growing. Add nonionic surfactant at 1 qt/100 gal of spray solution. Do not apply within 45 d of tomato harvest. See label for rotational restrictions.</p>

COMMERCIAL VEGETABLES - WEED CONTROL (continued)

Crop / Application Timing	Weed	Formulation	Rate/A Broadcast		Remarks and Precautions
			Amount of Formulation	Pounds Active Ingredient	
TOMATO (cont.)					
Postemergence (POST) (cont.)	Annual and perennial grasses only	clethodim (Select, others) 2 EC (SelectMax) 0.97 EC (TapOut) 0.97 EC	6 to 16 fl oz 9 to 32 fl oz 9 to 32 fl oz	0.09 to 0.25 0.07 to 0.25 0.07 to 0.25	Apply to actively growing grasses. A section 24(c) state local need label allows an application of SelectMax without the addition of an adjuvant, which will greatly reduce the potential for leaf burn while giving up little weed control as long as annual grasses are less than 6 in. in height. The addition of NIS at 1 qt/100 gal spray mix is recommended for large grasses and goosegrass. For Select, a crop oil at 1 gal/100 gal spray mix is required for control. DO NOT apply within 20 d of harvest. Do not mix with other pesticides. Do not apply a broadleaf grass herbicide within 3 d of clethodim as reduced grass control may occur.
		sethoxydim (Poast) 1.53 EC	1 to 1.5 pt	0.19 to 0.3	
Directed ONLY	Annual grasses and broadleaf weeds including cocklebur, ragweed, smartweed, velvetleaf, and morningglory	metribuzin (Dimetric, Metribuzin, Metri) 75 DF (Metri) 4 F	0.6 to 1.33 lb 1-2 pt	0.5 to 1.0	Postemergence directed: Seeded tomato must have at least 5 to 6 true leaves. For transplanted tomatoes, do not apply within 14 d of transplanting and until recovery from transplant shock and new growth are evident. Multiple treatments should be separated by at least 14 d. Apply only if there have been at least 3 successive d of sunny weather prior to application. Do not exceed 1 lb ai/yr. <u>Do not apply within 24 hours of application of other pesticides. Do not tank mix with other pesticides. Do not apply within 7 d of harvest.</u>
	Nutsedge and annual broadleaf weed control including Ipomoea morningglory	trifloxysulfuron (Envoke) 75 WDG	0.1 to 0.2 oz	0.0047 to 0.0094	Apply as a postemergence directed spray adjusted to limit contact with tomato foliage. Apply at least 14 d after transplanting but prior to fruit set and at least 45 d prior to harvest. Add non-ionic surfactant at 1 qt/100 gal of spray mix. See label for rotation restrictions.
ROW MIDDLES ONLY Hooded spray	Contact kill of all green foliage	paraquat (Firestorm, Parazone) 3SL (Gramoxone) 2SL	1.3 pt 2 pt	0.5	Apply for control of emerged weeds between rows of tomato. Do not exceed 30 PSI. Add 1 qt NIS or 1 gal COC/100 gal spray mix. Do not allow spray to contact crop or injury will occur. Do not make more than 3 applications/season. Do not apply within 30 d of harvest.
	Annual broadleaf weeds including morningglory, spiderwort, and very small pigweed	carfentrazone (Aim EC) 2.0 EC	0.8 to 2 fl oz	0.013 to 0.03	Apply as a hooded spray in row middles. Do not allow herbicide to contact the crop. Apply to weeds less than 3 in. Coverage is essential for weed control. Add 1.5 - 2 gal COC/100 gal of spray mix. Do not exceed 0.096 lb ai/A/season, including preplant applications.
	Excellent residual control for pigweeds, purslane, beggarweed, and other broadleaf weeds	flumioxazin (Chateau) 51 WDG	Up to 4 oz	Up to 0.127	For row middle applications in RAISED BED (at least 24 in. wide) plasticulture. Third Party Indemnification Label available ONLY through the Georgia Fruit and Vegetable Growers Association. Growers must obtain label to receive the appropriate application procedures (and to be legal); failure to follow these procedures will likely result in crop death. 1. Do allow spray to come into contact with mulch. 2. Must apply before transplanting. 3. Hooded sprayer. 4. Rainfall needed after application but before transplanting.

WEED RESPONSE TO HERBICIDES USED IN VEGETABLE CROPS

A. Stanley Culpepper, Extension Agronomist-Weed Science

	Prefar	Sutan	Eptam/ Eradicane	Tillam	Ro-Neet	Treflan/ Prowl	Pursuit	Outlook	Lasso	Dual Magnum ¹
TIME OF APPLICATION	PPI	PPI	PPI	PPI	PPI	PPI	PPI/PRE	PPI/PRE	PPI/PRE	PPI/PRE
PERENNIAL WEEDS										
johnsongrass (rhizome)	P	F	F-G		P	P	P-F	P	P	P
purple nutsedge	P	G	G	F-G	P	P	F-G	P	P	P
yellow nutsedge	P	G-E	G-E	F-G	P	P	F	F	P	F
ANNUAL GRASSES										
barnyardgrass	F-G	E	G-E	G-E	G	E	F	G-E	E	E
crabgrass	F-G	E	G-E	G-E	G	E	F	E	E	E
crowfootgrass	F-G	E	G-E	G-E	G	E	P	E	E	E
fall panicum	F-G	G	G	G	G	G	P-F	G-E	G-E	G-E
foxtails	F-G	E	G-E	G-E	G	E	F-G	E	E	E
goosegrass	F-G	G	G	F-G	G	E	F	E	E	E
johnsongrass (seedling)	F-G	G	G	G	G	G-E	G	P-F	P-F	P-F
sandbur	F-G	G-E	G	G	G	E		F-G	F-G	F-G
signalgrass, broadleaf	F-G	G-E	G-E	P	G	E	P-F	F-G	F-G	G
Texas panicum	F	F-G	F-G	P-F	G	G	P	P-F	P-G	P-F
ANNUAL BROADLEAF WEEDS										
bristly starbur			P	G		P	F	P-F	F	P-F
citronmelon	P					P	P	P	P	P
cocklebur	P	P	P	P		P	G-E	P	P	P
crotalaria						P		P	P	P
croton, tropic						P	P	P	P-F	P
cutleaf eveningprimrose	P-F	G	G	G		G	G-E	F-G	G	G
Florida beggarweed	P	P-F	P-F			P	P	F	F	F
Florida pusley	F	G-E	G-E	G		E	G	G	G	G
jimson weed	P	P	P	P	P	P	F-G	P	P	P
lambquarters	F	G	G	F	F	G-E	F-G	G	F-G	F-G
morningglory	P	P-F	P-F	P		P	F-G	P	P	P
nightshade, East. black					P	G		G	G	
pigweeds	F	G	G	G	G	G-E	G-E	G	G-E	G
prickly sida		P-F	P-F	P-F		P	G	P-F	P-F	P-F
purslane	P-F	G	G	G	G	E	G	G	G	G
ragweed, common	P	P-F	P-F	P-F	P	P	F-G	F	P-F	P
sicklepod	P	P-F	P-F	P		P	P	P	P-F	P
WINTER ANNUALS										
annual ryegrass	P					F-G		F-G	P	F-G
cudweed	P									
shepherdspurse	P-F			P	G	F-G	G		G	
swinecress	P									
wild mustards	P	P				P	E	P-F	P	P
wild radish	P	P				P	E	P	P	P

Abbreviations: PPI=preplant incorporated, PRE=preemergence.

Key: E = Excellent control, control above 90%; G = Good control, control above 80%; F = Fair control, control between 60 and 80%; P = Poor control, control less than 60%. If no response symbol is shown control is unknown.

¹ Weed response from Dual Magnum and Dual II Magnum is similar.

WEED RESPONSE TO HERBICIDES USED IN VEGETABLE CROPS (continued)

	Alanap	atrazine	Curbit /Prowl	Command	Dacthal	Devrinol
TIME OF APPLICATION	PRE	PRE	PRE	PRE	PRE	PRE
PERENNIAL WEEDS						
johnsongrass (rhizome)	P	P	P	P	P	P
johnsongrass (rhizome)	P	P	P	P	P	P
yellow nutsedge	P	P	P	P	P	P-F
ANNUAL GRASSES						
barnyardgrass	P	F	G-E	G-E	F-G	G-E
crabgrass	P-F	G	G-E	E	G	G-E
crowfootgrass	P	G	G-E	E	G	G-E
fall panicum	P	P	G	G-E	F	G
foxtails	F	F	G-E	E	F-G	G-E
goosegrass	P-F	F-G	G	E	G	G
johnsongrass (seedling)		P	G	F-G	G	G
sandbur	P	F	G	F-G	F-G	G-E
signalgrass, broadleaf	P-F	P	G	E	F-G	G
Texas panicum	P	P	F-G	F	F	G
ANNUAL BROADLEAF WEEDS						
bristly starbur		G	P	P	P	P
citronmelon	P	F-G	P	P		P
cocklebur	F	G-E	P	P-F	P	P
crotalaria		G-E	P		P	P
croton, tropic	F	G	P	E	P	P
cutleaf eveningprimrose	G	E	G	F	F	F
Florida beggarweed	P	E	P	F-G	P	P-F
Florida pusley	F-G	E	G-E	F-G	F-G	G
jimsonweed	F-G	E	P	F-G	P	P
lambsquarters	E	E	G	G	G	G
morningglory	P-F	G	P	P-F*	P	P
nightshade, east. black	F	G	P		N	P
pigweeds	G-E	E	G-E	P	F-G	F-G
prickly sida	G	E	P	E	G	P
purslane	G	E	G-E	G	F-G	G-E
ragweed, common	F-G	E	P	F-G		F
sicklepod	P	G	P	P	P	P
WINTER ANNUALS						
annual ryegrass		G				
cudweed					P-F	
shepherdspurse	F	G	P	F	P-F	F-G
swinecress		G			P-F	
wild mustards		G	P		P-F	P
wild radish		G	P		P-F	P

Abbreviations: PRE = preemergence.

*Command provides fair control of pitted morningglory but poor control of other morningglory species.

Key: E = Excellent control, control above 90%; G = Good control, control above 80%; F = Fair control, control between 60 and 80%; P = Poor control, control less than 60%. If no response symbol is shown control is unknown.

WEED RESPONSE TO HERBICIDES USED IN VEGETABLE CROPS (continued)

	Goal	Pyramin	Reflex	Sandea	Sencor	Valor/ Chateau
TIME OF APPLICATION	PRE	PRE	PRE	PRE	PRE	PRE
PERENNIAL WEEDS						
johnsongrass (rhizome)	P		N	P	P	P
purple nutsedge	P		P-F	F	P	P
yellow nutsedge	P		G-E	F	P	P
ANNUAL GRASSES						
barnyardgrass	P			P	G	P
crabgrass	P		F-G	P	F-G	P
crowfootgrass	P			F	G	P
fall panicum	P			P	P	P
foxtails	P			P	P	P
goosegrass	P			P	F-G	P
johnsongrass (seedling)	P			P	P-F	P
sandbur	P			P	P	P
signalgrass, broadleaf	P		F-G	P	P-F	P
Texas panicum	P		F	P	P	P
ANNUAL BROADLEAF WEEDS						
bristly starbur			G-E	F	G	P-F
citronmelon					P-F	F-G
cocklebur			G	G	F	P
crotalaria					G	
croton, tropic			F-G		G	G
cutleaf eveningprimrose	G-E	G			G-E	E
Florida beggarweed			P	F	G-E	G
Florida pusley			P	F	G-E	G-E
jimsonweed				G	G	G
lambsquarters	F		E	F-G	G	G
morningglory			P-G*	P-F	P-G	F
nightshade, east. black		N		P	G	
pigweeds	G-E		E	G-E	G-E	E
prickly sida					G	F-G
purslane	G-E		G	F	G-E	E
ragweed, common	F		G	G	G	F-G
sicklepod	P		P	P	F-G	P
WINTER ANNUALS						
annual ryegrass	P	G		P	G	F
cudweed	G-E	G			G	
shepherdspurse	G-E	G			G	
swinecress	G-E	G			G	E
wild mustards	G-E	G	G-E	G-E	G-E	E
wild radish	G-E	G	G-E	G-E	G-E	E

Abbreviations: PRE = preemergence.

*Reflex provides P – F control on Ipomoea morningglory and G control of smallflower morningglory.

Key: E = Excellent control, control above 90%; G = Good control, control above 80%; F = Fair control, control between 60 and 80%; P = Poor control, control less than 60%. If no response symbol is shown control is unknown.

WEED RESPONSE TO HERBICIDES USED IN VEGETABLE CROPS (continued)

	Aim	Atrazine	Basagran	Callisto	Goal	Lorox	Matrix	Pursuit	Sandea	Envoke	Laudis	Reflex
TIME OF APPLICATION	POST/ PD	POST	POST	POST	POST	POST/ PD	POST	POST	POST	POST	POST	POST
PERENNIAL WEEDS												
johnsongrass (rhizome)	P	P	P	P	P	P		P	P	P		P
purple nutsedge	P	P	P	P-F	P-F	P		G	E	F-G		P
yellow nutsedge	P	P	G	P-F	P-F	P-F	P-F	F	E	G		P-F
ANNUAL GRASSES												
barnyardgrass	P		P			F-G	G	F-G	P	P		P
crabgrass	P	G	P	F-G	P-F	G	F	P-F	P	P	F-G	P
crowfootgrass	P	G	P	P	P	G		P-F	P	P		P
fall panicum	P	G	P	P	P	G	F-G	P-F	P	P		P
goosegrass	P	F-G	P	P	P	G	P	P	P	P		P
johnsongrass (seedling)	P	F	P	P	P	G		F	P	P-F		P
sandbur	P	F	P	P	P-F	G			P	P		P
signalgrass, broadleaf	P	P-F	P	F	P-F	G		P-F	P	P		P
Texas panicum	P	P-F	P	P-F	P	G		P-F	P	P	G	P
ANNUAL BROADLEAF WEEDS												
bristly starbur	P	E	G-E		F-G	G		P-F	G-E	G-E		
citronmelon		G	P		F-G	G-E		P-F		G-E		
cocklebur	F-G	E	E	G-E	F-G	G-E	P-F	G-E	E	G-E		F-G
crotalaria	F	G	P		F-G	E		P				G-E
croton, tropic	F	G	P		G	G		P		F		
cutleaf eveningprimrose	P-F		F-G		F-G	F-G		F-G	P			P-F
Florida beggarweed	F	G	P		F	G-E		P	P-F	G-E		P
Florida pusley	F	G	P		P-F	G		F	P	P		F-G
jimsonweed	F	E	E	G-E	G	G	F	G	F	P		G
lambsquarters	G	E	P	G-E	P-F	E	F-G	P-F	P	G		P-F
morningglory, Ipomoea	G-E	E	P	F-G	G-E	G	F	F-G	P-F	G-E		G
morningglory, smallflower	F-G	E	G	F-G	G-E	G-E	F	P-F	P-F	P		G
nightshade, eastern black	G		P			F-G	P		P			
pigweeds	G	E	P	G	G-E	G-E	G*	E*	G*	F*	G	G-E
prickly sida	F	E	G	P	F-G	G		P		P		P
purslane	F-G	E	P		F-G	G	F-G	F	P			
ragweed, common	P	E	F	F-G	G	E	P	P-F	G-E	G		G-E
sicklepod	P	E	P	P	F-G	G-E		P	P	E	P	P
WINTER ANNUALS												
annual ryegrass	P	F	P	P	F-G	F-G			P	P		P
cudweed					E	G						
shepherdspurse					G	G	G	P-F				
swinecress					G	G						
wild mustards	F		P-F		G	G		G-E	E		G	
wild radish	F	F-G	P-F		G	G	G	G-E	E		G	

Abbreviations: POST = postemergence, PD = post-directed.

*Will not control ALS-resistant pigweed.

Key: E = Excellent control, control above 90%; G = Good control, control above 80%; F = Fair control, control between 60 and 80%; P = Poor control, control less than 60%. If no response symbol is shown control is unknown.

WEED RESPONSE TO HERBICIDES USED IN VEGETABLE CROPS (continued)

	Sencor	Spin-aid	Stinger	Fusilade	Select	Poast	glyphosate	paraquat
TIME OF APPLICATION	POST	POST	POST	POST	POST	POST	POST/HOOD	POST/HOOD
PERENNIAL WEEDS								
johnsongrass (rhizome)	P	P	P	G-E	G-E	G	G-E	P
purple nutsedge	P	P	P	P	P	P	F-G	P-F
yellow nutsedge	P	P	P	P	P	P	F	P-F
ANNUAL GRASSES								
Barnyardgrass	F	P	P	G-E	E	E	E	G
Crabgrass	F	P	P	G	G-E	G-E	E	F
Crowfootgrass	F-G	P	P	F	G	F-G	E	G
fall panicum	P-F	P	P	G-E	G-E	G-E	E	G
Goosegrass	F	P	P	G	G-E	G-E	E	G
johnsongrass (seedling)	G	P	P	G-E	E	E	E	G
Sandbur	G	P	P	G	G	E	E	G
signalgrass, broadleaf	P	P	P	G-E	E	E	E	G-E
Texas panicum	P	P	P	G-E	E	E	E	G
ANNUAL BROADLEAF WEEDS								
bristly starbur	G		F-G	F	P	P	G-E	E
Citronmelon			F-G	P	P	P	G-E	G
Cocklebur	E		G-E	P	P	P	E	G
Crotalaria	E		G-E	P	P	P	G	G
croton, tropic	G		G	P	P	P	E	F
cutleaf eveningprimrose	G	G		P	P	P	P-F	F
Florida beggarweed	G	E	G	P	P	P	E	E
Florida pusley	F-G	G	F	P	P	P	P-G	P-F
jimsonweed	E	G	G	P	P	P	E	G
Lambsquarters	G-E	F-G	P	P	P	P	G	F
Morningglory	F-G	F-G	P	P	P	P	F-G	F-G**
nightshade, eastern black	P		P	P	P	P	G	
Pigweeds	E	P-F	P	P	P	P	E	G
prickly sida	E			P	P	P	F-G	P-F
Purslane	G	F-G	P	P	P	P	G	G
ragweed, common	G	F-G	G	P	P	P	E	F
Sicklepod	E		F	P	P	P	E	G-E
WINTER ANNUALS								
annual ryegrass	F-G	F	P	G-E	G-E	E	G	F-G
Cudweed	G	G		P	P	P	G	G
Shepherdspurse	G	G	P	P	P	P	G	F
Swinecress	G	G		P	P	P	G	P
wild mustards	G-E	E		P	P	P	F-G	F-G
wild radish	G-E	E		P	P	P	F-G	F-G

Abbreviations: POST = postemergence, PD = post-directed.

**Paraquat provides P-F of smallflower morningglory but G control of other morningglories.

Key: E = Excellent control, control above 90%; G = Good control, control above 80%; F = Fair control, control between 60 and 80%; P = Poor control, control less than 60%. If no response symbol is shown control is unknown.

FOLIAR CALCIUM SPRAYS

CROP	MATERIAL	AMOUNT OF FORMULATION	REMARKS
Asparagus	Stoller Calcium 5X	1-2 qt/A	Apply when crowns begin to grow. Repeat after each cutting.
	Sorba-Spray CaB	1-4 qt/A	Apply when flowers are in bud stage. Repeat every 2-3 weeks. Also contains 5% nitrogen and 1.5% Boron.
Beans	Stoller Calcium 5X	1-2 pt/A	Apply at 4-5 inch stage, at early bloom and at early pod set.
	Stoller Calcium 5S	16 oz/A	Apply before flower bud formation or use half rate every 7-10 days beginning at third trifoliolate.
	Sorba-Spray CaB	1-2 qt/A	First application at bud to early bloom. Repeat in 2-3 weeks. Also contains 5% nitrogen and 1.5% Boron.
Broccoli	Ele-Max Clear Cal 12.1%	2 qt/A	Apply in 20 gallons water at head development. Repeat two to three times at 10-14 day intervals. Also contains 21% Cl.
	Stoller Calcium 5X	1-2 pt/A	Apply at 4-5 leaves and every 10-14 days.
	Stoller Calcium 5S	12 oz/A	Apply at 4-5 leaf stage and then every 7-14 days.
	Sorba-Spray CaB	1-4 qt/A	Make 1-3 applications at intervals of 2-3 weeks beginning when plants are 3-4 weeks old. Also contains 5% nitrogen and 1.5% Boron.
Cabbage	Ele-Max Clear Cal 12.1%	2 qt/A	Apply in 20 gallons water at head development. Repeat two to three times at 10-14 day intervals. Also contains 21% Cl.
	Stoller Calcium 5X	1-2 pt/A	Apply at 4-5 leaves and every 10-14 days.
	Stoller Calcium 5S	12 oz/A	Apply at 4-5 leaf stage and then every 7-14 days.
	Sorba-Spray CaB	1-4 qt/A	Make 1-3 applications at intervals of 2-3 weeks beginning when plants are 3-4 weeks old. Also contains 5% nitrogen and 1.5% Boron.
Cantaloupe	Ele-Max Clear Cal 12.1%	2 qt/A	Make two to three applications in 20 gallons of water beginning at first fruit set at seven day intervals. Also contains 21% Cl.
	Sorba-Spray CaB	1-2 qt/A	Make two or more applications at 2-3 week intervals starting just prior to bloom. Also contains 5% nitrogen and 1.5% Boron.
	Stoller CabY	1-2 qt/A	To correct physiological disorders begin 2-3 weeks after full bloom and continue at two week intervals. Also contains Boron.
Carrots	Ele-Max Clear Cal 12.1%	2 qt/A	Apply in 20 gallons water when crop is 4-6 inches tall. Repeat two to three times at 10-14 day intervals. Also contains 21% Cl.
	Stoller Calcium 5X	1 qt/A	Apply at enlarged root initiation and 2-3 weeks later.
	Sorba-Spray CaB	1-4 qt/A	Apply when plants are 3-4 weeks old. Repeat every 3-4 weeks. Also contains 5% nitrogen and 1.5% Boron.
Corn	Stoller Calcium 5S	16 oz/A	Apply at 2-6 leaf stage and half rate at 7-21 day intervals until end of tasseling.
	Stoller Calcium 5X	1 qt/A	Apply at 4-6 leaf stage.
	Sorba-Spray CaB	1-4 qt/A	As needed for nutrient stress. Also contains 5% nitrogen and 1.5% Boron.
Cucumbers	Ele-Max Clear Cal 12.1%	2 qt/A	Make two to three applications in 20 gallons of water beginning at first fruit set at seven day intervals. Also contains 21% Cl.
	Stoller Calcium 5X	1-2 pt/A	Apply at 4-8 inch stage, at early bloom and at start of fruiting.
	Stoller Calcium 5S	8 oz/A	Apply at flower bud initiation and then at 7-10 day intervals.

FOLIAR CALCIUM SPRAYS (continued)

CROP	MATERIAL	AMOUNT OF FORMULATION	REMARKS
Eggplant	Stoller Calcium 5X	1-2 qt/A	Apply just prior to first bloom then 10 and 20 days later.
Leafy vegetables	Sorba-Spray CaB	1-4 qt/A	Make 1 -3 applications at intervals of 2-3 weeks beginning when plants are 3-4 weeks old. Also contains 5% nitrogen and 1.5% Boron.
	Stoller Calcium 5S	12 oz/A	Apply at 4-5 leaf stage and then every 7-14 days.
Melons	Ele-Max Clear Cal 12.1%	2 qt/A	Make two to three applications in 20 gallons of water beginning at first fruit set at seven day intervals. Also contains 21% Cl.
	Stoller Calcium 5X	1-2 pt/A	Apply at 4-8 inch stage, at early bloom and at start of fruiting.
	Stoller Calcium 5S	8 oz/A	Apply at flower bud initiation and then at 7-10 day intervals.
	Sorba-Spray CaB	1-2 qt/A	Make two or more applications at 2-3 week intervals starting just prior to bloom. Also contains 5% nitrogen and 1.5% Boron.
	Stoller CabY	1-2 qt/A	To correct physiological disorders begin 2-3 weeks after full bloom and continue at two week intervals. Also contains Boron.
Onions	Ele-Max Calcium FL 4%	1-2 qt/A	Apply at 6-leaf stage and 10-14 days later in 3-20 gallons of water.
	Ele-Max Clear Cal 12.1%	2-4 qt/A	Apply in 20 gallons per acre at bulb swelling and repeat at 7-14 days intervals as needed. Also contains 21% Cl.
	Stoller Calcium 5S	12 oz/A	Apply two weeks after emergence and at 10-14 day intervals.
	Sorba-Spray CaB	1-4 qt/A	As needed for nutritional stress. Also contains 5% nitrogen and 1.5% Boron.
Peas	Ele-Max Calcium FL 4%	2 qt/A	Apply at 4-6 inch stage and 10-14 days later in 3-20 gallons of water.
	Stoller Calcium 5X	1-2 pt/A	Apply at 4-5 inch stage, at early bloom and at early pod set.
	Sorba-Spray CaB	1-2 qt/A	First application at bud to early bloom. Repeat in 2-3 weeks. Also contains 5% nitrogen and 1.5% Boron.
Peppers	Ele-Max Calcium FL 4%	2 qt/A	One to four applications from flowering up to one month before harvest in 50 gallons of water. Allow 7 days between applications.
	Ele-Max Clear Cal 12.1%	2 qt/A	Apply one to four applications in 50 gallons water beginning at flowering. Also contains 21% Cl.
	Stoller Calcium 5X	1-2 qt/A	Potatoes Apply just prior to first bloom then 10 and 20 days later.
	Stoller Calcium 5S	8 oz/A	Begin at transplant then at 7-14 day intervals.
	Sorba-Spray CaB	1-4 qt/A	Make 1-3 applications at intervals of 3-4 weeks starting prior to bloom. Also contains 5% nitrogen and 1.5% Boron.
Potatoes	Ele-Max Calcium FL 4%	2 qt/A	Two to three applications commencing at tuber initiation in 20 gallons of water. Allow 10-14 days between applications.
	Ele-Max Clear Cal 12.1%	2-4 qt/A	Two to three applications commencing at tuber initiation in 20 gallons of water. Allow 10-14 days between applications. Also contains 21 % Cl.
	Stoller Calcium 5X	1 qt/A	Apply at first tuber set and then 2-3 weeks later.
	Stoller Calcium 5S	1 qt/A	Apply at tuber initiation and use half rate at 8-10 leaf stage and every 10-14 days.
	Sorba-Spray CaB	1-4 qt/A	Apply when plants are 4-12 inches high and repeat three weeks later. Also contains 5% nitrogen and 1.5% Boron.

FOLIAR CALCIUM SPRAYS (continued)

CROP	MATERIAL	AMOUNT OF FORMULATION	REMARKS
Squash	Ele-Max Clear Cal 12.1%	2 qt/A	Make two to three applications in 20 gallons of water beginning at first fruit set at seven day intervals. Also contains 21% Cl.
	Stoller Calcium 5X	1-2 pt/A	Apply at 4-8 inch stage, at early bloom and at start of fruiting.
	Stoller Calcium 5S	8 oz/A	Apply at flower bud initiation and then at 7-10 day intervals.
	Sorba-Spray CaB	1-2 qt/A	Make two or more applications at 2-3 week intervals starting just prior to bloom. Also contains 5% nitrogen and 1.5% Boron.
Sweet Potatoes	Sorba-Spray CaB	1-4 qt/A	Apply when plants are 3-4 weeks old. Repeat every 3-4 weeks. Also contains 5% nitrogen and 1.5% Boron.
Tomatoes	Ele-Max Calcium FL 4%	2 qt/A	One to four applications from flowering up to one month before harvest in 50 gallons of water. Allow 7 days between applications.
	Ele-Max Clear Cal 12.1%	2 qt/A	Apply one to four applications in 50 gallons water beginning at flowering. Allow 7 days between applications. Also contains 21% Cl.
	Stoller Calcium 5X	1 qt/A	Apply at transplanting and 2-3 weeks after first bloom.
	Stoller Calcium 5S	8 oz/A	Apply at flower bud initiation and at 7-10 day intervals.
	Sorba-Spray CaB	1-4 qt/A	Make 1-3 applications at intervals of 3-4 weeks starting prior to bloom. For blossom end rot apply 2qt/A every 7-10 days. Also contains 5% nitrogen and 1.5% Boron.
	Stoller CabY	1-2 qt/A	To correct physiological disorders begin 2-3 weeks after full bloom and continue at two week intervals. Also contains Boron.
Vegetables	Tracite Calcium 6%	1-2 qt/A	Apply every two weeks after first bloom.
	Dyna Gold Calcium 8.25% (Solaceous, Brassica and Cucurbits)	1-2 qt/A	Apply in enough water for thorough coverage at regular intervals.
	Dyna Gold CB Mix 6.0% (flowering crops)	1-1½ qt/A	Apply in enough water for thorough coverage. Make 2 to 3 applications. Also contains 2% boron.
	Foli-Gro Link Calcium 6%	1-2 pt/A	Apply at appropriate crop stage in 20 gallons of water.
	Foli-Gro Calcium 6%	1-2 pt/A	Apply each week in normal spray program in 20 gallons of water.
	Metalosate Calcium 6%	1-2 pt/A	Apply during periods of rapid growth. May repeat two times.
	Pro Natural Calcium 5%	2-32 oz/A	Apply during periods of rapid growth. May repeat two times.
Watermelons	Tracite Calcium 6%	1-2 pt/A	Apply in normal spray program at the low rate once per week. Increase to maximum rate during times when deficiency usually occurs.
	Ele-Max Clear Cal 12.1%	2 qt/A	Make two to three applications in 20 gallons of water beginning at first fruit set at seven day intervals. Also contains 21% Cl.
	Stoller Calcium 5X	1-2 pt/A	Apply at 4-8 inch stage, at early bloom and at start of fruiting g.
	Stoller Calcium 5S	8 oz/A	Apply at flower bud initiation and then at 7-14 day intervals.
	Sorba-Spray CaB	1-2 qt/A	Make two or more applications at 2-3 week intervals starting just prior to bloom. Also contains 5% nitrogen and 1.5% Boron.
	Stoller CabY	1-2 qt/A	To correct physiological disorders begin 2-3 weeks after full bloom and continue at two week intervals. Also contains Boron.

FOLIAR BORON SPRAYS

CROP	MATERIAL	AMOUNT OF FORMULATION	REMARKS
Asparagus	Tracite Liquid Boron 10%	1-2 qt/A	As needed for nutrient stress at two week intervals.
Beans and Peas	Foli-Gro Boron 10	½-1 pt/A	Apply pre-bloom and repeat in 14-21 days.
	Tracite Liquid Boron 10%	1-2 qt/A	As needed for nutrient stress at two week intervals.
Broccoli, Cabbage, Cauliflower	Tracite Liquid Boron 10%	2-4 qt/A	As needed for nutrient stress at two week intervals.
Carrots	Tracite Liquid Boron 10%	1-2 qt/A	As needed for nutrient stress at two week intervals.
Cucumbers	Tracite Liquid Boron 10%	1-2 qt/A	As needed for nutrient stress at two week intervals.
Melons	Foli-Gro Boron 10	1-3 pt/A	Apply pre-bloom and repeat in 14-21 days.
Onions	Tracite Liquid Boron 10%	1-2 qt/A	As needed for nutrient stress at two week intervals.
	Foli-Gro Boron 10	1-2 qt/A	Apply three weeks after establishment and then three weeks later.
Potatoes	Tracite Liquid Boron 10%	1-2 qt/A	As needed for nutrient stress at two week intervals.
Peppers	Tracite Liquid Boron 10%	1-2 qt/A	As needed for nutrient stress at two week intervals.
Tomatoes	Tracite Liquid Boron 10%	1-2 qt/A	As needed for nutrient stress at two week intervals.
Vegetables	Metalosate Boron 5%	8-16 oz/A	Apply during periods of rapid growth or nutrient stress. May be repeated 2-3 times during the season.

Note: Never apply more than two pounds of elemental Boron to any crop during the season.

COMMERCIAL VEGETABLES – HARVEST AIDS/DESICCANTS AND POST HARVEST CONTROL OF CROPS

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DESICCANT	BROADCAST RATE/ACRE		REMARKS AND PRECAUTIONS
	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT	
ALFALFA			
diquat (Reglone) 2 SL	1.5 to 2 pt	0.375 to 0.5	Preharvest desiccation of seed crop only. On thin stands of seed alfalfa, use 1 pt per acre. Desiccation is complete in 3 to 10 days. Harvest within 7 days, but not before 3 days. DO NOT graze or feed treated forage to livestock. DO NOT use seed from treated plants for food, feed, or oil purposes. Add nonionic surfactant at 0.06 to 0.5% of finished spray volume or add 0.5 to 4 pt nonionic surfactant per 100 gal of spray.
CHILI PEPPERS			
sodium chlorate (3 lb Chlorate) 3 L (Defol 750) 7.5 L	4 to 10 qt 1.6 to 4 qt	3 to 7.5	PROCESSING ONLY. Consult processor before applying. Apply in 20 to 40 gallon of water by ground rig. Apply 14 days before anticipated harvest, longer if temperatures are cool. Do not graze treated fields or feed waste to livestock.
DRY BEANS (sweet lupin, white sweet lupin, white lupin, grain lupin, adzuki beans, asparagus beans, black beans, broad beans, field beans, garbanzo beans, kidney beans, lablab beans, lima beans, moth beans, mung beans, navy beans, pinto beans, rice beans, tepary beans, urd beans, blackeyed peas, cowpeas, crowder peas, southern peas, catjang, and guar) AND DRY PEAS.			
carfentrazone (Aim) 2 EC	1 to 2 fl oz	0.016 to 0.032	Apply when crop is mature and grain has begun to dry down. Use a minimum of 10 gallon of finished spray for ground application. Add crop oil concentrate at 1% v/v or non-ionic surfactant at 0.25% v/v. Do not apply within 3 days of harvest.
paraquat (Firestorm, Parazone) 3 SL (Gramoxone) 2 SL	0.8 to 1.3 pt 1.2 to 2.0 pt	0.3 to 0.48	Apply paraquat for weed and bean/pea desiccation. Apply when the crop is mature and AT LEAST 80% of the pods are yellowing and mostly ripe with no more than 40% (bush-type beans) or 30% (vine-type beans) of the leaves still green in color. Add nonionic surfactant at 1 qt per 100 gal spray mix. Do not apply when weather conditions favor spray drift. Do not harvest or graze for at least 7 days after application. Make application in at least 20 gallons of water per acre.
DRY BEAN, GUAR BEAN, SOUTHERN PEA			
sodium chlorate (3 lb Chlorate) 3 L (Defol 750) 7.5 L	8 qt 3.2 qt	6	Apply in 10 to 20 gallons of water to facilitate harvest. Apply approximately 7 to 10 days before anticipated harvest, longer if temperatures are cool. Do not graze treated fields or feed waste to livestock.
POTATO			
diquat (Reglone) 2 SL	1 to 2 pt	0.25 to 0.5	Desiccation of non-stressed potato vines. Under conditions of heavy vine cover two applications may be applied. Applications must be at least 5 days apart. Do NOT harvest within 7 days of application. Apply in at least 20 gallons of water per acre. Add nonionic surfactant at 0.06 to 0.5% of finished spray volume or add 0.5 to 4 pt nonionic surfactant per 100 gal of spray.
glufosinate-ammonium (Rely 200) 1.67 SL	29 fl oz	0.375	Apply at the beginning of natural senescence of potato vines. Do not split application or apply more than once. Thorough coverage of the potato vines is essential. Use sufficient volume (20 to 100 gal) of water for excellent vine coverage. DO NOT harvest potatoes until 9 days or more after application. DO NOT apply to potatoes grown for seed.
carfentrazone (Aim) 2 EC	3.2 to 5.8 fl oz	0.05 to 0.09	Water volume must provide coverage of potato (>20 GPA). Adequate desiccation achieved within 14 days. If a second application is necessary, apply 7 to 14 d after the first application. Add a NIS (2 pt/100 gal spray, COC (1-2 gal/100 gal spray)) or methylated seed oil. Do not apply more than 11.6 oz/A per season. Do not apply within 7 d of harvest
pyraflufen ethyl (ET) 0.208 L	2.75 to 5.5 fl oz	0.0045 to 0.0089	Apply as a foliar spray in the early stage of crop senescence. Apply by ground in 20 to 50 gallons of water per acre. Make 1 to 2 applications at a minimum 7 day interval. Do not exceed 2 applications or 11 fl oz/acre per season. Do not apply within 7 day of harvest.

**COMMERCIAL VEGETABLES - HARVEST AIDS/DESICCANTS
AND POST HARVEST CONTROL OF CROPS (continued)**

DESICCANT	BROADCAST RATE/ACRE		REMARKS AND PRECAUTIONS
	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT	
SWEET CORN			
carfentrazone (Aim) 2 EC	up to 1.9 fl oz	up to 0.031	Desiccation of morningglory and tropical spiderwort. Apply when crop is mature and grain has begun to dry down. Use a minimum of 10 gallon of finished spray for ground application and 5 gallon of finished spray for aerial application. Add crop oil concentrate at 1 % v/v. Do not apply within 3 days of harvest. Aerial applications pose <u>significant</u> drift concerns and are not recommended within 1 mile of any vegetable or fruit crop!
TOMATO: POST HARVEST ONLY			
paraquat (Firestorm, Parazone) 3 SL (Gramoxone) 2 SL	1.6 to 2.5 pt 2.4 to 3.75 pt	0.6 to 0.94	After final harvest. Apply in 40 to 120 gallons of water per acre. Add nonionic surfactant at 0.125% of final spray volume. Thorough coverage of vines is required.
VEGETABLES: POST HARVEST ONLY			
paraquat (Gramoxone) 2 SL	2.25 to 3 pt	0.56 to 0.75	Broadcast spray over plants following harvest to control many vegetables and emerged weeds. Add a nonionic surfactant at 1.0 quart per 100 gallons of spray mix. Do not graze livestock in treated areas. Do not use treated vegetables for human or animal consumption.
glyphosate (Roundup WeatherMax) 5.5 SL	11 to 32 fl oz	0.5 to 1.5	May be applied as a POST-harvest application for the control of the following crops and emerged weeds: <i>Brassica:</i> broccoli, cabbage, collard, kale, mustard <i>Bulb crops:</i> garlic, leek, onion <i>Cucurbits:</i> cucumber, melons, pumpkin, squash, <i>Leafy vegetables:</i> celery, lettuce, spinach <i>Fruiting vegetables:</i> eggplant, pepper, tomato <i>Legumes:</i> lima bean, snap bean, southern pea, English pea, garden pea <i>Root and Tuber:</i> beet, carrot, parsley, radish, rutabaga, sweet potato <i>Other:</i> globe artichoke, okra, sugar beet See label for use on additional crops. Apply at least 30 days prior to planting any non-labeled crop.
VEGETABLES: CUCURBIT AND FRUITING VEGETABLE TRANSPLANTS: POST HARVEST ONLY			
carfentrazone (Aim) 2 EC	0.5 to 2.0 fl oz	0.008 to 0.032	Burndown of previous crop and weeds prior to transplanting a new crop. Mix with glyphosate. Be aware of drift as severe injury will occur to most other crops and plants if contacted by this mixture. A single 0.5 inch water event, either by rainfall or irrigation, and a 7 day interval between application and transplanting the next crop is required to remove residues from mulch.