

TOBACCO PLANT BED INSECT CONTROL

Robert M. McPherson, Research Entomologist
J. Michael Moore, Extension Agronomist

INSECT	CHEMICAL AND FORMULATION	RATE PER 100 SQ. YDS.	REMARKS AND PRECAUTIONS
Aphids, flea beetles (preventive control)	disulfoton (Di-Syston) 15G	9 ozs.	Apply granules broadcast just before seeding or over top of small plants--water in immediately. Do not exceed recommended rate.
Aphids, flea beetles or vegetable weevils	acephate (Orthene) 75S (Acephate) 75SP (Orthene) 97PE	1 tbsp. in 1 gal. water (1 lb./acre) 0.75 tbsp. in 1 gal. water (12 ozs./acre)	Apply to foliage as needed.
Budworms	acephate (Orthene) 75S (Acephate) 75SP (Orthene) 97PE	1 tbsp. in 1 gal. water (1 lb./acre) 0.75 tbsp. in 1 gal. water (12 ozs./acre)	Apply to foliage as needed.
Cutworms	acephate (Orthene) 75S (Acephate) 75SP (Orthene) 97PE carbaryl (Sevin) 5% B	1 tbsp. in 1 gal. water (1 lb./acre) 0.75 tbsp. in 1 gal. water (12 ozs./acre) 0.5-1 lb.	Apply to foliage in late afternoon or at dusk. Scatter bait evenly at dusk around margins, walkways and open spaces in bed. Keep off plants as much as possible.
Green June beetle grubs	carbaryl (Sevin XLR Plus)	5.5 ozs. in 50 to 100 gals. water	Apply only to uprooted areas of bed.
Mole Crickets	Carbaryl 5%B as applied for cutworms gives helpful control.		See remarks under cutworms.
Slugs and snails	Metaldehyde 5% B	4-13 ozs.	Scatter bait evenly at dusk around margins, walkways and open spaces in bed. Do not apply directly to plants.

TOBACCO TRANSPLANTS GROWN IN GREENHOUSES

INSECT	CHEMICAL AND FORMULATION	RATE PER 1000 SQ. FT.	REMARKS AND PRECAUTIONS
Aphids, cutworms, or flea beetles	acephate (Orthene) 75S (Acephate) 75SP (Orthene) 97PE	1 tbsp. in 3 gals. of water 0.75 tbsp. in 3 gals. water	Apply to foliage as a spray. Do not apply through an irrigation system. Over application can cause plant injury.
Aphids or flea beetles	imidacloprid (Admire Pro) 4.6 (Alias and others) 2F thiamethoxam (Platinum and T-Moxx) 2SC	0.45-0.6 ozs. per 1000 plants 1.0-1.4 ozs. per 1000 plants 0.8-1.3 ozs. per 1000 plants	To control aphids or flea beetles in the field, apply as a drench to trays or flats not more than 7 days prior to transplanting. Water in immediately, using sufficient water volumes to remove any white residue from foliage.
Slugs and snails	Metaldehyde (Deadline Bullets) 5% B	0.5-2 lbs.	Apply to margins, walkways and vacant areas at dusk. Do not apply to float water or directly to plants.
Mole crickets or wireworms	imidacloprid (Admire Pro) 4.6 (Alias and others) 2F	0.6-1.2 ozs. per 1000 plants 1.4-2.8 ozs. per 1000 plants	To control mole crickets or wireworms in the field, apply as a drench to trays or flats prior to transplanting. Water in immediately, using sufficient water volumes to remove any white residue from foliage.
Wireworms (only)	thiamethoxam (Platinum and T-Moxx) 2SC	1.3 ozs. per 1000 plants	To control wireworms in the field, apply as a drench to trays or flats prior to transplanting.

TOBACCO PLANT BED DISEASE CONTROL

Paul Bertrand, Extension Plant Pathologist

DISEASE	CHEMICAL AND FORMULATION	RATE	REMARKS AND PRECAUTIONS
Blue mold and Pythium damping off	Dithane DF	1.4 - 2.4 pound/Acre (0.7 - 1.2 oz per 150 sq. yds.)	Use as an over the top spray on a 7-day schedule as long as conditions warrant.
Rhizoctonia damping off and Target Spot	Dithane DF	See above	Apply when needed. Spray twice a week beginning when plants are dime sized - continue through transplanting. Thoroughly cover all plants. Use as a drench when damping-off is present in the bed.
Tobacco mosaic virus	a) Rinse hands with milk or soap prior to each plant handling operation. b) Do not handle tobacco products or weeds around plant beds during or prior to handling plants.		

TOBACCO PLANT BED NEMATODE AND WEED CONTROL

Paul Bertrand, Extension Plant Pathologist
J. Michael Moore, Extension Agronomist

DISEASE	CHEMICAL AND FORMULATION	RATE	REMARKS AND PRECAUTIONS
Root-knot and lesion nematodes and weeds			APPLY METHYL BROMIDE WHEN SOIL TEMPERATURE IS ABOVE 50°F.
	Methyl bromide 98%	9 lbs./100 sq. yds.	Cans: Release gas under plastic covering. Plastic should be raised and sealed around the edges with soil. Leave covered 24 hours. Seed bed 72 hours after the cover is removed.
	Methyl bromide 68.6% or	10-12 lbs./100 sq. yds.	Cylinders: Inject into well prepared soil with chisel applicators. Cover immediately with plastic and seal all edges. Leave covered for 48 hours. Remove cover 72 hours prior to seeding.
	Vapam or	37.5 gal./acre	Spray on and incorporate with rototiller 6" deep ahead of plastic tarp. Wait 7 days before punching and removing tarp. Wait 7-14 days from tarp removal before seeding.
	Vapam + Telone C-17	37.5 gal.acre + 10 gal./acre	Spray on and incorporate 6" deep with rototiller. Apply by chisel in front of tiller, but ahead of plastic tarp. Wait 7 days before punching or removing tarp. Wait 14-21 days from tarp removal before seeding.

TOBACCO GREENHOUSE TRAY SANITATION

Paul Bertrand, Extension Plant Pathologist

DISEASE	CHEMICAL AND FORMULATION	RATE	REMARKS AND PRECAUTIONS
Rhizoctonia, Sclerotinia and Pythium	Methyl Bromide 98%	3 lbs / 1000 cubic feet	Stack polystyrene trays loosely with sticks separating trays after each ten trays in the stack to improve movement of the gas into the trays. Release gas into and maintain a closed environment (plastic tarp or other container) for at least 72 hours when air temperature is at least 50F. Greenhouses should not be used as fumigation chambers as they cannot be properly sealed. Trays should be ventilated prior to filling with media. Proper precautions should be taken to avoid worker injury from remaining gas when the cover is opened.
Rhizoctonia, Sclerotinia and Pythium	Steam	160°F - 175°F for 30 minutes	Excessive heat for an extended period of time can cause trays to be brittle and warp resulting in problems during mechanical seeding.

TOBACCO GREENHOUSE DISEASE CONTROL

Paul Bertrand, Extension Plant Pathologist

DISEASE	CHEMICAL AND FORMULATION	RATE PER 1000 sq. ft.	REMARKS AND PRECAUTIONS
Blue Mold, Rhizoctonia (Damping Off & Target Spot)	mancozeb (Dithane DF)	0.5 lb. (one level teaspoon per gallon)	Use 0.5 lb per 100 gallons of water. Spray to run-off (3 gallons per 1000 sq. ft.) every 5-7 days when plants reach dime size (0.5 - 1 inch tall). Gradually increase the spray volume to 6 to 12 gallons per 1000 sq. ft. as plants enlarge until transplanting to the field.
DISEASE	CHEMICAL AND FORMULATION	RATE PER 100 GALLONS	REMARKS AND PRECAUTIONS
Pythium Root Rot	Etridiazole (Terramaster 35 WP) (Terramaster 4 EC)	2 oz. 1 fl. oz.	Mix Terramaster per 100 gallons of water 2-3 weeks after seeding and again up to 8 weeks after seeding as needed. Mix Terramaster with water in a bucket and add to float water while providing thorough mixing. A sequential application may be made three weeks after the initial application as needed.
If Pythium shows up a second treatment can be made up until 8 weeks after seedling. The plant producer assumes all responsibility for any stunting or plant injury that may occur.			

TOBACCO FIELD INSECT CONTROL

Robert M. McPherson, Research Entomologist
J. Michael Moore, Extension Agronomist

INSECT	CHEMICAL AND FORMULATION ¹	RATE PER ACRE	POUNDS ACTIVE INGREDIENT PER ACRE	REMARKS AND PRECAUTIONS
Aphids	acephate (Orthene) 75S	⅔ - 1 lb.	0.5-0.75	Good coverage is essential for control for all products. The use of drop nozzles will improve control by depositing insecticides on the underside of the leaves where aphids feed. Do not apply bifenthrin later than layby and do not apply more than 0.2 lbs. AI/a per season.
	(Orthene) 97PE	8-12 ozs.	0.5-0.73	
	(Acephate) 75SP	⅔-1 lb.	0.5-0.75	
	acetamiprid (Assail) 80 WP	0.6-1.7 ozs.	0.025-0.075	
	bifenthrin (Brigade) 2EC	2.56-6.4 ozs.	0.04-0.10	
	imidacloprid (Provado) 1.6F	2-4 ozs.	0.025-0.05	
	methomyl (Lannate) 90SP	0.5 lb.	0.45	
	2.4LV	24 ozs.	0.45	
	pymetrozine (Fulfill) 50 WG	2.75 ozs.	0.09	
	thiamethoxam (Actara) 25WG	2-3 ozs.	0.03-0.05	
Aphids (transplant water treatment)	imidacloprid (Admire Pro) 4.6	0.45-0.6 ozs. per 1000 plants	0.016-0.02 per 1000 plants	Apply in transplant water. Mix thoroughly. Use 100+ gallons of water per acre for optimum control.
	(Alias and others) 2F	1.0-1.4 ozs. per 1000 plants	0.01-0.02 per 1000 plants	
	thiamethoxam (Platinum and T-Moxx) 2SC	0.8-1.4 ozs. per 1000 plants	0.013-0.022 per 1000 plants	
	Acephate (Orthene) 75S	1 lb.	0.75	
	(Orthene) 97PE	0.75 lb.	0.73	
	(Acephate) 75SP	1 lb.	0.75	
Budworms	acephate (Orthene) 75S	1 lb.	0.75	Use 8-10 gallons of spray per acre, using one hollow cone nozzle per row when tobacco is less than 12-14 inches high. For the remainder of the season, apply 20-40 gallons of spray using 3 hollow cone nozzles per row. Operate equipment at 60 pounds pressure and do not exceed 4 miles per hour. For best results apply when worms are very small (less than ¼ inch long). Bt must be eaten by the insect to be effective. Worms will die several days after feeding.
	(Orthene) 97PE	12 ozs.	0.73	
	(Acephate) 75SP	1 lb.	0.75	
	bifenthrin (Brigade) 2EC	2.56-6.4 ozs.	0.04-0.10	
	emamectin benzoate (Denim) .16EC	8-12 ozs.	0.01-0.015	
	Flubendiamide (Belt) SC	2-3 ozs.	0.06-0.09	
	methomyl (Lannate) 90SP	0.5 lb.	0.45	
	2.4LV	24 ozs.	0.45	
	spinosad (Tracer) 4SC	1.4-2.9 ozs.	0.044-0.09	
	<i>Bacillus thuringiensis</i> (Dipel) ES	2 pts.		
	(Dipel) DF	½ - 1 lb.		
	(Agree) S	1 - 2 lbs.		
	(Biobit) XL	3 pts.		
	(Biobit) HP	1 lb.		
	(Condor) OF	1 ⅔ qts.		
	(Crymax) WDG	1-1½ lbs.		
	(Javelin) WG	1-1¼ lbs.		
(Lepinox) WDG	1-2 lbs.			

TOBACCO FIELD INSECT CONTROL (continued)

INSECT	CHEMICAL AND FORMULATION ¹	RATE PER ACRE	POUNDS ACTIVE INGREDIENT PER ACRE	REMARKS AND PRECAUTIONS
Cabbage looper	acephate (Orthene) 75S (Orthene) 97PE (Acephate) 75SP emamectin benzoate (Denim) .16EC methomyl (Lannate) 90SP 2.4LV <i>Bacillus thuringiensis</i> (See rates for budworms) spinosad (Tracer) 4SC	1 lb. 12 ozs. 1 lb. 8-12 ozs. 0.5 lb. 24 ozs. 2-2.9 ozs.	0.75 0.73 0.75 0.01-0.015 0.45 0.45 0.063-0.09	Apply thoroughly. Good lower leaf coverage is essential for control. See remarks under Budworms. For best results apply when worms are small (½ inch long or less). Bt must be eaten by the insect to be effective. Worms will die several days after feeding.
Cutworms	acephate (Orthene) 75S (Orthene) 97PE (Acephate) 75SP bifenthrin (Brigade) 2EC cyfluthrin (Baythroid) XL	1 lb. ¾ lb. 1 lb. 4-6.4 ozs. 0.28 oz.	0.75 0.73 0.75 0.0625-0.10 0.0022	Apply 25-50 gallons of spray ovetop of plants. Make application during late afternoon. Apply bifenthrin as a pre-transplant broadcast application incorporated into the top 4" of the soil and no more than 0.2 lbs. AI/a per season. Apply cyfluthrin up to 7 days after transplanting and only 1 application per season.
Cutworms (transplant water treatment)	acephate (Orthene) 75S (Orthene) 97PE (Acephate) 75SP bifenthrin (Brigade) 2EC	1 lb. ¾ lb. 1 lb. 4-6.4 ozs.	0.75 0.73 0.75 0.0625-0.10	Apply in transplant water. Mix thoroughly. No more than 0.2 lbs. AI/a of bifenthrin can be applied per season.
Flea beetles (transplant water treatment)	acephate (Orthene) 75S (Orthene) 97PE (Acephate) 75SP imidacloprid (Admire Pro) 4.6 (Alias and Others) 2F thiamethoxam (Platinum and T-Moxx) 2SC	1 lb. ¾ lb. 1 lb. 0.45-0.6 ozs. per 1000 plants 1.0-1.4 ozs. per 1000 plants 0.8-1.3 ozs. per 1000 plants	0.75 0.73 0.75 0.016-0.02 per 1000 plants 0.016-0.02 0.01-0.02 per 1000 plants	Apply in transplant water. Mix thoroughly.
Flea beetles	acephate (Orthene) 75S (Orthene) 97PE (Acephate) 75SP bifenthrin (Brigade) 2EC carbaryl (Sevin) 80S (Sevin XLR Plus) imidacloprid (Provado) 1.6F thiamethoxam (Actara) 25WG methomyl (Lannate) 90SP 2.4LV	¾ lb. ½ lb. ¾ lb. 2.56-6.4 ozs. 1¼-2½ lbs. 1-2 qts. 2-4 ozs. 2-3 ozs. ¼-½ lb. 12-24 ozs.	0.5 0.5 0.5 0.04-0.10 1-2 1-2 0.025-0.05 0.03-0.05 0.23-0.45 0.23-0.45	Use lower rates for small plants. Use higher rates for large plants and thoroughly cover the lower leaves. Do not apply bifenthrin later than layby and do not apply more than 0.2 lbs. AI/a per season.
Grasshoppers	acephate (Orthene) 75S (Orthene) 97PE (Acephate) 75SP bifenthrin (Brigade) 2EC carbaryl (Sevin) 80S 4F (Sevin XLR Plus)	⅓-⅔ lb. ¼-½ lb. ⅓-⅔ lb. 2.56-6.4 ozs. ⅝-1⅞ lbs. ½-1½ qts. ½-1½ qts.	0.25-0.5 0.2-0.5 0.25-0.5 0.04-0.10 0.5-1.5 0.5-1.5 0.5-1.5	Apply thoroughly. Spraying around field borders may aid in preventing infestations. Do not apply bifenthrin later than layby and do not apply more than 0.2 lbs. AI/a per season.

TOBACCO FIELD INSECT CONTROL (continued)

Precautions

Workers should wear protective clothing when they handle treated tobacco. Schedules for insecticides with restrictions on field reentry and tobacco harvest are:

INSECTICIDE	RESTRICTED ENTRY INTERVAL (HOURS BEFORE FIELD REENTRY)	DAYS FROM LAST APPLICATION TO HARVEST
acephate (Orthene/Acephate)	24	3
acetamiprid (Assail)	12	7
<i>Bacillus thuringiensis</i> (Dipel, Agree, Biobit, Condor, Crymax, Javelin, Lepinox)	4	0
bifenthrin (Brigade)	12	Last application by layby
carbaryl (Sevin)	12	0
cyfluthrin (Baythroid)	12	Apply within 7 days of planting
emamectin benzoate (Demin)	48	14
Flubendiamide (Belt)	12	14
imidacloprid (Admire Pro, Provado, Alias and Others)	12	14
methomyl (Lannate)	48	5
pymetrozin (Fulfill)	12	14
spinosad (Tracer)	4	3
thiamethoxam (Platinum, Actar, T-Moxx)	12	14

TOBACCO FIELD DISEASE CONTROL

Paul Bertrand, Extension Plant Pathologist

DISEASE	CHEMICAL AND FORMULATION	RATE PER ACRE	REMARKS
Black shank	mefenoxam		Broadcast-Incorporate at or just prior to setting.
	Ridomil Gold EC	1 pt. PPI + .5-1 pt. layby	Mefenoxam may be applied to the beds at first plowing if heavy rainfall (>1") occurred between the PPI treatment and transplanting. Apply mefenoxam at layby using two drop nozzles per row. Direct spray to bed. Follow with layby plowing. Applying mefenoxam over the top to plant foliage will provide NO black shank control.
	Ultra flourish	1 qt. PPI + 1-2 pt. layby	
Blue Mold	FORUM FUNGICIDE		Select rate based on table below. Apply with drops as necessary to get full crop coverage.
	<u>Weeks of Growth After Transplant</u>	<u>Rate of FORUM (ounces of Product)</u>	<u>Water Output (Gallons/Acre)</u>
	Recently Transplanted to 3 weeks after transplanting	2	20
	3-4 weeks after transplanting (Knee High)	3	40
	4-5 weeks after transplanting (Waist High)	4	60
	6-7 weeks after transplanting (Chest High)	6	80
	7 weeks after transplanting and beyond (Shoulder height up to topping)	7	100
<p>Begin applications when the Blue Mold Advisory states that conditions favor development of blue mold, and before the onset of disease infection. Continue applications on a 5-7 day spray schedule until weather conditions favoring infection and sporulation decrease. Discontinue sprays when and if the threat of blue mold subsides. Restrictions (Field Application): DO NOT exceed 8 oz/acre per application. DO NOT exceed 30 oz/acre of FORUM per season. Full plant coverage is required for blue mold control with FORUM.</p>			
or	Actigard 50WG	½ oz.	Begin treatment when plants reach 18" high. Make up to 2 applications on a 10 day schedule
or Blue Mold Target Spot	Quadris	6-12 oz. (0.1-0.2 lb a.i.)	Alternate with FORUM If blue mold is present begin with forum DO NOT use more than 0.54 lb a.i./acre/year. Full plant coverage is required for disease control with either FORUM or QUADRIS. Quadris will give some control of blue mold and very good control of target spot if plant coverage is complete.
Tomato Spotted Wilt	Admire Pro 4.6 SC	0.7-0.9 oz./1000 tray cells	Plant house tray drench. Spray Admire onto wetted foliage and immediately rinse with enough water to wash the Admire off foliage into the root media.
		0.8-1.0 oz./1000 plants	Combine with transplant water. Mix thoroughly.
or	GENERIC IMIDACLOPRID 2F FORMULATIONS: (Alias, Couraze, Imia, Macho, Nuprid, Torrent)	1.5-2.0 oz.	Tray drench as above.
	GENERIC 2F	1.8-2.4 oz.	.In transplant water as above.
or	Platinum 2SC/ T-Moxx 2SC	1.3 oz	Tray drench as above. Platinum / T-Moxx are not suited for transplant water application
and	Actigard 5WG	1.0 oz./100,000 field ready seedlings	Spray seedlings in beds or plant houses 5-7 days before transplanting. Use transplant water. DO NOT let Actigard treated plants in trays or boxes dry out.

TOBACCO FIELD NEMATODE CONTROL

FUMIGANT NEMATOCIDES

CHEMICAL AND FORMULATION	RATE PER ACRE	RATE PER 100 FT. OF ROW	REMARKS
<u>Row Treatment</u>			
Telone II	6 gals.	cc 184 fl ozs 6.2	Inject 8 inches deep on the flat or 14-16 inches below top of a high wide bed. Make application when soil temperature is 55°F or above. Seal by bedding or dragging. Wait 3 weeks between application and setting. Break bed open 1-2 days prior to setting.
<p>*Use a fumigant when potential for nematode damage is moderate to high, or when javanese (<i>Meloidogyne javanica</i>) or peanut (<i>M. arenaria</i>) root-knot nematode is known to occur, or when root-knot nematodes and black shank or Fusarium wilt are present.</p> <p>**Multipurpose fumigants such as Telone C-17 or chloropicrin are also effective. These projects are more costly than Telone II and only provide cost effective disease control when Granville wilt is also known to occur. In Georgia, multipurpose fumigants have never shown a consistent benefit for black shank control beyond the reduction in black shank associated with root-knot nematode control.</p>			

NON-FUMIGANT NEMATOCIDES

CHEMICAL AND FORMULATION	RATE PER ACRE BROADCAST	POUNDS ACTIVE INGREDIENT PER ACRE	REMARKS
Broadcast and thoroughly incorporate non-fumigant nematicides prior to forming beds.			
Nemacur 3	2 gals.	6	Use 2 gallons of Nemacur or 1 gallon of Nemacur + 1 gallon of Mocap where potential for damage from Southern root-knot is low to moderate.
Nemacur 3	1 gal.	3	
+	+		
Mocap 6EC	1 gal.	6	

TOBACCO WEED CONTROL

(Flue-Cured and Burley)

J. Michael Moore, Extension Agronomist - Tobacco

BROADCAST RATE/ACRE				
TIMING	HERBICIDE FORMULATION	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT/A	REMARKS AND PRECAUTIONS
PLANT BED (for control of soil fungi, bacteria, nematodes, insects and weeds)	Methyl Bromide 98%	9 lb/100 sq yd	8.82/sq yd	Apply methyl bromide when soil temperature is above 50°F.
	Methyl Bromide 68.6%	10-12 lb/100 sq yd	6.8 - 8.2/sq yd	Cans: Release gas under plastic covering. Plastic should be sealed around the edges with soil. Leave covered for 24 hours. Seed bed after 72 hours of aeration. Cylinders: Inject into well prepared soil with chisel applicators. Cover immediately with plastic and seal all edges. Leave covered for 48 hours. Remove cover to provide sufficient aeration 72 hours prior to seeding.
	metham-sodium (Vapam)	1 to 1.5 gal/100 sq yd		A. Spray Vapam on moist soil surface, incorporate 6" deep with tiller and cover with plastic all in a single operation as with Methyl Bromide. B. After treatment, wait 7 d before punching holes in plastic. C. After punching, wait 14-21 days before seeding.
	metham-sodium (Vapam) + 1-3D+chloropicrin (Telone C-17)	37.5 gal/A + 10 gal/A		A. Spray Vapam on moist soil surface, chisel in Telone C-17, incorporate/seal by tiller(6"deep) behind chisels, and cover with plastic all in a single operation as with Methyl Bromide. B. After treatment, wait 7 d before punching holes in plastic. C. After punching, wait 14-21 days before seeding.
(for post emergence control of grasses)	sethoxydim (Poast) 1.5 lb/gal	1.0 pt (0.33 fl oz per 100 sq yd)	0.19	Addition of a non-phytotoxic oil concentrate at 1 qt/A (0.67 fl oz per 100 sq yd) is required. Allow plants to completely dry before covering, especially with plastic.
PREPLANT	clomazone (Command)3ME 3 lb/gal	2.0 to 2.66 pt/A	0.75-1.0	Apply Command as a broadcast spray at low pressure and large droplet size. Incorporate to a depth not to exceed one inch prior to transplanting. Transplant roots should be placed below the treated area. Off-site movement of spray drift or vapors of Command can cause foliar whitening or yellowing of some plants (fruit and nut trees, berries, roses, other landscape plants and greenhouse plants). Temporary whitening and/or yellowing of the treated crop and rotational crops may occur. The crop should grow through this with no adverse impact. Do not plant small grain for grain less than 12 months after application of Command. Do not graze treated areas for 9 months.
	isopropalin (Paarlan) 6E 6 lb/gal	1 qt	1.5	Apply and soil incorporate within 14 days prior to transplanting. Prior to bedding, apply and soil incorporate either Paarlan, Prowl or Devrinol with a power-driven rotary tiller set to cut 4 inches deep or incorporate by disking and cross disking with a disk harrow set to cut 4 to 6 inches deep. If applied to preformed beds, "board off" to planting level and incorporate with a power-driven rotary tiller set to cut 4 inches deep.
	pendimethalin (Prowl) 3.3E (Pendimax) (Repose) 3.3 lb/gal	1.8 - 2.4 pt 1.8 - 2.4 pt 1.8 - 2.4 pt	0.75 - 1.0	
	napropamide (Devrinol)50W (Devrinol) 2E	2 - 4 lb 2 - 4 qt	1.0 - 2.0	
	pebulate (Tillam) 6E	5 pt 5 fl oz	4	Devrinol is for field use only. Not labeled for tobacco seedbeds due to plant injury. Tillam should be used if nutsedge is a problem in the field. Apply and incorporate immediately either before or after bedding as discussed above. If possible, apply Tillam at least 2 days before transplanting.

TOBACCO WEED CONTROL (continued)
(Flue Cured and Burley)

BROADCAST RATE/ACRE				
TIMING	HERBICIDE FORMULATION	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT/A	REMARKS AND PRECAUTIONS
PREPLANT (cont.)	pebulate (Tillam) 6E 6 lb/gal	5 pt 5 fl oz	4.0	Tillam and Devrinol may be tank-mixed to provide control of nut-sedge and many annual grasses and some broadleaf weeds. Apply and incorporate immediately either before or after bedding as discussed above. If possible, apply this combination at least 2 days before transplanting.
	+ napropamide (Devrinol)50W (Devrinol) 2E	+ 2 lb 2 qt	+ 1.0	
PRETRANS-PLANT (surface application only)	sulfentrazone (Spartan 4F) 4 lb ai/gal	8.0 oz	0.25	<p>DO NOT INCORPORATE !!</p> <p>CALIBRATION IS IMPORTANT !!</p> <p>Application rate for Spartan DF should be limited to 0.25 lb ai per acre (5.3 oz Spartan DF or 8.0 oz Spartan 4F). Excessive application rates or poor calibration may result in injury to the tobacco.</p> <p>Spartan DF should not be applied to soils classified as Sand with less than 1% Organic Matter and shallow groundwater. Most Georgia tobacco soils would make the loamy sand or sandy loam categories of coarse textured soils. Application methods should be directed toward applying and maintaining Spartan at the soil surface. Spartan may be surface applied up to 14 days prior to transplanting after all other soil incorporation practices have been performed where transplanting occurs without bedding. If beds are formed prior to transplanting, the top of the beds should be dragged or knocked off prior to application of Spartan. Transplant into the treated bed without pushing additional soil from the bed. Spartan should not be incorporated into the bed greater than 2 inches.</p> <p>DO NOT APPLY SPARTAN POST-TRANSPLANT OVER THE TOP OF TOBACCO AS CROP INJURY MAY OCCUR.</p> <p>Rotational Guidelines limit recropping treated soil to: wheat - 4 months, field corn - 10 months, cotton - 18 months, canola - 24 months. Although recropping to vegetables is not mentioned on the label, the limited information available would discourage recropping treated soil to most vegetables in less than 12 months after treatment.</p>
POST TRANS-PLANTING	napropamide (Devrinol)50W	2 - 4 lb	1.0 - 2.0	Apply directly over the top of tobacco immediately after trans-planting to control weeds before they emerge. Irrigate with 1/2 inch of water if no rainfall occurs within 3 to 4 days. Refer to Remarks for Command under the Preplant section for comments on application, off-site movement and rotation. Tender plant bed plants and particularly greenhouse plants have been shown to be very sensitive to Command and some leaves may turn white for a short period of time. This does not usually cause a reduction in yield and has not been widely observed in Georgia.
	clomazone (Command)3ME 3 lb/gal	2.0 to 2.66 pt/A	0.75-1.0	
- with hooded or shielded sprayer	sulfentrazone (Spartan F) 4 lb ai/lb	8 oz	0.25	<p>Based on the results of accumulated work in Georgia Spartan 4F has received 2 (ee) labeling providing for the application of Spartan 4F with a shielded sprayer within 7 days after transplanting but prior to weed emergence and cultivation.</p> <p>Tobacco transplants should be protected from Spartan 4F spray using an appropriately shielded sprayer. Apply Spartan 4F solution to provide coverage of all row bed surface excluding 4 inches on both sides of the tobacco transplants (8" band). Cultivate tobacco as-soon-as-possible and within 7 days of Spartan 4F application to provide slight incorporation and move treated soil around plants and to cover untreated press wheel track (8" band).</p>

TOBACCO WEED CONTROL (continued)
(Flue Cured and Burley)

BROADCAST RATE/ACRE				
TIMING	HERBICIDE FORMULATION	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT/A	REMARKS AND PRECAUTIONS
POST TRANS-PLANTING (cont.) - with hooded or shielded sprayer	carfentrazone (Aim EC) 2 lb ai/gal	0.8 - 1.5 fl oz	0.013 - 0.023 lb ai	Use Aim EC for postemergence control of many broadleaf weeds (including most morningglory species other than small flower) up to 4 inches high growing in between the rows of tobacco. Use higher rates when treating more mature weeds or dense vegetative growth. COVERAGE IS ESSENTIAL FOR GOOD CONTROL. Use adequate spray volume to achieve thorough coverage, but a minimum of 10 gallons of finished spray per acre is required. Use a quality crop oil concentrate (COC) at 1% v/v (1 gallon of COC per 100 gallons of spray solution). Do Not Allow spray solution to contact tobacco foliage or green stem tissue. Do Not Apply within 6 days of harvest. Do Not Apply more than 3.06 fl oz (0.48 lb ai) per acre per season.
	napropamide (Devrinol)50W pendimethalin (Prowl) 3.3E (Repose) 3.3 lb/gal	2 lb 1.2 - 1.8 pt	1.0 - 2.0 0.5 - 0.75	
(for post emergence control of grasses)	sethoxydim (Poast) 1.5 lb/gal	1 - 1.5 pt	0.19	Provides selective broad Spectrum postemergence control of annual and perennial grass weeds. Poast does not control sedges or broadleaf weeds. Addition of a non-phytotoxic oil concentrate at 1 qt/A is required. Do Not apply within 42 days of harvest. Do Not apply to grasses under stress, such as stress due to lack of moisture or herbicide injury, as unsatisfactory control may result. Do not cultivate within 7 days before or 7 days after applying Poast.
AFTER FIRST HARVEST - Post - Directed or Banded -	carfentrazone (Aim EC) 2 lb ai/gal	0.8 - 1.5 fl oz	0.013 - 0.023 lb ai	Aim EC may be applied with drop nozzles or other spray equipment capable of directing the spray to the target weeds and away from sensitive plant parts. Aim EC may be applied up to the maximum rate for the target crop for the control of larger weed sizes or weeds not controlled with lower use rates. Directed spray after first priming (Flue-Cured Tobacco Only) Aim EC may be applied as a directed spray application after the first priming in only flue cured tobacco only for the control of emerged and actively growing broadleaf weeds. Directed spray equipment should position nozzles a minimum of 3 to 4 inches above the soil, with nozzles directed underneath the crop canopy. Spray solution should be directed at the base of tobacco plants for minimal contact with foliage while maintaining maximum contact with broadleaf weeds that are at appropriate treatment size. Do not apply when conditions favor drift or wind is above 10 mph. Use Aim EC for postemergence control of many broadleaf weeds (including most morningglory species other than small flower) up to 4 inches high growing in between the rows of tobacco. Use higher rates when treating more mature weeds or dense vegetative growth. COVERAGE IS ESSENTIAL FOR GOOD CONTROL. Use adequate spray volume to achieve thorough coverage, but a minimum of 10 gallons of finished spray per acre is required. Use a quality crop oil concentrate (COC) at 1% v/v (1 gallon of COC per 100 gallons of spray solution). Do Not Allow spray solution to contact tobacco foliage or green stem tissue. Do Not Apply within 6 days of harvest. Do Not Apply more than 3.06 fl oz (0.48 lb ai) per acre per season.

TOBACCO WEED RESPONSE TO HERBICIDES

(Flue-Cured and Burley)

J. Michael Moore, Extension Agronomist - Tobacco

	PLANT BED & FIELD	FIELD APPLICATION											
		PRE-TRANSPLANT						POST TRANSPLANT		LAYBY		POST- DIRECTED OR BANDED	
		SURFACE APPLIED	INCORPORATED					Dev- rinol + Tillam	Dev- rinol	Com- mand	Dev- rinol	Prowl	Aim EC
			Com mand	Prowl	Dev- rinol	Tillam	Devrinol + Tillam						
Poast	Spartan ¹	Com mand	Prowl	Dev- rinol	Tillam	Devrinol + Tillam	Dev- rinol	Com- mand	Dev- rinol	Prowl	Aim EC		
PERENNIAL WEEDS													
purple nutsedge	P	E	P	P	P	P	P	P	P	P	P	N	
yellow nutsedge	P	E	P	P	P	F	F	P	P	P	P	N	
ANNUAL GRASSES													
crabgrass	E	F-G	E	E	E	E	G	E	E	E	E	N	
crowfootgrass	E	F	G	E	E	E	G	E	G	E	E	N	
goosegrass	E	F-G	G	E	E	G	G	E	G	E	E	N	
fall panicum	E	F-G	G	G	G	G	G	G	G	G	G	N	
johnsongrass (seedling)	E	F	F	G	F	G	G	F	F	F	G	N	
sandbur	G	P-F	F	G	-	G	G	-	F	-	G	N	
Texas panicum	G	F	G	G	-	P	P	-	G	-	G	N	
BROADLEAFS													
bristly starbur	P	F-G	P	P	P	G	G	P	P	P	P	N	
Florida beggarweed	P	G-E	F-G	P	P	P	P	P	F-G	P	P	F	
cocklebur	N	F-G		P	P	P	P	P		P	P	G	
Florida pusley	P	F-G	F-G	E	G	E	E	G	F-G	G	E		
lambsquarters	N	E	F-G	G	G	G	G	G	F-G	G	G	E	
pigweeds	N	E	P	G-E	G	G	G	G	P	G	G-E	E	
prickly sida	N	P	G	P	P	F	F	P	G	P	P		
purslane	N	G-E	F-G	E	E	G	E	E	F-G	E	E	E	
ragweed	N	P	F	P	F	G	G	F	F	F	P	F	
smartweed	N	E	G	PF	P	P	P	P	G	P	PF	E	
morningglory sp.	N	E	P	P	P	P	P	P	P	P	P	G-E	

Key to response symbols:

E= Excellent control, weed kill 90% or above.
 G= Good control, weed kill 80% or above.
 F = Fair control, weed kill 70% or above.
 P = Poor control, less than 70% control.
 N= No Control
 If no symbol is given, weed response is unknown.

Ratings are based on average to good soil and weather conditions for herbicide performance.

Bermudagrass and rhizome johnsongrass cannot be controlled with presently labeled tobacco herbicides in the same growing season. However, control can be achieved with Roundup in the season prior to transplanting tobacco (check label for rates and application).

¹ Transplant into the **Spartan** treated bed surface without pushing additional soil from the bed. **Spartan** should not be incorporated into the bed greater than 2 inches. **Do Not** apply **Spartan** post-transplant over the top of tobacco as crop injury may occur.

TOBACCO SUCKER CONTROL

(Flue-Cured)

J. Michael Moore - Extension Agronomist - Tobacco

CHEMICAL TYPE	CHEMICAL AND FORMULATION	FORMULATION RATE PER ACRE	REMARKS AND PRECAUTIONS
CONTACT	<p>Fatty Alcohol (C₆, C₈, C₁₀ and C₁₂ alcohol mixture)</p> <p>85% Active Ingredient</p> <p>(Various Brands) Fair 85 Off-Shoot T Sucker Plucker Royaltac-M</p>	<p>1.5 - 2.5 gal 1.5 - 2.5 gal 1.5 - 2.5 gal 1.5 - 2.5 gal</p>	<p>Solution concentration and timing of fatty alcohol solutions are very important. Apply the first contact treatment at a 3% concentration (1.5 gal of chemical in 48.5 gal of water) when 30 to 40% of plants are in the early button stage. Make a second contact application at a 4% concentration (2 gal of chemical in 48 gal of water) 5 to 7 days later. Third applications may be made at a 5% concentration (2.5 gal of chemical in 47.5 gal of water) 5 to 7 days later if the crop is not uniform, weather conditions are not suitable for application of maleic hydrazide or if harvest must occur within 7 days. Use approximately 50 gal of solution per acre or enough to provide for spray solution to reach the bottom of the stalk. Use two TG-3 nozzle tips and one TG-5 or equivalents per row with 20 to 25 psi pressure operated from 12 to 16 inches above the top of the button or stalk at 2.5 to 3 mph.</p> <p>Excess nitrogen or high soil and plant moisture conditions may increase the chance of leaf drop where contact solutions are applied and promotes excess sucker growth.</p>
	<p>n-Decanol (C₁₀) 79% Active Ingredient Antak</p>	<p>1.5 - 2.25 gal</p>	<p>If the application of contacts starts after the 30 to 40% early button stage, start with 4% and follow 5 to 7 days later with a 5% application. Antak contains only C₁₀ alcohol. Because this long chain alcohol is said to be "hotter" than the mixture of alcohols found in the other products the rate is normally reduced 0.5% less than for the products which are mixtures of C₆, C₈, C₁₀ and C₁₂ alcohols.</p>
SYSTEMIC	<p>Maleic Hydrazide (potassium salt) (MH) Various Brands</p> <p>(1.5 lb MH/gal) Fair Plus Royal MH Super Sucker Stuff</p> <p>(2.25 lb MH/gal) Fair 30 Royal MH Xtra Sucker Stuff</p> <p>Water-Soluble MH 60% by wt. of MH Fair 80 SP Royal MH-30 SG Sucker Stuff 60WS Sucker Stuff 80EG</p>	<p>1.5 gal 1.5 gal 1.5 gal</p> <p>1.0 gal 1.0 gal 1.0 gal</p> <p>3.75 lbs 4-5 lbs 3.75 lbs 3.75 lbs</p>	<ul style="list-style-type: none"> - Apply 5-7 days after last contact treatment. - Use 30-40 gal of water per acre and a pump pressure of 25-35 psi. - Apply to upper sides of leaves on upper one third of stalks. - DO NOT APPLY SUCKER CONTROL CHEMICALS WHEN TOBACCO IS WILTED OR WET OR UNDER WINDY CONDITIONS. - DO NOT USE DROP NOZZLES FOR APPLICATION OF MH. - ALLOW 7 DAYS OR UNTIL AFTER RAINFALL BETWEEN MH APPLICATION AND HARVEST. Fair 80 SP is a water-soluble powder packaged in dissolvable 3.75 lb containers. Royal MH-30 SG is a water-soluble granular material packaged in dissolvable 7.5 lb containers. Sucker Stuff 60 WS is packaged in water dissolvable packets. Two packets are packaged in one paper over-pack bag weighing 3.75 lbs to provide 2.25 lbs MH.
CONTACT-SYSTEMIC MIX (PRE-MIX)	<p>38.3% ai Fatty alcohol (n-Decanol) and 11.1% ai MH (potassium salt) FST-7 Leven-38</p>	<p>3.0 gal 3.0 gal</p>	<p>Provides 2.0 lbs ai MH/A and a 4% contact solution. Mix with 47 gal of water and apply approximately 50 gal per acre to plants in early flower stage (one week after button) all day except when plants are wet or temperature exceeds 90°F with bright sunlight. Use three nozzles per row to deliver a coarse spray at 20-25 psi pressure targeted to the upper one third of the plant. Do not apply within 7 days prior to harvest unless irrigation or rainfall will occur to minimize MH residues.</p>

TOBACCO SUCKER CONTROL (continued)
(Flue-Cured)

CHEMICAL TYPE	CHEMICAL AND FORMULATION	FORMULATION RATE PER ACRE	REMARKS AND PRECAUTIONS
CONTACT-LOCALIZED-SYSTEMIC	1.2 lb ai per gallon flumetralin (1.2 lb/gal) Prime+ Flupro Drexalin Plus	2 qt 2 qt 2 qt	Flumetralin may be tank mixed with the labeled rate of any MH product which does not specifically prohibit the tank mix in approximately 50 gal of water and applied as a contact to run down the stalk (approximately 50 gal solution per acre). Apply 5-7 days after the last application of contact and after a majority of the plants have been topped. Direct spray at 20 to 25 psi into the top leaf axils of plants.
(TANKMIX) CONTACT-LOCALIZED-SYSTEMIC/ SYSTEMIC COMBINATION	[flumetralin + MH] [tankmixed] flumetralin + MH (1.5 lb/gal)] or MH (2.25 lb/gal)]	(2 qt + 1.5 gal) or 1.0 gal)	(FLUMETRALIN TANK MIXED WITH MH) Flumetralin may be tank mixed with the labeled rate of any MH product which does not specifically prohibit the tank mix in approximately 50 gal of water and applied as a contact to run down the stalk (approximately 50 gal solution per acre). Apply 5-7 days after the last application of contact and after a majority of the plants have been topped. Direct spray at 20 to 25 psi into the top leaf axils of plants.
(3 Way TANKMIX) CONTACT-LOCALIZED-SYSTEMIC/ SYSTEMIC/ CONTACT COMBINATION	[flumetralin + MH+Contact] [3 way tankmix] [flumetralin (1.2 lb/gal) + MH (1.5 lb/gal) or MH (2.25 lb/gal) + CONTACT]	(2 qt + 1.5 gal or 1.0 gal + 2.5 gal)	(FLUMETRALIN TANK MIXED WITH MH and CONTACT) Flumetralin may be tank mixed with the labeled rate of any MH product which does not specifically prohibit the tank mix. To provide additional control a 5% solution of any contact fatty alcohol product may be included by adding 2.5 gallons of product for each 47.5 gallons of total solution. Apply in approximately 50 gal of water per acre as a contact to run down the stalk (approximately 50 gal solution per acre). Apply the three-way tank mix 5-7 days after the last application of contact and after a majority of the plants have been topped. Direct spray at 20 to 25 psi into the top leaf axils of plants. FST-7 or Leven-38 may be used in combination with flumetralin to provide MH and Contact material for the 3-Way Tankmix. Following label instructions will result in lower application rates of MH and contact than suggested above.
CONTACT: Late Season Clean-up	Fatty Alcohol (C ₈ , C ₉ , C ₁₀ and C ₁₂ alcohol mixture) 85% Active Ingredient (Various Brands) Fair 85 Off-Shoot T Sucker Plucker Royaltac-M n-Decanol (C ₁₀) 79% Active Ingredient Antak	2.5 gal 2.5 gal 2.5 gal 2.5 gal 2.25 gal	Late season application (up to 3 weeks after MH or flumetralin) of a 5% contact solution (2.5 gal in 47.5 gal water) may be useful in controlling late season sucker growth or suckers uncontrolled by previously applied materials. Use the three nozzle arrangement described above. Care should be taken not to apply this solution in bright sunlight when the temperature is high or when tobacco is moisture stressed. 3% mix = 1.5 gal added to each 48.5 gals of water 4% mix = 2.0 gal added to each 48.0 gals of water 5% mix = 2.5 gal added to each 47.5 gals of water

YELLOWING AGENT FOR FLUE-CURED TOBACCO

J. Michael Moore - Extension Agronomist - Tobacco

CHEMICAL TYPE	CHEMICAL AND FORMULATION	RATE PER ACRE	REMARKS AND PRECAUTIONS
YELLOWING AGENT	ethephon (Ethrel) 2 lb/gal	2 - 4 qt	Use after second or third priming when remaining leaves are physiologically mature.
	ethephon (Ethephon 2) 2 lb/gal	2 - 4 qt	Directed Spray: Mix the lower amount in 50 to 60 gal of water and apply on a warm, sunny day as a fine spray mist with drop nozzles which direct the spray so that all mature leaves are covered. This treatment may make determining which leaves to harvest a little difficult as the tips of some upper leaves may yellow more rapidly than the butts. Harvest all leaves with 20% or more yellowing.
	ethephon (MatureXL) 6 lb/gal	1.33 - 2.66 pt	Over the Top: Use the higher rate in 40 to 60 gal of water for an acreage of coverage. Apply to all remaining leaves on the stalk.
	ethephon (Prep) 6 lb/gal	1.33 - 2.66 pt	Determining time of application requires some experience and some trial and error; therefore, use a test kit to treat a few plants and observe the results before treating the whole field. Harvest yellowed leaves when they reach desired degree of yellowness, usually within 24 to 72 hours. Harvest may be completed the day after treatment. Excessive delay in harvest may result in loss of yield and quality or leaf drop.
	ethephon (Super Boll) 6 lb/gal	1.33 - 2.66 pt	Tobacco which is sufficiently mature when treated and which yellows prior to harvest may require an advanced curing schedule with reduced yellowing time. Close attention should be paid to the curing schedule.
	ethephon (Ethephon 6) 6 lb/gal	1.33 - 2.66 pt	

TOBACCO SUCKER CONTROL (Burley)

CHEMICAL TYPE	CHEMICAL AND FORMULATION	FORMULATION RATE PER ACRE	REMARKS AND PRECAUTIONS
CONTACT	Fatty Alcohol (C ₆ , C ₈ , C ₁₀ and C ₁₂ alcohol mixture)		Solution concentration and timing of fatty alcohol solutions are very important. Apply the first contact treatment at a 3% concentration (1.5 gal of chemical in 48.5 gal of water) when 30 to 40% of plants are in the early button stage. Make a second contact application at a 4% concentration (2 gal of chemical in 48 gal of water) 5 to 7 days later. Third applications may be made at a 5% concentration (2.5 gal of chemical in 47.5 gal of water) 5 to 7 days later if the crop is not uniform, weather conditions are not suitable for application of MH or if harvest must occur within 7 days.
	85% Active Ingredient (Various Brands) Off-Shoot T Fair 85 Sucker Plucker Royaltac-M	1.5 - 2.5 gal 1.5 - 2.5 gal 1.5 - 2.5 gal 1.5 - 2.5 gal	Use approximately 50 gal of solution per acre or enough to provide for spray solution to reach the bottom of the stalk. Use two TG-3 nozzle tips and one TG-5 or equivalents per row with 20 to 25 psi pressure operated from 12 to 16 inches above the top of the button or stalk at 2.5 to 3 mph. Excess nitrogen or high soil and plant moisture conditions may increase the chance of leaf drop where contact solutions are applied and promotes excess sucker growth.
	n-Decanol (C ₁₀) 79% Active Ingredient Antak	1.5 - 2.0 gal	If the application of contacts starts after the 30 to 40% early button stage, start with 4% and follow 5 to 7 days later with a 5% application. To prepare a small amount of solution for hand application, use 1 pt of formulation and 3 gal of water for a 4% solution. Mix thoroughly. This will treat 470 to 490 plants. Antak contains only C ₁₀ alcohol. Because this long chain alcohol is said to be "hotter" than the mixture of alcohols found in the other products the rate is normally reduced 0.5% less than for the products which are mixtures of C ₆ , C ₈ , C ₁₀ and C ₁₂ alcohols.

TOBACCO SUCKER CONTROL (continued)
(Burley)

CHEMICAL TYPE	CHEMICAL AND FORMULATION	FORMULATION RATE PER ACRE	REMARKS AND PRECAUTIONS
SYSTEMIC	Maleic Hydrazide (potassium salt) (MH) Various Brands (1.5 lb MH/gal) Fair Plus Royal MH-30 Super Sucker Stuff (2.25 lb MH/gal) Fair 30 Royal MH Xtra Sucker Stuff Water-Soluble MH 60% by wt. of MH Fair 80 SP Royal MH-30 SG Sucker Stuff 60 WS Sucker Stuff 80EG	 2.0 gal 2.0 gal 2.0 gal 1.3 gal 1.3 gal 1.3 gal 3.75 lbs 4-5 lbs 3.75 lbs 3.75 lbs	- Apply 5-7 days after last contact treatment. - Use 30-40 gal of water per acre and a pump pressure of 25-35 psi. - Apply to upper sides of leaves on upper one third of stalks. - DO NOT APPLY SUCKER CONTROL CHEMICALS WHEN TOBACCO IS WILTED OR WET OR UNDER WINDY CONDITIONS. - DO NOT USE DROP NOZZLES FOR APPLICATION OF MH. - ALLOW 7 DAYS OR UNTIL AFTER RAINFALL BETWEEN MH APPLICATION AND HARVEST. Fair 80 SP is a water-soluble powder packaged in dissolvable 3.75 lb containers. Royal MH-30 SG is a water-soluble granular material packaged in dissolvable 7.5 lb containers. Sucker Stuff 60 WS is packaged in water dissolvable packets. Two packets are packaged in one paper over-pack bag weighing 3.75 lbs to provide 2.25 lbs MH.
CONTACT-SYSTEMIC MIX	38.3% ai Fatty alcohol (n-Decanol) and 11.1% ai MH (potassium salt) FST-7 Leven-38	 3.0 gal 3.0 gal	Provides 2.0 lbs ai MH/A and a 4% contact solution. Apply in 47 gal of water to plants in early flower stage (one week after button) all day except when plants are wet or temperature exceeds 90°F with bright sunlight. Use three nozzles per row to deliver a coarse spray at 20-25 psi pressure targeted to the upper one third of the plant. Do not apply within 7 days prior to harvest unless irrigation or rainfall will occur to minimize MH residues. To prepare a small amount of solution for hand application, use 2 pt of formulation and 3 gal of water. Mix thoroughly. This will treat 470 to 490 plants.
CONTACT-LOCALIZED-SYSTEMIC	1.2 lb ai per gallon flumetralin (1.2 lb/gal) Prime+ Flupro Drexalin Plus	 2 qt 2 qt 2 qt	Flumetralin may be tank mixed with the labeled rate of any MH product which does not specifically prohibit the tank mix in approximately 50 gal of water and applied as a contact to run down the stalk (approximately 50 gal solution per acre). Apply 5-7 days after the last application of contact and after a majority of the plants have been topped. Direct spray at 20 to 25 psi into the top leaf axils of plants.
CONTACT-LOCALIZED-SYSTEMIC/ SYSTEMIC COMBINATIONS	[flumetralin + MH] [tankmixed] [flumetralin (1.2 lb/gal) + MH (1.5 lb/gal)] or MH (2.25 lb/gal)]	(2 qt + 1.5 gal) or 1.0 gal)	<u>(FLUMETRALIN TANK MIXED WITH MH)</u> Flumetralin may be tank mixed with the labeled rate of any MH product which does not specifically prohibit the tank mix in approximately 50 gal of water and applied as a contact to run down the stalk (approximately 50 gal solution per acre). Apply 5-7 days after the last application of contact and after a majority of the plants have been topped. Direct spray at 20 to 25 psi into the top leaf axils of plants.
	Flumetralin (1.2 lb/gal) + MH (1.5 lb/gal) or MH (2.25 lb/gal)	2 qt + 1.5 gal or 1.0 gal	<u>SEQUENTIAL APPLICATION WITH MH</u> Mix 2 qt of flumetralin 49.5 gal of water and apply either by handheld dropline nozzles or with powered spray equipment as a contact to run down the stalk. Timing of Flumetralin should be during the elongated button to early flower stage of tobacco. Approximately 3 to 5 days after the Flumetralin application, apply maleic hydrazide according to the label directions, precautions, and restrictions on that label.

