

ALFALFA

ALFALFA INSECT CONTROL

David Buntin, Research/Extension Entomologist

PEST	INSECTICIDE	AMOUNT PER ACRE	REMARKS AND PRECAUTIONS								
At-Planting seed Cutworms, grubs, wireworms	Lorsban 15G	6.7 lb.	Apply in-furrow at planting for suppression of target pests. Do not cut or graze within 21 days after application. Make only 1 application per year.								
Alfalfa weevil (Hay production)	Baythroid XL (1.0EC) Lannate 2.4 LV Lannate 90 SP <u>chlorpyrifos</u> Lorsban 4E, Chlorfos, Chlorpyrifos, others 4E Mustang MAX, Respect (0.8EC) Methyl 4EC Permethrin, Ambush, other brands 3.2EC Steward 1.25SC <u>lambda cyhalothrin</u> Karate Zeon (2.08) Warrior, Silencer, Lambda, others (1.0) <u>gamma cyhalothrin</u> Declare (1.25) Proaxis (0.5) Tombstone (2.0)	1.6 - 2.8 fl. oz. 3 pt. 1 lb. 1 - 2 pt. 2.24 - 4.0 fl. oz. 1 pt. 8 fl. oz. 6.7 - 11.3 fl. oz. 1.28 - 1.6 fl. oz. 2.56 - 3.2 fl. oz. 1.02 - 1.54 fl. oz. 2.56 - 3.2 fl. oz. 1.6 - 2.8 fl. oz.	Alfalfa weevil infestations can normally be found from mid-February until after the 1st cutting. Scouted 1-2 times a week during this period by randomly pulling 30 whole stems from throughout the field. Place stems in a plastic bucket and dislodge larvae by vigorously flailing the stems against the sides of the bucket. Count the number of larvae. Use plant height to determine your treatment level where: <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Stem Height (inches)</u></td> <td style="text-align: center;"><u>Larvae per stem</u></td> </tr> <tr> <td style="text-align: center;">3 - 8</td> <td style="text-align: center;">0.5</td> </tr> <tr> <td style="text-align: center;">9 - 14</td> <td style="text-align: center;">1.0</td> </tr> <tr> <td style="text-align: center;">15 or more</td> <td style="text-align: center;">1.5</td> </tr> </table> Do not treat solely on weevil numbers. Wait until you have damage on about 30% of the terminals before you consider spraying. For sweep net sampling, treat if 20 or more larvae per sweep are present. All weevil sprays should be made with ground equipment with a minimum of 20 gal./acre. <u>Grazing Alfalfa Pastures:</u> Products and rates listed in the table for grazing alfalfa have grazing restrictions of 0 to 3 days. Several products listed in the hay section have 7 day grazing restriction. The reduced rate of permethrin may be less effective in controlling larvae than rates recommended for hay production. NOTE: Chlorpyrifos products may cause injury to young, rapid growing foliage but normally does not affect yield. NOTE: Cobalt, mixture of chlorpyrifos and gamma cyhalothrin, also is registered for alfalfa weevil control.	<u>Stem Height (inches)</u>	<u>Larvae per stem</u>	3 - 8	0.5	9 - 14	1.0	15 or more	1.5
<u>Stem Height (inches)</u>	<u>Larvae per stem</u>										
3 - 8	0.5										
9 - 14	1.0										
15 or more	1.5										
Alfalfa weevil (Grazing alfalfa) Products and rates listed have grazing restrictions of 0 to 3 days, see table of pesticide restrictions.	Permethrin, Ambush, other brands 3.2EC Mustang MAX, Respect (0.8EC) <u>lambda cyhalothrin</u> Karate Zeon (2.08) Warrior, Silencer, Lambda, others (1.0) <u>gamma cyhalothrin</u> Declare (1.25) Proaxis (0.5)	4 fl. oz. 2.24 - 4.0 fl. oz. 1.28 - 1.6 fl. oz. 2.56 - 3.2 fl. oz. 1.02 - 1.54 fl. oz. 2.56 - 3.2 fl. oz.	NOTE: EPA has revoked all crop tolerances of all formulations of Furadan . Any crop receiving an application of Furadan after January 1, 2010 cannot be legally sold.								
Aphids	<u>chlorpyrifos</u> Lorsban, Chlorfos, Chlorpyrifos, others (4E) Dimethoate 4EC, 400 Dimethoate 2.67EC Methyl 4EC <u>malathion</u> Malathion 5EC, 57EC, Malathion 8EC	1 - 2 pt. 0.5 - 1 pt. 0.75 - 1.5 pt. 1 pt. 1.5 - 2.0 pt. 1.0 - 1.25 pt.	In Georgia, especially in the Coastal Plain area, aphids can be extremely abundant without causing economic damage. Some varieties are resistant to aphids. Treat aphids as listed below based on average number per stem at a given stem height. Select several sites per field and clip 10-20 stems per site. If alfalfa is near the time of cutting consider cutting earlier and treating the stubble if aphids remain after cutting. <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><u>Stem Height (inches)</u></td> <td style="text-align: center;"><u>Aphids per Stem</u></td> </tr> <tr> <td style="text-align: center;">10-15</td> <td style="text-align: center;">40-50</td> </tr> <tr> <td style="text-align: center;">16-20</td> <td style="text-align: center;">60-80</td> </tr> <tr> <td style="text-align: center;">21+</td> <td style="text-align: center;">100-120</td> </tr> </table> NOTE: Chlorpyrifos products may cause injury to young rapid growing foliage but normally does not affect yield. NOTE: Cobalt, mixture of chlorpyrifos and gamma cyhalothrin, also is registered for aphid control.	<u>Stem Height (inches)</u>	<u>Aphids per Stem</u>	10-15	40-50	16-20	60-80	21+	100-120
<u>Stem Height (inches)</u>	<u>Aphids per Stem</u>										
10-15	40-50										
16-20	60-80										
21+	100-120										

ALFALFA INSECT CONTROL (continued)

PEST	INSECTICIDE	AMOUNT PER ACRE	REMARKS AND PRECAUTIONS								
Aphids (continued)	Permethrin, Ambush, other brands 3.2EC <u>lambda cyhalothrin</u> Karate Zeon (2.08) Warrior, Silencer, Lambda, others (1.0) <u>gamma cyhalothrin</u> Declare (1.25) Proaxis (0.5)	4 - 8 fl. oz. 1.28 - 1.92 fl. oz. 2.56 - 3.84 fl. oz. 1.02 - 1.28 fl. oz. 2.56 - 3.84 fl. oz.	In Georgia, especially in the Coastal Plain area, aphids can be extremely abundant without causing economic damage. Some varieties are resistant to aphids. Treat aphids as listed below based on average number per stem at a given stem height. Select several sites per field and clip 10-20 stems per site. Treat if aphid numbers exceed numbers in the table for a given stem height. If alfalfa is near the time of cutting consider cutting earlier and treating the stubble if aphids remain after cutting. <table border="0" style="width: 100%;"> <tr> <td style="text-align: left;"><u>Stem Height (inches)</u></td> <td style="text-align: left;"><u>Aphids per Stem</u></td> </tr> <tr> <td>10-15</td> <td>40-50</td> </tr> <tr> <td>16-20</td> <td>60-80</td> </tr> <tr> <td>21+</td> <td>100-120</td> </tr> </table> NOTE: Chlorpyrifos products may cause injury to young rapid growing foliage but normally does not affect yield. NOTE: Cobalt, mixture of chlorpyrifos and gamma cyhalothrin, also is registered for aphid control.	<u>Stem Height (inches)</u>	<u>Aphids per Stem</u>	10-15	40-50	16-20	60-80	21+	100-120
<u>Stem Height (inches)</u>	<u>Aphids per Stem</u>										
10-15	40-50										
16-20	60-80										
21+	100-120										
Armyworms (True armyworm, Fall Armyworm, Beet armyworm, Yellowstriped armyworm)	Belt (4.0) Coragen (1.67SC) Prevathon (0.43) Lannate 2.4 LV Lannate 90 SP Sevin 80S Sevin XLR Plus, 4F Mustang MAX, Respect (0.8EC) <u>lambda cyhalothrin</u> Karate Zeon 2.08) Warrior, Silencer, Lambda, others (1.0) <u>gamma cyhalothrin</u> Declare (1.25) Proaxis (0.5)	2.0 - 4.0 fl. oz. 3.5 - 5.0 fl. oz. 14 - 20 fl. oz. 3 pt. 0.5 - 1 lb. 1.625 lb. 1.5 qt. 3.2 - 4.0 fl. oz. 1.28 - 1.92 fl. oz. 2.56 - 3.8 fl. oz. 1.02 - 1.54 fl. oz. 2.56 - 3.84 fl. oz.	Treat when any of these armyworm pests or combination of pests are found at an average of 2 to 3 per square foot. NOTE: Tracer is most effective against small larvae, use higher rate for large larvae and large infestations.								
Clover leaf weevil, Lesser clover leaf weevil, (Larvae)	Products applied for control of alfalfa weevil larvae may give helpful control of other leaf-feeding weevil larvae.		Treat when larvae or adults are damaging the leaves and stems on 30% of the plants.								
Green cloverworm and/or Velvetbean caterpillar and/or Alfalfa Webworm and/or Alfalfa caterpillar and/or alfalfa looper	Baythroid XL (1.0EC) Belt (4.0) Coragen (1.67SC) Prevathon (0.43) Lannate 2.4 LV Lannate 90 SP Mustang MAX, Respect (0.8EC) Permethrin, Ambush, other brands 3.2EC Sevin 80S Sevin XLR Plus, 4F <u>lambda cyhalothrin</u> Karate Zeon (2.08) Warrior, Silencer, Lambda, others (1.0) <u>gamma cyhalothrin</u> Declare (1.25) Proaxis (0.5) Tombstone (2.0)	1.6 - 2.8 fl oz. 2.0 - 4.0 fl. oz. 3.5 - 5.0 fl. oz. 14 - 20 fl. oz. 1.5 - 3 pt. 0.5 - 1 lb. 2.4 - 4.0 fl. oz. 4 fl. oz. 1.25 - 1.625 lb. 1 - 1.5 qt. 0.96 - 1.6 fl. oz. 1.92 - 3.2 fl. oz. 1.02 - 1.28 fl. oz. 1.92 - 3.2 fl. oz. 1.6 - 2.8 fl. oz.	FOLIAGE FEEDING CATERPILLARS: For alfalfa caterpillar, green cloverworm, velvetbean caterpillar, and alfalfa webworm, treat when any of these pests or combinations of pests are found at an average of 2 or more 1/2- inch long larvae per plant OR defoliation exceeds 10%.								

ALFALFA INSECT CONTROL (continued)

PEST	INSECTICIDE	AMOUNT PER ACRE	REMARKS AND PRECAUTIONS
Blister beetles	Sevin 80S Sevin XLR Plus, 4F	1.25 lb. 1 qt.	Treat when 2 beetles per square foot are found. Beetles tend to aggregate on the weedy margins of fields. Blister beetles bailed up in hay are toxic to livestock, especially horses.
	<u>Lambda cyhalothrin</u> Karate Zeon (2.08) Warrior, Silencer, Lambda, others (1.0) <u>gamma cyhalothrin</u> Declare (1.25) Proaxis (0.5)	1.28 - 1.92 fl. oz. 2.56 - 3.84 fl. oz. 1.02 - 1.54 fl. oz. 2.56 - 3.84 fl. oz.	
Clover root curculio, Lesser clover leaf weevil, Sweet clover weevil (Adults only)	Methyl 4EC	1 pt.	CLOVER ROOT CURCULIO, SWEET CLOVER WEEVIL: Damage caused by larvae in soil feeding on roots and root nodules. No effective control for larvae in soil. Adults feed on foliage causing notches in leaves. Products listed may reduce adult populations.
	<u>lambda cyhalothrin</u> Karate Zeon (2.08) Warrior, Silencer, Lambda, others (1.0) <u>gamma cyhalothrin</u> Declare (1.25) Proaxis (0.5)	1.28 - 1.92 fl. oz. 2.56 - 3.84 fl. oz. 1.02 - 1.54 fl. oz. 2.56 - 3.84 fl. oz.	
Cutworms	Baythroid XL (1.0EC)	0.8 - 1.6 fl. oz.	Several species. Treat if 3 or more cutworms per square ft. In standing alfalfa use enough pressure and water for spray penetration to the ground. If near cutting, consider cutting early and treating stubble if infestation remains. Cutworms often will congregate under wind-rowed hay.
	Lannate 2.4 LV Lannate 90 SP	1.5 - 3 pt. 0.5 - 1 lb.	
	Methyl 4EC	1 pt.	
	Mustang MAX, Respect (0.8EC)	2.8 - 4.0 fl. oz.	
	Sevin 80S Sevin XLR Plus, 4F	1.625 lb. 1.5 qt.	
	<u>lambda cyhalothrin</u> Karate Zeon (2.08) Warrior, Silencer, Lambda, others (1.0) <u>gamma cyhalothrin</u> Declare (1.25) Proaxis (0.5)	0.96 - 1.6 fl. oz. 1.92 - 3.2 fl. oz. 1.02 - 1.54 fl. oz. 1.92 - 3.2 fl. oz.	
Grasshoppers	Tombstone (2.0)	0.8 - 1.6 fl. oz.	Treat when heavy grasshopper infestations are causing excess defoliation. Grasshoppers often invade fields from adjacent weedy areas; border treatments are sometimes appropriate. NOTE: Chlorpyrifos products may cause injury to young rapid growing foliage but normally does not affect yield. NOTE: Cobalt, mixture of chlorpyrifos and gamma cyhalothrin, also is registered for grasshopper control.
	Baythroid XL (1.0EC)	2.0 - 2.8 fl. oz.	
	Dimethoate 4EC, 400 Dimethoate 2.76EC	0.5 - 1 pt. 0.75 - 1.5 pt.	
	<u>chlorpyrifos</u> Lorsban 4E, Chlorfos 4E, Chlorpyrifos 4E	0.5 - 1 pt.	
	malathion Malathion 57EC Malathion 8EC	1.5 - 2.0 pt. 1.5 - 2.0 pt.	
	Mustang MAX, Respect (0.8EC)	2.8 - 4.0 fl. oz.	
	<u>lambda cyhalothrin</u> Karate Zeon (2.08) Warrior, Silencer, Lambda, others (1.0) <u>gamma cyhalothrin</u> Declare (1.25) Proaxis (0.5)	1.28 - 1.92 fl. oz. 2.56 - 3.84 fl. oz. 1.02 - 1.54 fl. oz. 2.56 - 3.84 fl. oz.	
	Tombstone (2.0)	2.0 - 2.8 fl. oz.	

ALFALFA INSECT CONTROL (continued)

PEST	INSECTICIDE	AMOUNT PER ACRE	REMARKS AND PRECAUTIONS										
Green June Beetle Larvae	Sevin 80S Sevin XLR Plus, 4F	1.625 lb. 1.5 qt.	Treat when populations average 1 larva per square foot.										
Fire ants	methoprene Extinguish (bait) (broadcast application)	1 - 1.5 lb.	Generally fire ants are important predators and help reduce populations of other pest insects. However, treat when mounds are so numerous that they interfere with haying operations. Methoprene granular bait requires several weeks or months after application to reduce fire ant populations.										
Leafhoppers (potato leafhopper, aster leafhopper)	Baythroid XL (1.0EC) <u>chlorpyrifos</u> Lorsban 4E, Chlorfos 4E, Chlorpyrifos 4E Dimethoate 4EC, 400 Dimethoate 2.76EC Permethrin, Ambush, other brands 3.2EC Mustang MAX, Respect (0.8EC) <u>lambda cyhalothrin</u> Karate Zeon (2.08) Warrior, Silencer, Lambda, others (1.0) <u>gamma cyhalothrin</u> Declare (1.25) Proaxis (0.5) Tombstone (2.0)	1.6 - 2 .8 fl. oz. 0.5 - 1 pt. 0.5 - 1 pt. 0.75 - 1.5 pt. 8 fl. oz. 3.2 - 4 .0 fl. oz. 1.28 - 1.60 fl. oz. 1.92 - 3.20 fl. oz. 1.02 - 1.28 fl. oz. 1.92 - 3.20 fl. oz. 1.6 - 2.8 fl. oz.	Potato leafhopper feeding generally causes V-shaped yellow leaf discoloration that reduces yield. Treat when sweep net samples show leafhopper numbers for a given stem height exceed the following levels: <table border="0"> <tr> <td><u>Stem Height (inches)</u></td> <td><u>Hoppers per sweep</u></td> </tr> <tr> <td>3 - 7</td> <td>0.5</td> </tr> <tr> <td>8 - 10</td> <td>1.0</td> </tr> <tr> <td>11 - 14</td> <td>2.0</td> </tr> <tr> <td>14+</td> <td>4.0 or cut hay early</td> </tr> </table> <p>NOTE: Chlorpyrifos products may cause injury to young rapid growing foliage but normally does not affect yield.</p> <p>NOTE: Cobalt, mixture of chlorpyrifos and gamma cyhalothrin, also is registered for potato leafhopper control.</p>	<u>Stem Height (inches)</u>	<u>Hoppers per sweep</u>	3 - 7	0.5	8 - 10	1.0	11 - 14	2.0	14+	4.0 or cut hay early
<u>Stem Height (inches)</u>	<u>Hoppers per sweep</u>												
3 - 7	0.5												
8 - 10	1.0												
11 - 14	2.0												
14+	4.0 or cut hay early												
Mites	Dimethoate 4EC, 400 Dimethoate 2.76EC Karate Zeon (2.08) Declare 1.25	1 pt. 1.5 pt. 1.92 fl. oz. 1.54 fl. oz.	Mite control may be difficult. Treat if mites are causing leaf discoloration over large areas of the field. If near cutting, consider cutting early and treating stubble if infestation remains. Apply by ground with 25 or more gal. per acre. Karate and declare for suppression only.										
Threecornered alfalfa hopper	Baythroid XL (1.0EC) Sevin 80S Sevin XLR Plus, 4F Mustang MAX, Respect (0.8EC) <u>lambda cyhalothrin</u> Karate Zeon (2.08) Warrior, Silencer, Lambda, others (1.0) <u>gamma cyhalothrin</u> Declare (1.25) Proaxis (0.5) Tombstone (2.0)	1.6 - 2 .8 fl. oz. 1.25 lb. 1 qt. 3.2 fl. oz. 1.28 - 1.92 fl. oz. 2.56 - 3.84 fl. oz. 1.02 - 1.28 fl. oz. 2.56 - 3.84 fl. oz. 1.6 - 2.8 fl. oz.	Treat when adults and/or nymphs are found on 10 % of seedling alfalfa plants or if adults or nymphs are girdling and killing 10% of the lateral stems in a field. NOTE: Cobalt, mixture of chlorpyrifos and gamma cyhalothrin also is registered for 3-cornered alfalfa hopper control.										
Thrips	Dimethoate 4EC, 400 Dimethoate 2.76EC Sevin 80S Sevin XLR Plus, 4F <u>lambda cyhalothrin</u> Karate Zeon (2.08) Warrior, Silencer, Lambda, others (1.0) <u>gamma cyhalothrin</u> Declare (1.25) Proaxis (0.5)	0.5 - 1 pt. 0.75 - 1.5 pt. 1.25 lb. 1 qt. 1.28 - 1.92 fl. oz. 2.56 - 3.84 fl. oz. 1.02 - 1.54 fl. oz. 2.56 - 3.84 fl. oz.	Treat when thrips are causing leaf discoloration and deformation over large areas of the field. NOTE: Cyhalothrin products are not effective against western flower thrips.										

ALFALFA INSECT CONTROL (continued)

Premixed or Co-Packed Insecticides: Products listed are available as premixes or co-packages of two insecticide active ingredients. User should check mixture labels for active ingredient, specific use rates, target pests, and precautions.	
Brand name (active ingredients)	Range of formulation rates
Cobalt (chlorpyrifos, gamma-cyhalothrin)	13 - 42 fl. oz per acre.
Voliam Xpress (lambda-cyhalothrin, cloranthraniliprole)	5.0 - 9.0 fl. oz per acre.

PESTICIDE USE PRECAUTIONS AND RESTRICTIONS

CAUTION: Bees, including honey bees, play a major role in the pollination of alfalfa. During the bloom period, make insecticide applications during the early morning and evening hours, when bees are not visiting the field. Do not apply the following to alfalfa during the bloom period: dimethoate, chlorpyrifos, malathion, methomyl and methyl parathion. Read label for complete list of restrictions and precautions.

Baythroid XL (1.0 EC, beta-cyfluthrin); Tombstone (2.0, cyfluthrin): Do not apply within 7 days of harvest or grazing. Do not apply more than 3.2 fl. oz. per acre per cutting and more than 12.8 fl. oz. per acre per season. Do not apply to alfalfa - grass mixed stand. REI = 12 hrs.

Belt SC (4.0), (flubendiamide): Preharvest interval for forage and hay is 0 days. Do not apply more than 4.0 fl. oz. per acre per cutting and 12 fl. oz. per acre per year. REI = 12 hours.

Coragen (1.67SC, chloranthraniliprole); Prevathon (0.43): Make one application per cutting. Days of last application to harvest is 0 days. REI = 4 hours.

Dimethoate (dimethoate): Make only one application per cutting. Do not apply within 10 days of grazing or cutting for hay. Do not apply during bloom period. REI = 48 hrs.

Declare (1.25), Proaxis (0.5), (gamma cyhalothrin): Apply only to pure alfalfa stands. Do not apply within 1 day of harvest for forage or within 7 days of harvest for hay. Do not apply more than 0.015 lb a.i. per acre or more than 0.06 lb a.i. per acre per season. REI = 24 hrs.

Karate Z, other brands (2.08); Silencer, Lambda T, other brands (1.0) (lambda cyhalothrin): Do not apply within 1 day of harvest for forage or within 7 days of harvest for hay. Do not apply more than 0.03 lb. a.i. per acre per cutting and more than 0.12 lb. a.i. per acre per season. Avoid application when bees are actively foraging. REI = 24 hrs.

Lannate (methomyl): Do not apply within 7 days of grazing or cutting for hay. Do not apply more than 3.6 lbs. ai per acre per crop. Do not apply to dormant or semi-dormant alfalfa when minimum daily temperature is 50 degrees Fahrenheit or lower. Do not apply during bloom period. REI = 48 hrs.

Lorsban 15 G (chlorpyrifos): Do not cut or graze within 21 days after application. Make only 1 application per year. REI = 24 hrs.

Lorsban, Chlorfos, Chlorpyrifos, other brands (4E, chlorpyrifos): Do not make more than 1 application per cutting and more than 4 applications per year. Cutting and grazing restrictions are 7 days for 0.5 pt. per acre, 14 days for 1 pt. per acre, and 21 days for rates above 1 pt. per acre. Do not apply if bees are active. Similar restriction apply to Cobalt, see label for specific rates and harvest intervals. REI = 24 hrs.

Malathion, other brands (malathion): Apply as needed up to day of grazing or cutting for hay. Do not apply during flowering. REI = 12 hrs.

Methyl 4EC (methyl parathion): Do not apply within 15 days of harvest, cutting, or grazing. Do not apply if the crop or weeds in the treated area are in bloom. REI = 96 hrs (4 days).

Mustang MAX, Respect (0.8E C, zeta-cypermethrin): Do not apply within 3 days of cutting or grazing or 7 days for harvesting seed. Maximum of 4 fl oz. per acre per cutting and 12 fl. oz. per acre per season. Do not make applications less than 7 days apart. REI = 12 hrs.

Permethrin, Ambush, other brands (3.2EC, permethrin): Do not apply more than 0.2 lb. ai per acre per cutting. For rates listed for grazing (=0.1 lb ai per acre or less), application may be made on day of harvest. For rate listed for hay production (= more than 0.1 lb ai per acre), do not apply within 14 days of harvest. When bees are active, apply in early morning or evening. REI = 12 hrs.

Sevin (carbaryl): Do not apply within 7 days of harvest or grazing. Do not make more than 1 application per cutting. Do not apply when crop is wet. Carbaryl may bleach tender foliage. Do not apply if bees are active. REI = 12 hrs.

Steward 1.2 5SC (indoxacarb): Make no more than 1 application per cutting. Do not apply more than 45 fl. oz. per acre per season. Do not apply within 7 days of harvest. REI = 12 hrs.

ALFALFA WEED CONTROL

Tim R. Murphy, Extension Agronomist-Weed Science

STAGE OF APPLICATION/ HERBICIDE	BROADCAST RATE PER ACRE		REMARKS AND PRECAUTIONS
	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT	
PREPLANT INCORPORATED			
benefin (Balan 60DF)	2.0 lbs.	1.2	Incorporate 2-3 inches deep before planting for grass control. EPTC may provide better broad spectrum weed control. Some epinastic injury to alfalfa usually occurs from EPTC; however, injury is normally temporary. Do not use if grain or grass crop is to be planted with alfalfa. Research has shown significant injury as stand reduction from Balan. Injury would be expected to be less when used on fall than on spring planted alfalfa. The yield of the first cutting may be reduced when treated with Balan.
EPTC (Eptam) 7 lbs./gal.	3.5 pts.	3.1	
trifluralin (Treflan) 4.0 lbs./gal.	1.0	0.5	TREFLAN HFP has a supplemental label for weed control in seedling alfalfa during establishment. Proper incorporation is critical (refer to Treflan HFP label), since severe crop damage and stunting can result. Some stand reduction and stunting of alfalfa may occur with TREFLAN HFP, but reduced weed competition will allow establishment of a quality stand.
POSTEMERGENCE SEEDLING ALFALFA			
2-4,DB (Butyrac 200) (Butoxone) 1.75 lbs./gal.	2 - 3 qts. 4.3 - 6.5 pts.	1.0 - 1.5 0.9 - 1.4	Apply in fall or spring after alfalfa has two to four trifoliolate leaves. Controls emerged annual broadleaf weeds less than 3 inches tall. Do not graze or cut for hay for 60 days after application. Rainfall or irrigation within 7 to 10 days after treatment may cause injury. DO NOT add wetting agents or surfactants to the spray solution.
bromoxynil (Buctril) 2L	1.5 pts.	0.375	Apply to seedling alfalfa that has a minimum of four trifoliolate leaves. Spray winter annual broadleaf weeds that do not exceed the 4-leaf stage or 2 inches in height, or have rosettes greater than 1.5 inches in diameter. DO NOT apply when temperatures exceed 70° F at and 3 days after application or unacceptable crop injury may occur. DO NOT add a surfactant or crop oil. DO NOT cut for feed or graze spring treated alfalfa for 30 days after application. DO NOT cut for feed or graze fall or winter treated alfalfa for 60 days after application.
imazethapyr (Pursuit) 70DG (Pursuit) 2EC	1.08 - 2.16 oz. 3.0 - 6.0 fl. ozs.	0.047 - 0.094	Apply to seedling alfalfa with a minimum of two trifoliolate leaves and when weeds are 1 to 3 inches tall or before rosette forming weeds exceed 3 inches in diameter. Pursuit requires a 1 hour rain free period. Pursuit may cause a temporary reduction in height or slight leaf yellowing. DO NOT feed, graze, or harvest alfalfa for 30 days after application. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1.25% v/v to the spray solution. If replanting is necessary in a field treated with Pursuit, do not plant alfalfa for 4 months following the application of Pursuit.
glyphosate (Roundup WeatherMax) 5.5 lbs./gal.	22.0 - 44.0 fl. ozs.	0.95 - 1.9	USE ONLY ON ALFALFA VARIETIES DESIGNATED AS CONTAINING A ROUNDUP READY (RR) GENE. Apply from alfalfa emergence up 5 days before cutting hay. May be applied at any alfalfa growth stage. Due to alfalfa biology and breeding constraints, up to 10% of seedlings may not contain the Roundup Ready gene and will be killed by glyphosate. To eliminate undesirable stand gaps during seedling establishment, apply Roundup WeatherMax at the low rate at or before the 3 to 4 trifoliolate leaf stage of alfalfa. Sequential applications may be made as needed (allow a minimum of 7 days between applications) but do not exceed 4.1 qts./acre per year. Remove livestock before application and wait 5 days after the last application before grazing, cutting for silage or hay harvest. Glyphosate will control most weed species, including dodder. Weeds that are not effectively controlled by a single application of glyphosate include: hemp sesbania, bermudagrass, yellow nutsedge, tropical spiderwort, greenbrier species, cutleaf eveningprimrose, Carolina geranium, maypop passionflower and trumpet creeper. Repeat applications, or other appropriate herbicides, will be needed to control this group of weeds. Other brands of glyphosate may be used on Roundup Ready alfalfa, if the specific brand label lists this use.

ALFALFA WEED CONTROL (continued)

STAGE OF APPLICATION/ HERBICIDE	BROADCAST RATE PER ACRE		REMARKS AND PRECAUTIONS
	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT	
POSTEMERGENCE SEEDLING ALFALFA (continued)			
imazamox (Raptor) 1.0 lb./ gal.	4.0- 6.0 fl. ozs.	0.031-0.047	Apply to seedling alfalfa with a minimum of two trifoliolate leaves and when weeds are 1 to 3 inches tall. Raptor requires a 1-hour rain-free period. A temporary growth reduction may occur after application. DO NOT feed, graze, or harvest alfalfa for 20 days after application. A maximum total of 6.0 fl. ozs./acre may be applied per season. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1.0 to 2.0% v/v to the spray solution. If replanting is necessary in a field treated with Raptor, do not plant alfalfa for 4 months following the application of Raptor.
pendimethalin (Prowl H2O) 3.8 lbs./gal.	1.1 to 2.1 pts.	0.5 to 1.0	Apply to seedling alfalfa before annual weed emergence and after alfalfa has developed two trifoliolate leaves Applications should be made before alfalfa exceeds 6 inches in height. Pendimethalin will provide good to excellent preemergence control of annual grasses and some annual broadleaf weeds. Do not cut for hay or graze for 28 days after an application.
pronamide (Kerb) 50W	1.0 - 1.5 lbs.	0.5 - 0.75	Spray preemergence or early postemergence for control of winter annual weeds after the alfalfa has reached the trifoliolate leaf stage. Do not graze or cut for hay for 120 days after treatment.
sethoxydim (Poast) 1.5 lbs./gal. (Poast Plus) (Sethoxydim E-Pro) (Sethoxydim G-Pro) 1.0 lbs./gal.	1.0 - 1.5 pts. 1.5 - 2.25 pts. 1.5 - 2.25 pts. 1.5 - 2.25 pts.	0.19 - 0.3	Apply low rate with 2 pts. of crop oil concentrate/A for control of annual grasses up to 8 inches tall (varies with species). Use high rate if rhizome johnsongrass is to be controlled, followed by a second application to regrowth or new plants. Do not apply to grass or alfalfa under stress. Apply before the grass has been cut. Do not apply sethoxydim products within 7 days of feeding, grazing or harvesting undried forage, or within 14 days of cutting for dry hay.
clethodim (Select Max) 0.97 lbs./gal. (Intensity One) 0.97 lbs./gal. (TapOut) 0.97 lbs./gal. (Shadow) 2.0 lbs./gal. (Arrow) 2.0 lbs./gal.	9.0 to 32.0 fl. ozs. 6.0 to 16.0 fl. ozs. 6.0 to 16.0 fl. ozs.	0.07 to 0.24 0.09 to 0.25 0.09 to 0.25	Clethodim will provide excellent control of annual and perennial grasses, but will not control broadleaf weeds or sedges. Use the low rate on annual grasses, and the high rate on perennial grasses (see label). Select Max and Intensity One require the addition of a nonionic surfactant at 0.25% v/v. For Shadow and Arrow use only a crop oil concentrate at 1.0% v/v. Use a nonionic surfactant or crop oil concentrate with TapOut. Clethodim may be tank-mixed with 2,4-DB; however, the risk of temporary injury to alfalfa will increase. Clethodim may also be tank-mixed with Pursuit and Raptor. Do not cut for hay or graze for 15 days after an application of clethodim.
POSTEMERGENCE SEEDLING - ALFALFA (BETWEEN CUTTINGS)			
paraquat (Firestorm) 3.0 lbs./gal. (Gramoxone Inteon) 2.0 lbs./gal.	0.7 pts. 1.0 pt.	0.25	Apply to small emerged annual grass and broadleaf weeds in first year alfalfa immediately after removing hay between cuttings. Do not treat more than 5 days after cutting. Add a nonionic surfactant at 1 pt./100 gals. of water. Do not make more than two applications during the growing season. Apply in 20-40 gals. of water/A. Weeds much beyond the seedling stage and stubble of those cut off during harvest will be less affected by the treatment. Do not graze, cut or harvest within 30 days of application.
POSTEMERGENCE - ESTABLISHED DORMANT ALFALFA (SECOND YEAR & OL DER)			
metribuzin (Sencor) 4L (Sencor) 75DF (Metribuzin) 75 DF	12 fl. ozs. 8 ozs. 8 ozs.	0.375	See label for weeds controlled at different rates and for precautions related to soil textures. Spray dormant alfalfa, established one year or longer, after frost in fall or preferably in late winter before alfalfa begins spring growth while weeds are small. Provides preemergence and early postemergence weed control when surfactant is added. Do not use these treatments on alfalfa-grass mixtures. Do not use Sencor, Metribuzin or Velpar on sands. The higher rate of Velpar may cause crop damage. Do not graze or cut for hay within 28 days after Sencor or Metribuzin treatment. Do not graze or cut for hay within 30 days after Velpar treatment. Do not tank-mix any of these herbicides.
hexazinone (Velpar) 2L (Velpar) 75 DF	2 - 3 pts. 8 - 12 ozs.	0.5 - 0.75 0.5 - 0.75	
pronamide (Kerb) 50W	1.0 - 1.5 lbs.	0.5 - 0.75	Apply in January at lower rate for most annual winter grasses, except higher rate for annual ryegrass or orchardgrass. Do no graze or cut for hay for 120 days after treatment. Provides preemergence and early postemergence control. Do not tank mix with other herbicides.
paraquat (Firestorm) 3.0 lbs./gal. (Gramoxone Inteon) 2.0 lbs./gal.	0.7 - 1.3 pts. 1.0 - 2.0 pts.	0.25 - 0.5	Apply during the winter months when established alfalfa is dormant. DO NOT apply dormant treatments to seedling alfalfa less than 6 months old. Controls Italian ryegrass (less than 6 in. tall), chick weed and most other winter annual weeds. Green alfalfa foliage present at time of application will become necrotic (brown). DO NOT apply after the initiation of new spring growth. Add a nonionic surfactant at 1.0 pt./100 gals. of spray solution. DO NOT graze or harvest within 42 days of application. Make only one application per season.

ALFALFA WEED CONTROL (continued)

STAGE OF APPLICATION/ HERBICIDE	BROADCAST RATE PER ACRE		REMARKS AND PRECAUTIONS
	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT	
PREEMERGENCE - ESTABLISHED ALFALFA			
norflurazon (Solicam) 80DF	1.25 - 2.5 lbs.	1.0 - 2.0	Apply to established alfalfa in spring or early fall for the control of annual grasses and annual broadleaf weeds such as tropic croton and prickly sida. May be applied to dormant and actively-growing alfalfa. Apply to actively-growing alfalfa following hay removal to ensure spray penetration to the soil surface. DO NOT apply to seedling alfalfa earlier than 5 months after emergence. DO NOT apply Solicam within 28 days of harvest. Use the low rate on sandy soils. Solicam may be tank-mixed with Gramoxone Extra, Poast, Pursuit, Kerb, Sencor, Lexone and 2,4-DB. For 16 months following application rotate only to cotton, soybeans or peanuts.
pendimethalin (Prowl H2O) 3.8 lbs./gal.	1.1 to 4.2 qts.	1.05 to 4.0	Pendimethalin will provide good to excellent preemergence control of annual grasses and some annual broadleaf weeds. In established alfalfa (defined as alfalfa that was planted in fall or spring and has gone through a first cutting/mowing), Prowl H2O may be applied in the fall after the last cutting, during winter dormancy or in the spring before alfalfa regrowth is 6 inches. Do not cut for hay or graze for 28 days after an application of 2.1 qts./acre or less. If Prowl H2O is applied at more than 2.1 qts./acre, the grazing and haying restriction is 50 days.
flumioxazin (Chateau 51 WDG)	4.0 oz.	0.13	Flumioxazin will provide good to excellent preemergence control of annual grasses and some annual broadleaf weeds. Apply in the fall or spring months before weed emergence. Do not apply to alfalfa with more than 6 inches or new growth or significant injury can occur. Do not cut for hay or graze for 25 days after an application of flumioxazin.
POSTEMERGENCE - ESTABLISHED ALFALFA			
2,4-DB (Butyrac 200) (Butoxone) 1.75 lbs./gal.	2 - 3 qts. 4.3 - 6.5 pts.	1.0 - 1.5 0.9 - 1.4	Spray established dormant or non-dormant alfalfa in late fall through spring for control of emerged weeds that emerge in the fall and over winter in the rosette stage. Do not graze or cut for hay within 30 days after treatment. Overhead irrigation or rainfall within a few days after use may wash chemical into the root zone, possibly causing some twisting of stems and malformation of leaves. Do not add wetting agents or surfactants to the spray mix.
imazethapyr (Pursuit) 70DG (Pursuit) 2EC	1.08 - 2.16 oz. 3.0 - 6.0 fl. ozs.	0.047 - 0.094	Apply to established alfalfa in the fall, or in the spring to dormant or semi-dormant alfalfa. Spring treatments should be made before excessive alfalfa growth (less than 3 inches of new growth) to reduce spray interference. Apply when weeds are 1 to 3 inches tall or before rosette forming weeds exceed 3 inches in diameter. DO NOT feed, graze, or harvest alfalfa for 30 days after application. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1.25% v/v to the spray solution. If replanting is necessary in a field treated with Pursuit, do not plant alfalfa for 4 months following the application of Pursuit.
imazamox (Raptor) 1.0 lb./ gal.	4.0- 6.0 fl. ozs.	0.031-0.047	Apply to established alfalfa in the fall, or in the spring to dormant or semi-dormant alfalfa. Spring treatments should be made before excessive alfalfa growth (less than 3 inches of new growth) to reduce spray interference. Apply when weeds are 1 to 3 inches tall or before rosette forming weeds exceed 3 inches in diameter. Raptor requires a 1 hour rain free period. A temporary growth reduction may occur after application. DO NOT feed, graze, or harvest alfalfa for 20 days after application. A maximum total of 6.0 fl. ozs./acre may be applied per season. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1.0 to 2.0% v/v to the spray solution. If replanting is necessary in a field treated with Raptor, do not plant alfalfa for 4 months following the application of Raptor.
glyphosate (Roundup WeatherMax) 5.5 lbs./gal.	44.0 fl. ozs.	1.9	USE ONLY ON ALFALFA VARIETIES DESIGNATED AS CONTAINING A ROUNDUP READY (RR) GENE. May be applied at any alfalfa growth stage. Sequential applications may be made as needed (allow a minimum of 7 days between applications) but do not exceed 4.1 qts./acre per year. Remove livestock before application and wait 5 days after the last application before grazing, cutting for silage or hay harvest. Glyphosate will control most weed species, including dodder. Weeds that are not effectively controlled by a single application of glyphosate include: hemp sesbania, bermudagrass, yellow nutsedge, tropical spiderwort, greenbrier species, cutleaf eveningprimrose, Carolina geranium, maypop passionflower and trumpet creeper. Repeat applications, or other appropriate herbicides, will be needed to control this group of weeds. Other brands of glyphosate may be used on Roundup Ready alfalfa, if the specific brand label lists this use.

ALFALFA WEED CONTROL (continued)

STAGE OF APPLICATION/ HERBICIDE	BROADCAST RATE PER ACRE		REMARKS AND PRECAUTIONS
	AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT	
POSTEMERGENCE - ESTABLISHED ALFALFA (continued)			
sethoxydim (Poast) 1.5 lbs./gal. (Poast Plus) (Sethoxydim E-Pro) (Sethoxydim G-Pro) 1.0 lbs./gal.	1.0 - 1.5 pts. 1.5 - 2.25 pts. 1.5 - 2.25 pts. 1.5 - 2.25 pts.	0.19 - 0.3	Apply low rate with 2 pts. of crop oil concentrate/A for control of annual grasses up to 8 inches tall (varies with species). Use high rate if rhizome johnsongrass is to be controlled, followed by a second application to regrowth or new plants. Do not apply to grass or alfalfa under stress. Apply before the grass has been cut. Do not apply sethoxydim products within 7 days of feeding, grazing or harvesting undried forage, or within 14 days of cutting for dry hay.
clethodim (Select Max) 0.97 lbs./gal. (Intensity One) 0.97 lbs./gal. (TapOut) 0.97 lbs./gal. (Shadow) 2.0 lbs./gal. (Arrow) 2.0 lbs./gal.	9.0 to 32.0 fl. ozs. 6.0 to 16.0 fl. ozs. 6.0 to 16.0 fl. ozs.	0.07 to 0.24 0.09 to 0.25 0.09 to 0.25	Clethodim will provide excellent control of annual and perennial grasses, but will not control broadleaf weeds or sedges. Use the low rate on annual grasses, and the high rate on perennial grasses (see label). Select Max and Intensity One require the addition of a nonionic surfactant at 0.25% v/v. For Shadow and Arrow use only a crop oil concentrate at 1.0% v/v. Use a nonionic surfactant or crop oil concentrate with TapOut. Clethodim may be tank-mixed with 2,4-DB; however, the risk of temporary injury to alfalfa will increase. Clethodim may also be tank-mixed with Pursuit and Raptor. Do not cut for hay or graze for 15 days after an application of clethodim.
POSTEMERGENCE ESTABLISHED - ALFALFA (BETWEEN CUTTINGS)			
imazethapyr (Pursuit) 70DG	1.08 - 2.16 oz.	0.047 - 0.094	Apply as a between cut treatment. Remove hay from the field and apply before excessive alfalfa regrowth. Apply when weeds are 1 to 3 inches tall or before rosette forming weeds exceed 3 inches in diameter. DO NOT feed, graze, or harvest alfalfa for 30 days after application. A maximum total of 2.16 oz./A of Pursuit may be applied per year. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1.25% v/v to the spray solution. If replanting is necessary in a field treated with Pursuit, do not plant alfalfa for 4 months following the application of Pursuit. Do not apply more than 1.44 ozs. during the last year of the stand.
imazamox (Raptor) 1.0 lb./ gal.	4.0- 6.0 fl. ozs.	0.031-0.047	Apply as a between cut treatment. Remove hay from the field and apply before excessive alfalfa regrowth. Apply when weeds are 1 to 3 inches tall or before rosette forming weeds exceed 3 inches in diameter. Raptor requires a 1-hour rain-free period. A temporary growth reduction may occur after application. DO NOT feed, graze, or harvest alfalfa for 20 days after application. A maximum total of 6.0 fl. ozs./acre may be applied per season. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1.0 to 2.0% v/v to the spray solution. If replanting is necessary in a field treated with Raptor, do not plant alfalfa for 4 months following the application of Raptor.
paraquat (Firestorm) 3.0 lbs./gal. (Gramoxone Inteon) 2.0 lbs./gal.	0.7 pts. 1.0 pt.	0.25	Apply to established stands (at least one year old) immediately after alfalfa has been removed for silage or hay. Do not treat more than 5 days after cutting. Add surfactant at 1 pt./100 gals. of spray mix. DO NOT graze, cut or harvest within 30 days of application. Make 1 to 3 applications as needed during the cutting season. Apply in 20 to 40 gals. of water/A. Weeds much beyond the seedling stage and stubble of those cut off during harvest will be less affected by the treatment.
pendimethalin (Prowl H2O) 3.8 lbs./gal.	1.1 to 4.2 qts.	1.05 to 4.0	Apply as a between cut treatment before annual weeds emerge. Pendimethalin will provide good to excellent preemergence control of annual grasses and some annual broadleaf weeds. Do not cut for hay or graze for 28 days after an application of 2.1 qts./acre or less. If Prowl H2O is applied at more than 2.1 qts./acre, the grazing and haying restriction is 50 days.
flumioxazin (Chateau 51 WDG)	4.0 oz.	0.13	Apply as between cut treatment for preemergence control of annual grasses and some annual broadleaf weeds. Application should be made as soon as possible after hay harvest to minimize injury to alfalfa. Do not apply to alfalfa with more than 6 inches or new growth or significant injury can occur. Do not cut for hay or graze for 25 days after an application of flumioxazin.