

ALFALFA

ALFALFA INSECT CONTROL

David Buntin, Research/Extension Entomologist

PEST	INSECTICIDE	MOA	AMOUNT PER ACRE	LBS ACTIVE PER ACRE	REI/PHI (Hours or Days)	REMARKS AND PRECAUTIONS								
At-Planting Pests Cutworms, grubs, wireworms	SEED TREATMENT: <i>thiamethoxam</i> Cruiser 5FS alfalfa	4A	0.001 mg (ai)/ seed		12 H/ —									
Alfalfa weevil (Hay production)	<i>alpha-cypermethrin</i> Fastac CS, other brands 0.83 EC	3A	2.2–3.8 fl oz	0.012–0.025	12 H/ 3 D	<p>Alfalfa weevil infestations can normally be found from mid-February until after the 1st cutting. Scout 1–2 times/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:</p> <table border="0"> <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</td> </tr> <tr> <td style="text-align: center;">15 or more</td> <td style="text-align: center;">1.5</td> </tr> </table> <p>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/ sweep are present. All weevil sprays should be made with ground equipment with a minimum of 10 gal/A.</p> <p>Grazing Alfalfa Pastures: Products and rates listed in the table for grazing alfalfa have grazing restrictions of 0 days. Several products listed in the hay section have a 7-day grazing restriction. The reduced rate of <i>permethrin</i> may be less effective in controlling larvae than rates recommended for hay production.</p>	<u>Stem Height (inches)</u>	<u>Larvae per stem</u>	3–8	0.5	9–14	1	15 or more	1.5
	<u>Stem Height (inches)</u>	<u>Larvae per stem</u>												
	3–8	0.5												
	9–14	1												
	15 or more	1.5												
	<i>beta-cyfluthrin</i> Baythroid XL 1.0 EC	3A	1.6–2.8 fl oz	0.0125–0.022	12 H/ 7 D									
	<i>cyfluthrin</i> Tombstone 2	3A	1.6–2.8 fl oz	0.025–0.044	12 H/ 7 D									
	<i>indoxacarb</i> Steward 1.25 SC	22	6.7–11.3 fl oz	0.065–0.11	12 H/ 7 D									
	<i>gamma-cyhalothrin</i> Declare 1.25 EC Proaxis 0.5 EC	3A	1.02–1.54 fl oz 2.56–3.28 fl oz	0.01–0.015 0.01–0.015	12 H/ 7 D									
<i>lambda-cyhalothrin</i> Warrior II Zeon 2.08 Silencer, Lambda, other brands 1 EC	3A	1.28–1.92 fl oz 2.56–3.84 fl oz	0.02–0.03 0.02–0.03	12 H/ 7 D										
<i>methomyl</i> Lannate, other brands 2.4 LV Lannate 90 SP	1A	3 pt 1 lb	0.90 0.90	48 H/ 7 D										
<i>permethrin</i> Permethrin 3.2EC, other brands	3A	8 fl oz	0.2	12 H/ 14 D										
<i>zeta-cypermethrin</i> Mustang Maxx, Respect 0.8 EC	3A	2.24–4 fl oz	0.014–0.025	12 H/ 3 D										
Alfalfa weevil (Grazing alfalfa) Products and rates listed have grazing restrictions of 0–3 days.	<i>alpha-cypermethrin</i> Fastac CS, other brands 0.83 EC	3A	2.2–3.8 fl oz	0.012–0.025	12 H/ 3 D									
	<i>gamma-cyhalothrin</i> Declare 1.25 Proaxis 0.5	3A	1.02–1.54 fl oz 2.56–3.84 fl oz	0.01–0.015 0.01–0.015	12 H/ 1 D Forage									
	<i>lambda-cyhalothrin</i> Warrior II Zeon 2.08 Silencer, Lambda, other brands 1 EC	3A	1.28–1.92 fl oz 2.56–3.84 fl oz	0.02–0.03 0.02–0.03	12 H/ 1 D Forage									
	<i>permethrin</i> Permethrin 3.2EC, other brands	3A	4 fl oz	0.1	12 H/ 0 D									
	<i>zeta-cypermethrin</i> Mustang Maxx, Respect 0.8 EC	3A	2.24–4 fl oz	0.014–0.025	12 H/ 3 D									

PEST	INSECTICIDE	MOA	AMOUNT PER ACRE	LBS ACTIVE PER ACRE	REI/PHI (Hours or Days)	REMARKS AND PRECAUTIONS								
Aphids	<i>dimethoate</i> Dimethoate 4EC, 400 Dimethoate 2.67EC	1B	0.5–1 pt 0.75–1.5 pt	0.25–0.5 0.25–0.5	12 H/ 10 D	<p>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. If alfalfa is near the time of cutting, consider cutting earlier and treating the stubble if aphids remain after cutting.</p> <table border="1"> <thead> <tr> <th>Stem Height (inches)</th> <th>Aphids per Stem</th> </tr> </thead> <tbody> <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> </tbody> </table>	Stem Height (inches)	Aphids per Stem	10–15	40–50	16–20	60–80	21+	100–120
	Stem Height (inches)	Aphids per Stem												
	10–15	40–50												
	16–20	60–80												
	21+	100–120												
	<i>flupyradifurone</i> Sivanto Prime	4D	7–14 fl oz	0.09–0.14	4 H/ 7 D									
<i>gamma-cyhalothrin</i> Declare 1.25 Proaxis 0.5	3A	1.02–1.54 fl oz 2.56–3.84 fl oz	0.01–0.015 0.01–0.015	12 H/ 7 D										
<i>lambda-cyhalothrin</i> Warrior II Zeon 2.08 Silencer, Lambda, other brands	3A	1.28–1.92 fl oz 2.56–3.84 fl oz	0.02–0.03 0.02–0.03	12 H/ 7 D										
<i>malathion</i> Malathion 5EC, 57EC, Malathion 8EC	1B	1.5–2 pt 1–1.25 pt	0.94–1.25 0.94–1.25	12 H/ 0 D										
<i>permethrin</i> Permethrin 3.2EC, other brands	3A	8 fl oz	0.2	12 H/ 14 D										
Cutworms and Armyworms (True armyworm, Fall armyworm, Beet armyworm, Yellowstriped armyworm)	<i>alpha-cypermethrin</i> Fastac CS, other brands 0.83 EC	3A	2.2–3.8 fl oz	0.012–0.025	12 H/ 3 D	<p>ARMYWORMS ON SOIL SURFACE: Treat when any of these armyworm pests or combination of pests are found at an average of 2–3/sq ft.</p> <p>CUTWORMS: Several species. Treat if 3 or more cutworms/sq ft. In standing alfalfa use enough pressure and water for spray penetration to reach the ground. If near cutting, consider cutting early and treating stubble if infestation remains. Cutworms often will congregate under windrowed hay.</p> <p>CARBARYL NOTE: Do not apply when crop is wet. <i>Carbaryl</i> may bleach tender foliage. Do not apply this product to target crops or weeds in bloom.</p> <p>NOTE: Baythroid and Tombstone for small armyworm larvae only.</p>								
	<i>beta-cyfluthrin</i> Baythroid XL 1.0EC	3A	1.6–2.8 fl oz	0.0125–0.022	12 H/ 7 D									
	<i>carbaryl</i> Sevin XLR Plus, 4F	1A	1–1.5 qt	1–1.5	12 H/ 7 D									
	<i>chlorantraniliprole</i> Coragen 1.67SC Prevathon 0.43 Vantacor (armyworms only)	28	3.5–5 fl oz 14–20 fl oz 1.2–2.5 fl oz	0.047–0.09 0.047–0.09 0.047–0.098	4 H/ 0 D									
	<i>cyfluthrin</i> Tombstone 2	3A	1.6–2.8 fl oz	0.025–0.044	12 H/ 7 D									
	<i>gamma-cyhalothrin</i> Declare 1.25 Proaxis 0.5	3A	1.02–1.54 fl oz 2.56–3.84 fl oz	0.01–0.015 0.01–0.015	12 H/ 7 D									
	<i>lambda-cyhalothrin</i> Warrior II Zeon 2.08 Silencer, Lambda, other brands	3A	1.28–1.92 fl oz 2.56–3.84 fl oz	0.02–0.03 0.02–0.03	12 H/ 7 D									
	<i>methomyl</i> Lannate, Annihilate 2.4 LV Lannate 90SP	1A	3 pt 1 lb	0.90 0.90	48 H/ 7 D									
	<i>methoxyfenozone</i> Intrepid 2F	18	4–8 fl oz	0.06–0.12	4 H/ 3 D									
	<i>zeta-cypermethrin</i> Mustang Maxx, Respect 0.8EC	3A	2.24–4 fl oz	0.014–0.025	12 H/ 3 D									

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Blister beetles	<i>carbaryl</i> Sevin XLR Plus, 4E, other brands	1A	0.5–1 qt	0.5–1	12 H/ 7 D	Treat when 2 beetles/sq ft are found. Beetles tend to aggregate on the weedy margins of fields. Blister beetles bailed up in hay are toxic to livestock, especially horses. CARBARYL NOTE: Do not apply when crop is wet. <i>Carbaryl</i> may bleach tender foliage. Do not apply this product to target crops or weeds in bloom.
	<i>gamma-cyhalothrin</i> Declare 1.25 Proaxis 0.5	3A	1.02–1.54 fl oz 2.56–3.84 fl oz	0.01–0.015 0.01–0.015	12 H/ 7 D	
	<i>lambda-cyhalothrin</i> Warrior II Zeon 2.08 Silencer, Lambda, other brands	3A	1.28–1.92 fl oz 2.56–3.84 fl oz	0.02–0.03 0.02–0.03	12 H/ 7 D	
Clover root curculio, Lesser clover leaf weevil, Sweet clover weevil (Adults only)	<i>gamma-cyhalothrin</i> Declare 1.25 Proaxis 0.5	3A	1.02–1.54 fl oz 2.56–3.84 fl oz	0.01–0.015 0.01–0.015	12 H/ 7 D	CLOVER ROOT CURCULIO, SWEET CLOVER WEEVIL: Damage is 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.
	<i>lambda-cyhalothrin</i> Warrior II Zeon 2.08 Silencer, Lambda, other brands	3A	1.28–1.92 fl oz 2.56–3.84 fl oz	0.02–0.03 0.02–0.03	12 H/ 7 D	
Foliage feeding caterpillars: Green cloverworm, Velvetbean caterpillar, Alfalfa Webworm, Alfalfa caterpillar, and/or Alfalfa looper	<i>alpha-cypermethrin</i> Fastac CS, other brands 0.83 EC	3A	2.2–3.8 fl oz	0.012–0.025	12 H/ 3 D	FOLIAGE FEEDING CATERPILLARS: For alfalfa caterpillar, green cloverworm, velvetbean caterpillar, alfalfa webworm, and foliage inhabiting armyworms, treat when any of these pests or combinations of pests are found at an average of 2 or more ½" long larvae per plant OR defoliation exceeds 10%. CARBARYL NOTE: Do not apply when crop is wet. <i>Carbaryl</i> may bleach tender foliage. Do not apply this product to target crops or weeds in bloom.
	<i>beta-cyfluthrin</i> Baythroid XL 1.0EC	3A	1.6–2.8 fl oz	0.0125–0.022	12 H/ 7 D	
	<i>carbaryl</i> Sevin XLR Plus, 4E, other brands	1A	0.5–1 qt	0.5–1	12 H/ 7 D	
	<i>chlorantraniliprole</i> Coragen 1.67SC Prevathon 0.43 Vantacor	28	3.5–5 fl oz 14–20 fl oz 1.2–2.5 fl oz	0.047–0.09 0.047–0.09 0.047–0.098	4 H/ 0 D	
	<i>cyfluthrin</i> Tombstone 2	3A	1.6–2.8 fl oz	0.025–0.044	12 H/ 7 D	
	<i>indoxacarb</i> Steward 1.25 SC	22	6.7–11.3 fl oz	0.065–0.11	12 H/ 7 D	
	<i>gamma-cyhalothrin</i> Declare 1.25 Proaxis 0.5	3A	1.02–1.54 fl oz 2.56–3.84 fl oz	0.01–0.015 0.01–0.015	12 H/ 7 D	
	<i>lambda-cyhalothrin</i> Warrior II Zeon 2.08 Silencer, Lambda, other brands	3A	1.28–1.92 fl oz 2.56–3.84 fl oz	0.02–0.03 0.02–0.03	12 H/ 7 D	
	<i>methomyl</i> Lannate, Annihilate 2.4 LV Lannate 90 SP	1A	3 pt 1 lb	0.90 0.90	48 H/ 7 D	
	<i>methoxyfenozide</i> Intrepid 2F	18	4–8 fl oz	0.06–0.12	4 H/ 3 D	
	<i>permethrin</i> Permethrin 3.2EC, other brands	3A	8 fl oz	0.2	12 H/ 14 D	
<i>zeta-cypermethrin</i> Mustang Maxx, Respect 0.8EC	3A	2.24–4 fl oz	0.014–0.025	12 H/ 3 D		

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Grasshoppers	<i>alpha-cypermethrin</i> Fastac CS, other brands 0.83 EC	3A	2.2–3.8 fl oz	0.012–0.025	12 H/ 3 D	Treat when heavy grasshopper infestations are causing excess defoliation. Grasshoppers often invade fields from adjacent weedy areas; border treatments are sometimes appropriate.										
	<i>beta-cyfluthrin</i> Baythroid XL 1EC	3A	2–2.8 fl oz	0.0155–0.022	12 H/ 7 D											
	<i>cyfluthrin</i> Tombstone 2	3A	2–2.8 fl oz	0.031–0.044	12 H/ 7 D											
	<i>dimethoate</i> Dimethoate 4EC, 400 Dimethoate 2.67EC	1B	0.5–1 pt 0.75–1.5 pt	0.25–0.5 0.25–0.5	12 H/ 10 D											
	<i>gamma-cyhalothrin</i> Declare 1.25 Proaxis 0.5	3A	1.02–1.54 fl oz 2.56–3.84 fl oz	0.01–0.015 0.01–0.015	12 H/ 7 D											
	<i>lambda-cyhalothrin</i> Warrior II Zeon 2.08 Silencer, Lambda, other brands	3A	1.28–1.92 fl oz 2.56–3.84 fl oz	0.02–0.03 0.02–0.03	12 H/ 7 D											
	<i>malathion</i> Malathion 5EC, 57EC Malathion 8EC	1B	1.5–2 pt 1–1.25 pt	0.94–1.25 0.94–1.25	12 H/ 0 D											
	<i>zeta-cypermethrin</i> Mustang Maxx, Respect 0.8EC	3A	2.8–4 fl oz	0.0175–0.025	12 H/ 3 D											
Leafhoppers (potato leafhopper, aster leafhopper)	<i>alpha-cypermethrin</i> Fastac CS, other brands 0.83 EC	3A	2.2–3.8 fl oz	0.012–0.025	12 H/ 3 D	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" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;"><u>Stem Height (inches)</u></th> <th style="text-align: center;"><u>Hoppers per sweep</u></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">3-7</td> <td style="text-align: center;">0.5</td> </tr> <tr> <td style="text-align: center;">8-10</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">11-14</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">14+</td> <td style="text-align: center;">4 or cut hay early</td> </tr> </tbody> </table>	<u>Stem Height (inches)</u>	<u>Hoppers per sweep</u>	3-7	0.5	8-10	1	11-14	2	14+	4 or cut hay early
	<u>Stem Height (inches)</u>	<u>Hoppers per sweep</u>														
	3-7	0.5														
	8-10	1														
	11-14	2														
	14+	4 or cut hay early														
	<i>beta-cyfluthrin</i> Baythroid XL 1EC	3A	1.6–2.8 fl oz	0.0125–0.022	12 H/ 7 D											
	<i>cyfluthrin</i> Tombstone 2	3A	1.6 fl oz	0.013	12 H/ 7 D											
	<i>dimethoate</i> Dimethoate 4EC, 400 Dimethoate 2.67EC	1B	0.5–1 pt 0.75–1.5 pt	0.25–0.5 0.25–0.5	12 H/ 10 D											
<i>flupyradifurone</i> Sivanto Prime	4D	7–14 fl oz	0.09–0.14	4 H/ 7 D												
<i>gamma-cyhalothrin</i> Declare 1.25 Proaxis 0.5	3A	1.02–1.54 fl oz 2.56–3.84 fl oz	0.01–0.015 0.01–0.015	12 H/ 7 D												
<i>lambda-cyhalothrin</i> Warrior II Zeon 2.08 Silencer, Lambda, other brands	3A	1.28–1.92 fl oz 2.56–3.84 fl oz	0.02–0.03 0.02–0.03	12 H/ 7 D												
<i>permethrin</i> Permethrin 3.2EC, other brands	3A	8 fl oz	0.2	12 H/ 14 D												
<i>zeta-cypermethrin</i> Mustang Maxx, Respect 0.8EC	3A	2.24–4 fl oz	0.014–0.025	12 H/ 3 D												

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Mites	<i>dimethoate</i> Dimethoate 4EC, 400 Dimethoate 2.67EC	1B	1 pt 1.5 pt	0.5 0.5	12 H/ 10 D	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 15 or more gal/A. Warrior II Zeon and Declare are for suppression only.
	<i>gamma-cyhalothrin</i> Declare 1.25 Proaxis 0.5	3A	1.54 fl oz 3.84 fl oz	0.015 0.015	12 H/ 7 D	
	<i>lambda-cyhalothrin</i> Warrior II Zeon 2.08 Silencer, Lambda, other brands	3A	1.92 fl oz 3.84 fl oz	0.03 0.03	12 H/ 7 D	
Threecornered alfalfa hopper	<i>alpha-cypermethrin</i> Fastac CS, other brands 0.83 EC	3A	2.2–3.8 fl oz	0.012–0.025	12 H/ 3 D	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. CARBARYL NOTE: Do not apply when crop is wet. <i>Carbaryl</i> may bleach tender foliage. Do not apply this product to target crops or weeds in bloom.
	<i>beta-cyfluthrin</i> Baythroid XL 1.0EC	3A	1.6–2.8 fl oz	0.0125–0.022	12 H/ 7 D	
	<i>carbaryl</i> Sevin XLR Plus, 4E, other brands	1A	1 qt	1	12 H/ 7 D	
	<i>cyfluthrin</i> Tombstone 2	3A	1.6–2.8 fl oz	0.025–0.044	12 H/ 7 D	
	<i>gamma-cyhalothrin</i> Declare 1.25 Proaxis 0.5	3A	1.02–1.54 fl oz 2.56–3.84 fl oz	0.01–0.015 0.01–0.015	12 H/ 7 D	
	<i>lambda-cyhalothrin</i> Warrior II Zeon 2.08 Silencer, Lambda, other brands	3A	1.28–1.92 fl oz 2.56–3.84 fl oz	0.02–0.03 0.02–0.03	12 H/ 7 D	
	<i>zeta-cypermethrin</i> Mustang Maxx, Respect 0.8EC	3A	2.24–4 fl oz	0.014–0.025	12 H/ 3 D	

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
Besiege (<i>lambda-cyhalothrin, chlorantraniliprole</i>)	5–9 fl oz/A

ALFALFA WEED CONTROL

Patrick E. McCullough, Extension Agronomist—Weed Science

ALFALFA

HERBICIDE	MOA	BROADCAST RATE PER ACRE		REI/PHI (Hours or Days)	REMARKS AND PRECAUTIONS
		AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT		
PRE-PLANT INCORPORATED					
<i>benefin</i> Balan 60DF		2 lb	1.2		Incorporate 2–3" 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.
<i>EPTC</i> Eptam 7 lb/gal		3.5 pt	3.1		
<i>trifluralin</i> Treflan 4 lb/gal		1	0.5		
POST-EMERGENCE SEEDLING ALFALFA					
<i>2,4-DB</i> Butyrac 200 Butoxone 1.75 lb/gal		2–3 qt 4.3–6.5 pt	1–1.5 0.9–1.4		Apply in fall or spring after alfalfa has 2–4 trifoliolate leaves. Controls emerged annual broadleaf weeds less than 3" tall. Do not graze or cut for hay for 60 days after application. Rainfall or irrigation within 7–10 days after treatment may cause injury. DO NOT add wetting agents or surfactants to the spray solution.
<i>bromoxynil</i> Buctril 2L		1.5 pt	0.375		Apply to seedling alfalfa that has a minimum of 4 trifoliolate leaves. Spray winter annual broadleaf weeds that do not exceed the 4-leaf stage or 2" in height, or have rosettes greater than 1.5" 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.
<i>imazethapyr</i> Pursuit 70DG Pursuit 2EC		1.08–2.16 oz 3–6 fl oz	0.047–0.094		Apply to seedling alfalfa with a minimum of 2 trifoliolate leaves and when weeds are 1–3" tall or before rosette forming weeds exceed 3" 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.
<i>glyphosate</i> Roundup WeatherMax 5.5 lb/gal		22–44 fl oz	0.95–1.9		USE ONLY ON ALFALFA VARIETIES DESIGNATED AS CONTAINING A ROUNDUP READY (RR) GENE. Apply from alfalfa emergence up to 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 <i>glyphosate</i> . To eliminate undesirable stand gaps during seedling establishment, apply Roundup WeatherMax at the low rate at or before the 3–4 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 qt/A/year. Remove livestock before application and wait 5 days after the last application before grazing, cutting for silage or hay harvest. <i>Glyphosate</i> will control most weed species, including dodder. Weeds that are not effectively controlled by a single application of <i>glyphosate</i> 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 <i>glyphosate</i> may be used on Roundup Ready alfalfa, if the specific brand label lists this use.

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HERBICIDE	MOA	BROADCAST RATE PER ACRE		REI/PHI (Hours or Days)	REMARKS AND PRECAUTIONS
		AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT		
POST-EMERGENCE SEEDLING ALFALFA (continued)					
<i>imazamox</i> Raptor 1 lb/gal		4–6 fl oz	0.031–0.047		Apply to seedling alfalfa with a minimum of 2 trifoliolate leaves and when weeds are 1–3" 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 fl oz/A may be applied per season. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1–2% 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.
<i>pendimethalin</i> Prowl H2O 3.8 lb/gal		1.1–2.1 pt	0.5–1		Apply to seedling alfalfa before annual weed emergence and after alfalfa has developed 2 trifoliolate leaves. Applications should be made before alfalfa exceeds 6" in height. <i>Pendimethalin</i> will provide good to excellent pre-emergence control of annual grasses and some annual broadleaf weeds. Do not cut for hay or graze for 28 days after an application.
<i>pronamide</i> Kerb 50W		1–1.5 lb	0.5–0.75		Spray pre-emergence or early post-emergence 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.
<i>sethoxydim</i> Poast 1.5 lb/gal Poast Plus Sethoxydim E-Pro Sethoxydim G-Pro 1 lb/gal		1–1.5 pt 1.5–2.25 pt 1.5–2.25 pt 1.5–2.25 pt	0.19–0.3		Apply low rate with 2 pt of crop oil concentrate/A for control of annual grasses up to 8" 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 <i>sethoxydim</i> products within 7 days of feeding, grazing or harvesting undried forage, or within 14 days of cutting for dry hay.
<i>clethodim</i> Select Max 0.97 lb/gal Intensity One 0.97 lb/gal TapOut 0.97 lb/gal Shadow 2 lb/gal Arrow 2 lb/gal		9–32 fl oz 6–16 fl oz 6–16 fl oz	0.07–0.24 0.09–0.25 0.09–0.25		<i>Clethodim</i> 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% v/v. Use a nonionic surfactant or crop oil concentrate with TapOut. <i>Clethodim</i> may be tank-mixed with 2,4-DB; however, the risk of temporary injury to alfalfa will increase. <i>Clethodim</i> may also be tank-mixed with Pursuit and Raptor. Do not cut for hay or graze for 15 days after an application of <i>clethodim</i> .
POST-EMERGENCE SEEDLING – ALFALFA (BETWEEN CUTTINGS)					
<i>paraquat</i> Firestorm 3 lb/gal Gramoxone Inteon 2 lb/gal		0.7 pt 1 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 gal of water. Do not make more than 2 applications during the growing season. Apply in 20-40 gal 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.

HERBICIDE	MOA	BROADCAST RATE PER ACRE		REI/PHI (Hours or Days)	REMARKS AND PRECAUTIONS
		AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT		
POST-EMERGENCE—ESTABLISHED DORMANT ALFALFA (SECOND YEAR & OLDER)					
<i>metribuzin</i> Sencor 4L Sencor 75DF Metribuzin 75 DF		12 fl oz 8 oz 8 oz	0.375		See label for weeds controlled at different rates and for precautions related to soil textures. Spray dormant alfalfa, established 1 year or longer, after frost in fall or preferably in late winter before alfalfa begins spring growth while weeds are small. Provides pre-emergence and early post-emergence 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.
<i>hexazinone</i> Velpar 2L Velpar 75 DF		2–3 pt 8–12 oz	0.5–0.75 0.5–0.75		
<i>pronamide</i> Kerb 50W		1–1.5 lb	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 pre-emergence and early post-emergence control. Do not tank mix with other herbicides.
<i>paraquat</i> Firestorm 3 lb/gal Gramoxone Inteon 2 lb/gal		0.7–1.3 pt 1–2 pt	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" 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 pt/100 gal of spray solution. DO NOT graze or harvest within 42 days of application. Make only 1 application per season.
PRE-EMERGENCE—ESTABLISHED ALFALFA					
<i>norflurazon</i> Solicam 80DF		1.25–2.5 lb	1–2		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.
<i>pendimethalin</i> Prowl H2O 3.8 lb/gal		1.1–4.2 qt	1.05–4		<i>Pendimethalin</i> will provide good to excellent pre-emergence 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". Prowl H2O must be applied before crabgrass or other annual grasses germinate. Prowl H2O has no pre-harvest or pre-grazing interval restriction.
<i>flumioxazin</i> Chateau 51 WDG		4 oz	0.13		<i>Flumioxazin</i> will provide good to excellent pre-emergence 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" of new growth or significant injury can occur. Do not cut for hay or graze for 25 days after an application of <i>flumioxazin</i> .
POST-EMERGENCE – ESTABLISHED ALFALFA					
2,4-DB Butyrac 200 Butoxone 1.75 lb/gal		2–3 qt 4.3–6.5 pt	1–1.5 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.

■ ALFALFA WEED CONTROL

ALFALFA

HERBICIDE	MOA	BROADCAST RATE PER ACRE		REI/PHI (Hours or Days)	REMARKS AND PRECAUTIONS
		AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT		
POST-EMERGENCE—ESTABLISHED ALFALFA (continued)					
<i>halosulfuron</i> Sanda 75WG		0.67–1 oz	0.03–0.045		Controls annual and perennial broadleaf weeds and sedges in established alfalfa. It is recommended to make an application as soon as possible after removal of hay. Application of Sandea to alfalfa where re-growth exceeds 6" will result in greater yield reduction. Do not apply more than 2 oz/A/12 month period. Apply to sedges 6–10" tall. Applications are recommended with a non-ionic surfactant at 0.25% v/v. For best results, do not graze or mow for 2 weeks before or after application.
<i>imazethapyr</i> Pursuit 70DG Pursuit 2EC		1.08–2.16 oz 3–6 fl oz	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" of new growth) to reduce spray interference. Apply when weeds are 1–3" tall or before rosette forming weeds exceed 3" in diameter. DO NOT feed, graze, or harvest alfalfa for 30 days after application. Add a non-ionic 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.
<i>imazamox</i> Raptor 1 lb/gal		4–6 fl oz	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" of new growth) to reduce spray interference. Apply when weeds are 1–3" tall or before rosette forming weeds exceed 3" 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 fl oz/A/ season may be applied. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1-2% v/v to the spray solution. If replanting is necessary in a field treated with Raptor, do not plant alfalfa for 4 months following its application.
<i>glyphosate</i> Roundup WeatherMax 5.5 lb/gal		44 fl oz	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 qt/A/year. Remove livestock before application and wait 5 days after the last application before grazing, cutting for silage or hay harvest. <i>Glyphosate</i> will control most weed species, including dodder. Weeds that are not effectively controlled by a single application of <i>glyphosate</i> include: hemp sesbania, bermudagrass, yellow nutsedge, tropical spiderwort, greenbrier species, cutleaf eveningprimrose, Carolina geranium, maypop passionflower and trumpetcreeper. Repeat applications, or other appropriate herbicides, will be needed to control this group of weeds. Other brands of <i>glyphosate</i> may be used on Roundup Ready alfalfa, if the specific brand label lists this use.
<i>sethoxydim</i> Poast 1.5 lb/gal Poast Plus Sethoxydim E-Pro Sethoxydim G-Pro 1 lb/gal		1–1.5 pt 1.5–2.25 pt 1.5–2.25 pt 1.5–2.25 pt	0.19–0.3		Apply low rate with 2 pt of crop oil concentrate/A for control of annual grasses up to 8" 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 <i>sethoxydim</i> products within 7 days of feeding, grazing, or harvesting undried forage, or within 14 days of cutting for dry hay.

HERBICIDE	MOA	BROADCAST RATE PER ACRE		REI/PHI (Hours or Days)	REMARKS AND PRECAUTIONS
		AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT		
POST-EMERGENCE ESTABLISHED—ALFALFA (BETWEEN CUTTINGS)					
<i>clethodim</i> Select Max 0.97 lb/gal Intensity One 0.97 lb/gal TapOut 0.97 lb/gal Shadow 2 lb/gal Arrow 2 lb/gal		9–32 fl oz	0.07–0.24		<i>Clethodim</i> 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% v/v. Use a nonionic surfactant or crop oil concentrate with TapOut. <i>Clethodim</i> may be tank-mixed with 2,4-DB; however, the risk of temporary injury to alfalfa will increase. <i>Clethodim</i> may also be tank-mixed with Pursuit and Raptor. Do not cut for hay or graze for 15 days after an application of <i>clethodim</i> .
<i>imazethapyr</i> 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 1–3" tall or before rosette forming weeds exceed 3" in diameter. DO NOT feed, graze, or harvest alfalfa for 30 days after application. A maximum total of 2.16 oz/A/year of Pursuit may be applied. 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 its application. Do not apply more than 1.44 oz during the last year of the stand.
<i>imazamox</i> Raptor 1 lb/gal		4–6 fl oz	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 1–3" tall or before rosette forming weeds exceed 3" 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 fl oz/A may be applied per season. Add a nonionic surfactant at 0.25% v/v or a crop oil concentrate at 1–2% v/v to the spray solution. If replanting is necessary in a field treated with Raptor, do not plant alfalfa for 4 months following its application.
<i>paraquat</i> Firestorm 3 lb/gal Gramoxone Inteon 2 lb/gal		0.7 pt 1 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 gal of spray mix. DO NOT graze, cut or harvest within 30 days of application. Make 1-3 applications as needed during the cutting 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.
<i>pendimethalin</i> Prowl H2O 3.8 lb/gal		1.1–4.2 qt	1.05–4		Apply as a between cut treatment before annual weeds emerge. <i>Pendimethalin</i> will provide good to excellent pre-emergence 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 qt/A or less. If Prowl H2O is applied at more than 2.1 qt/A, the grazing and haying restriction is 50 days.
<i>flumioxazin</i> Chateau 51 WDG		4 oz	0.13		Apply as a between cut treatment for pre-emergence 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" of new growth or significant injury can occur. Do not cut for hay or graze for 25 days after an application of <i>flumioxazin</i> .