



IPM-0978

# Alfalfa

Insect and Weed Control  
Recommendations for 2023



## INSECT PEST MANAGEMENT

Alfalfa is a superb forage, but it can be attacked by a complex of insect pests. In fact, the introduction of the alfalfa weevil about 70 years ago contributed to the decline of alfalfa acreage in Alabama. However, improved cultivars and management techniques have led to a renewed interest in alfalfa.

Alfalfa insect populations can vary greatly from field to field. Therefore, it is essential to check each alfalfa field frequently for the presence of insects or insect injury. Table 1 indicates when each insect pest is likely to be present. For optimum insect management alfalfa should be scouted weekly from February through the first hard freeze.

### Action Thresholds for Alfalfa Pests

An action threshold is a decision-making tool that indicates when an insect population is high enough to cause significant yield loss. Listed below are the recommended action thresholds for the pests in the scouting guide.

**Alfalfa Weevil.** Treat when 50 percent of stems have injury and insects are present at the rate of 25 larvae per net sweep; or two larvae per stem when alfalfa is 16 inches tall; or one larva per stem when alfalfa is 10 inches tall. When the threshold is

reached, harvest if alfalfa is within 10 days of normal harvest. Otherwise, treat with an insecticide. After harvest, check to see how many alfalfa weevil larvae are present on the stubble and new regrowth. If there are more than eight larvae per square foot, consider a stubble spray.

**Pea Aphid.** The action threshold depends on height of crop. When alfalfa is 15 inches tall, treat if there are 50 aphids per stem; when it is 25 inches tall, treat if there are 120 aphids per stem. Aphid populations frequently decline due to natural enemies. Do not treat for aphids unless aphid populations are high.

**True Armyworm, other Caterpillars.** Treat when there are two to three caterpillars per square foot.

**Three-Cornered Alfalfa Hopper.** Treat when the insect is girdling and killing 10 percent of the lateral stems in the field—probably about three hoppers per plant.

**Blister Beetles.** These beetles poison livestock, particularly horses, when they are eaten along with the hay. Blister beetles are often clumped in the weedy margins of a field; spot treatment may be possible. Early cuttings are unlikely to be infested by blister beetle.

**Table 1. Alfalfa Insect Scouting Guide**

| Insects                       | Jan | Feb        | Mar        | Apr        | May        | June       | July       | Aug | Sept | Oct | Nov | Dec |
|-------------------------------|-----|------------|------------|------------|------------|------------|------------|-----|------|-----|-----|-----|
| Alfalfa Weevil                |     | ////////// |            |            |            |            |            |     |      |     |     |     |
| Pea Aphids                    |     | ////////// |            |            |            |            |            |     |      |     |     |     |
| True Armyworms                |     |            | ////////// |            |            |            |            |     |      |     |     |     |
| Other Caterpillars*           |     |            |            |            |            |            |            |     |      |     |     |     |
| Japanese Beetle               |     |            |            |            | ////////// |            |            |     |      |     |     |     |
| Three-Cornered Alfalfa Hopper |     |            |            |            |            | ////////// |            |     |      |     |     |     |
| Blister Beetles               |     |            |            |            |            |            | ////////// |     |      |     |     |     |
| Leafhoppers                   |     |            |            | ////////// |            |            |            |     |      |     |     |     |
| Grasshoppers                  |     |            |            |            |            |            |            |     |      |     |     |     |

\* Corn earworm, webworms, alfalfa caterpillar, green cloverworm, yellow-striped armyworm, soybean looper, beet armyworm, fall armyworm.

KEY TO RATINGS: ////////// normal; ----- may vary with season.

**Grasshoppers.** Treat when heavy populations are defoliating the alfalfa. This will probably be about 12 per square yard.

**Potato Leafhopper.** Potato leafhopper feeding causes abnormal plant response. Only a few are needed to cause injury. Recommended thresholds are based on sweep-net sampling. Threshold is one half per sweep when alfalfa is 3 to 7 inches tall, one per sweep when 8 to 10 inches tall, and two per sweep when it is 11 to 14 inches tall. When alfalfa is taller, the yield loss will probably not be observed if it is harvested at the usual time.

**Webworms.** Treat when the crop is more than 2 weeks from cutting and when 25 to 30 percent of plant terminals are infested.

### Sampling Equipment

Equipment needed depends on the method of measuring thresholds. When insect thresholds are based on the number of pests per stem, gently cut the stem off at the base and shake it into a bucket. When thresholds are based on number per area, use a sampling hoop that can be tossed onto the alfalfa. To make a hoop, bend the body of a wire coat hanger until it is approximately round. This should make a circle about 11 inches in diameter, which is approximately two-thirds of a square foot in area. Alternatively pvc pipe can be used to make a square foot frame. A sweep net is useful for detecting pest populations before they cause injury. A 15-inch diameter sweep net with a muslin or sailcloth bag can be purchased from various IPM or forestry supply stores.

### Organic Insecticides That Can be Applied to Alfalfa

Organic producers may want to consider the following insecticides, most if not all of which are OMRI approved. Be sure to read the insecticide label to make sure it meets your needs. The following products contain azadirachtin: Azera, Azatrol EC, Neemix 4.5 and Ecozin Plus. The following products contain *Bacillus thuringiensis*: Biobit HP (subsp. *kurstaki* strain ABTS-351), Dipel DF (subsp. *kurstaki* strain ABTS-351), Javelin WG (subsp. *kurstaki* strain SA-11), Agree WG (subsp. *aizawai* strain), and Xentari (subsp. *aizawai* strain ABTS-1857). Surround WP contains kaolin. Microthiol Disperss and Yellow Jacket Special Dusting Sulfur contain sulfur. Gemstar LC contains an insecticidal virus. PyGanic Crop Protection EC 1.4<sub>II</sub> and PyGanic Crop Protection EC 5.0<sub>II</sub> insecticides are OMRI approved and contain natural pyrethrins. There are other insecticides that contain pyrethrins. Be sure to choose one that does not contain piperonyl butoxide, as that chemical is not considered organic. Pest Out contains cottonseed, clove, and garlic oils. M-Pede contains potassium salts of fatty acids. Biolink Insect and Bird Repellent contains garlic. Ecotec contains rosemary and peppermint oils. Entrust and Entrust SC contain spinosad. Mycotrol ESO and BotaniGard ES contain *Beauveria bassiana* strain GHA. Grandevo contains *Chromobacterium subtsugae* strain PRAA4-1. Other organic insecticides may be available. Always check the label to determine if a product is OMRI approved and suitable for your crop.

**Table 2. Alfalfa Control <sup>1</sup>**

| Insecticide and Formulation | Acres per Gallon | Amount of Formulation per Acre | Lb. Active Ingredient per Acre | Minimum Days from Last Application to Harvest | Comments |
|-----------------------------|------------------|--------------------------------|--------------------------------|-----------------------------------------------|----------|
|-----------------------------|------------------|--------------------------------|--------------------------------|-----------------------------------------------|----------|

**Caution:** Most insecticides cannot be used when alfalfa is in bloom. Read labels for instructions.

| ALFALFA WEBWORMS, GARDEN WEBWORMS                                                         |        |                |                               |                                     |                                                        |
|-------------------------------------------------------------------------------------------|--------|----------------|-------------------------------|-------------------------------------|--------------------------------------------------------|
| alpha-cypermethrin<br>FASTAC EC<br>Other trade names <sup>2</sup>                         | 34–58  | 2.2–3.8 fl.oz. | 0.014–0.025                   | 3 (cutting,<br>grazing)<br>7 (seed) | Fastac is a <b>RESTRICTED USE</b> pesticide.           |
| beta-cyfluthrin<br>BAYTHROID XL                                                           | 46–80  | 1.6–2.8 fl.oz. | 0.0125–0.022                  | 7                                   | Baythroid XL is a <b>RESTRICTED USE</b> pesticide.     |
| carbaryl<br>SEVIN XLR PLUS<br>Other trade names <sup>2</sup>                              | 2.7–4  | 1–1.5 qt.      | 1–1.5                         | 7                                   |                                                        |
| chlorpyrifos<br>LORSBAN ADVANCED<br>Other trade names <sup>2</sup>                        | 5.3    | 1.5 pt.        | 0.7                           | 21                                  | Lorsban Advanced is a <b>RESTRICTED USE</b> pesticide. |
| chlorpyrifos +<br>gamma-cyhalothrin<br>COBALT                                             | 5–10   | 13–26 fl.oz.   | 0.25–0.51<br>+<br>0.004–0.009 | 7–14 <sup>1</sup>                   | Cobalt is a <b>RESTRICTED USE</b> pesticide.           |
| chlorpyrifos +<br>lambda-cyhalothrin<br>COBALT ADVANCED<br>Other trade names <sup>2</sup> | 5–11.6 | 11–26 fl.oz.   | 0.21–0.51<br>+<br>0.011–0.026 | 7–14 <sup>1</sup>                   | Cobalt Advanced is a <b>RESTRICTED USE</b> pesticide.  |

<sup>1</sup> See Table 3 for a list of insecticides, formulations, restricted entry intervals, and days to grazing or harvest.

<sup>2</sup> See Table 3 for other trade names.

**Table 2. Alfalfa Control <sup>1</sup> (cont.)**

| Insecticide and Formulation                                                                              | Acres per Gallon | Amount of Formulation per Acre | Lb. Active Ingredient per Acre | Minimum Days from Last Application to Harvest | Comments                                                                                               |
|----------------------------------------------------------------------------------------------------------|------------------|--------------------------------|--------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>Caution:</b> Most insecticides cannot be used when alfalfa is in bloom. Read labels for instructions. |                  |                                |                                |                                               |                                                                                                        |
| <b>ALFALFA WEBWORMS, GARDEN WEBWORMS (cont.)</b>                                                         |                  |                                |                                |                                               |                                                                                                        |
| chlorpyrifos + zeta-cypermethrin<br>STALLION BRAND                                                       | 11–26            | 5.0–11.75 fl.oz.               | 0.11–0.25+<br>0.011–0.025      | 7                                             | Stallion Brand is a <b>RESTRICTED USE</b> pesticide.                                                   |
| cyfluthrin<br>TOMBSTONE<br>Other trade names <sup>2</sup>                                                | 46–80            | 1.6–2.8 fl.oz.                 | 0.025–0.03                     | 7                                             | Tombstone is a <b>RESTRICTED USE</b> pesticide.                                                        |
| gamma-cyhalothrin<br>DECLARE                                                                             | 100–166          | 0.77–1.28 fl.oz.               | 0.0075–0.0125                  | 7 (hay)<br>1 (forage)                         | Declare is a <b>RESTRICTED USE</b> pesticide.                                                          |
| lambda-cyhalothrin <sup>1</sup><br>WARRIOR II with ZEON TECHNOLOGY<br>Other trade names <sup>2</sup>     | 80–133           | 0.96–1.6 fl.oz.                | 0.015–0.025                    | 7 (hay)<br>1 (forage)                         | Warrior II with Zeon Technology is a <b>RESTRICTED USE</b> pesticide.                                  |
| lambda-cyhalothrin + chlorantraniliprole<br>BESIEGE                                                      | 16–25.6          | 5–8 fl.oz.                     | 0.016–0.026 +<br>0.03–0.05     | 3 (hay)<br>1 (forage)                         | Besiege is a <b>RESTRICTED USE</b> pesticide.                                                          |
| methoxyfenozide<br>INTREPID 2F                                                                           | 16–32            | 4–8 fl.oz.                     | 0.06–0.12                      | 3 (hay)<br>0 (grazing)                        | Use higher rate for heavier infestations.                                                              |
| permethrin<br>POUNCE 25 WP<br>Other trade names <sup>2</sup>                                             | 1.25–5           | 3.2–12.8 oz.                   | 0.05–0.2                       | 0–14 <sup>1</sup>                             | All permethrin formulations are <b>RESTRICTED USE</b> pesticides.                                      |
| zeta-cypermethrin<br>MUSTANG MAXX 0.8E<br>Other trade names <sup>2</sup>                                 | 32–58            | 2.2–4 fl.oz.                   | 0.014–0.025                    | 3                                             | Mustang Maxx is a <b>RESTRICTED USE</b> pesticide.                                                     |
| <b>ALFALFA WEEVILS</b>                                                                                   |                  |                                |                                |                                               |                                                                                                        |
| alpha-cypermethrin<br>FASTAC EC<br>Other trade names <sup>2</sup>                                        | 34–58            | 2.2–3.8 fl.oz.                 | 0.014–0.025                    | 3 (cutting, grazing)<br>7 (seed)              | Fastac is a <b>RESTRICTED USE</b> pesticide.                                                           |
| beta-cyfluthrin<br>BAYTHROID XL                                                                          | 46–80            | 1.6–2.8 fl.oz.                 | 0.0125–0.022                   | 7                                             | Baythroid XL is a <b>RESTRICTED USE</b> pesticide.                                                     |
| carbaryl<br>SEVIN XLR PLUS<br>Other trade names <sup>2</sup>                                             | 2.7              | 1.5 qt.                        | 1.5                            | 7                                             |                                                                                                        |
| chlorpyrifos<br>LORSBAN ADVANCED<br>Other trade names <sup>2</sup>                                       | 4–8              | 1–2 pt.                        | 0.47–0.93                      | 14–21 <sup>1</sup>                            | Use a minimum of 20 gallons per acre by ground. Lorsban Advanced is a <b>RESTRICTED USE</b> pesticide. |
| chlorpyrifos + gamma-cyhalothrin<br>COBALT                                                               | 3.4–7            | 19–38 fl.oz.                   | 0.37–0.74<br>+<br>0.007–0.013  | 14–21 <sup>1</sup>                            | Cobalt is a <b>RESTRICTED USE</b> pesticide.                                                           |

<sup>1</sup> See Table 3 for a list of insecticides, formulations, restricted entry intervals, and days to grazing or harvest.<sup>2</sup> See Table 3 for other trade names.

**Table 2. Alfalfa Control <sup>1</sup> (cont.)**

| Insecticide and Formulation | Acres per Gallon | Amount of Formulation per Acre | Lb. Active Ingredient per Acre | Minimum Days from Last Application to Harvest | Comments |
|-----------------------------|------------------|--------------------------------|--------------------------------|-----------------------------------------------|----------|
|-----------------------------|------------------|--------------------------------|--------------------------------|-----------------------------------------------|----------|

**Caution:** Most insecticides cannot be used when alfalfa is in bloom. Read labels for instructions.

| <b>ALFALFA WEEVILS (cont.)</b>                                                            |                       |                   |                               |                                     |                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------|-----------------------|-------------------|-------------------------------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| chlorpyrifos +<br>lambda-cyhalothrin<br>COBALT ADVANCED<br>Other trade names <sup>2</sup> | 3.4–8                 | 16–38 fl.oz.      | 0.31–0.74<br>+<br>0.016–0.038 | 14–21 <sup>1</sup>                  | Cobalt Advanced is a <b>RESTRICTED USE</b> pesticide.                                                                                                                                                         |
| chlorpyrifos + zeta-cypermethrin<br>STALLION BRAND                                        | 11–14                 | 9.25–11.75 fl.oz. | 0.2–0.25 +<br>0.02–0.025      | 7                                   | Stallion Brand is a <b>RESTRICTED USE</b> pesticide.                                                                                                                                                          |
| cyfluthrin<br>TOMBSTONE<br>Other trade names <sup>2</sup>                                 | 46–80                 | 1.6–2.8 fl.oz.    | 0.025–0.044                   | 7                                   | Tombstone is a <b>RESTRICTED USE</b> pesticide.                                                                                                                                                               |
| gamma-cyhalothrin<br>DECLARE                                                              | 83–125                | 1.02–1.54 fl.oz.  | 0.01–0.015                    | 7 (hay)<br>1 (forage)               | Declare is a <b>RESTRICTED USE</b> pesticide.                                                                                                                                                                 |
| indoxacarb<br>STEWART EC                                                                  | 11.5–19               | 6.7–11.3 fl.oz.   | 0.065–0.11                    | 7                                   | Use 6.7 to 11.3 fluid ounces when longer residual control is needed.                                                                                                                                          |
| lambda-cyhalothrin<br>WARRIOR II with ZEON TECHNOLOGY<br>Other trade names <sup>2</sup>   | 67–100                | 1.28–1.92 fl.oz.  | 0.02–0.03                     | 7 (hay)<br>1 (forage)               | WARRIOR II is a <b>RESTRICTED USE</b> pesticide.                                                                                                                                                              |
| lambda-cyhalothrin +<br>chlorantraniliprole<br>BESIEGE                                    | 13–21                 | 6–10 fl.oz.       | 0.02–0.03 +<br>0.04–0.06      | 7 (hay)<br>1 (forage)               | Besiege is a <b>RESTRICTED USE</b> pesticide.                                                                                                                                                                 |
| methomyl<br>LANNATE 2.4LV<br>Other trade names <sup>2</sup>                               | 2.7                   | 3 pt.             | 0.9                           | 7                                   | Lannate is a <b>RESTRICTED USE</b> pesticide.                                                                                                                                                                 |
| permethrin<br>POUNCE 25WP<br>Other trade names <sup>2</sup>                               | 1.25–2.5 A<br>per lb. | 6.4–12.8 oz.      | 0.1–0.2                       | 0–14 <sup>1</sup>                   | FOR ROTATIONAL GRAZING: Use low rate for short-term weevil control when alfalfa is too short to graze. Graze as soon as possible for further weevil suppression. Pounce is a <b>RESTRICTED USE</b> pesticide. |
| phosmet<br>IMIDAN 70-W                                                                    | 0.75–1 A<br>per lb.   | 1.0–1.33 lb.      | 0.7–1.0                       | 7                                   |                                                                                                                                                                                                               |
| zeta-cypermethrin<br>MUSTANG MAXX 0.8E<br>Other trade names <sup>2</sup>                  | 32–58                 | 2.2–4 fl.oz.      | 0.014–0.025                   | 3                                   | Mustang Maxx is a <b>RESTRICTED USE</b> pesticide.                                                                                                                                                            |
| <b>APHIDS</b>                                                                             |                       |                   |                               |                                     |                                                                                                                                                                                                               |
| alpha-cypermethrin<br>FASTAC EC<br>Other trade names <sup>2</sup>                         | 34–58                 | 2.2–3.8 fl.oz.    | 0.014–0.025                   | 3 (cutting,<br>grazing)<br>7 (seed) | Fastac is a <b>RESTRICTED USE</b> pesticide.                                                                                                                                                                  |
| chlorpyrifos<br>LORSBAN ADVANCED<br>Other trade names <sup>2</sup>                        | 4–8                   | 1–2 pt.           | 0.47–0.93                     | 14–21 <sup>1</sup>                  | Lorsban 4E is a <b>RESTRICTED USE</b> pesticide.                                                                                                                                                              |

<sup>1</sup> See Table 3 for a list of insecticides, formulations, restricted entry intervals, and days to grazing or harvest.

<sup>2</sup> See Table 3 for other trade names.

**Table 2. Alfalfa Control <sup>1</sup> (cont.)**

| Insecticide and Formulation | Acres per Gallon | Amount of Formulation per Acre | Lb. Active Ingredient per Acre | Minimum Days from Last Application to Harvest | Comments |
|-----------------------------|------------------|--------------------------------|--------------------------------|-----------------------------------------------|----------|
|-----------------------------|------------------|--------------------------------|--------------------------------|-----------------------------------------------|----------|

**Caution:** Most insecticides cannot be used when alfalfa is in bloom. Read labels for instructions.

| <b>APHIDS (cont.)</b>                                                                        |           |                   |                               |                                  |                                                                                                               |
|----------------------------------------------------------------------------------------------|-----------|-------------------|-------------------------------|----------------------------------|---------------------------------------------------------------------------------------------------------------|
| chlorpyrifos + gamma-cyhalothrin<br>COBALT                                                   | 5–10      | 13–26 fl.oz.      | 0.25–0.51<br>+<br>0.004–0.009 | 14 <sup>1</sup>                  | Cobalt is a <b>RESTRICTED USE</b> pesticide.                                                                  |
| chlorpyrifos + lambda-cyhalothrin<br>COBALT ADVANCED<br>Other trade names <sup>2</sup>       | 5–11.6    | 11–26 fl.oz.      | 0.21–0.51<br>+<br>0.011–0.026 | 7–14 <sup>1</sup>                | Cobalt Advanced is a <b>RESTRICTED USE</b> pesticide.                                                         |
| chlorpyrifos + zeta-cypermethrin<br>STALLION BRAND                                           | 11–14     | 9.25–11.75 fl.oz. | 0.2–0.25 +<br>0.02–0.025      | 7                                | Stallion Brand is a <b>RESTRICTED USE</b> pesticide.                                                          |
| dimethoate<br>DIMETHOATE 4EC<br>Other trade names <sup>2</sup>                               | 8–16      | 0.5–1 pt.         | 0.25–0.5                      | 10                               | <b>DO NOT</b> apply more than once per cutting.                                                               |
| flupyradifurone<br>SIVANTO PRIME                                                             | 12.2–18.3 | 7–10.5 fl.oz.     | 0.09–0.14                     | 7                                |                                                                                                               |
| gamma-cyhalothrin<br>DECLARE                                                                 | 83–125    | 1.02–1.54 fl.oz.  | 0.01–0.015                    | 7 (hay)<br>1 (forage)            | Declare is a <b>RESTRICTED USE</b> pesticide.                                                                 |
| lambda-cyhalothrin<br>WARRIOR II with ZEON TECHNOLOGY<br>Other trade names <sup>2</sup>      | 67–100    | 1.28–1.92 fl.oz.  | 0.02–0.03                     | 7 (hay)<br>1 (forage)            | Warrior II is a <b>RESTRICTED USE</b> pesticide.                                                              |
| lambda-cyhalothrin + chlorantraniliprole<br>BESIEGE                                          | 13–21     | 6–10 fl.oz.       | 0.02–0.03 +<br>0.04–0.06      | 7 (hay)<br>1 (forage)            | Besiege is a <b>RESTRICTED USE</b> pesticide.                                                                 |
| methomyl<br>LANNATE LV<br>Other trade names <sup>2</sup>                                     | 2.7–5.3   | 1.5–3 pt.         | 0.45–0.9                      | 7                                | Lannate is a <b>RESTRICTED USE</b> pesticide.                                                                 |
| permethrin<br>POUNCE 25 WP<br>Other trade names <sup>2</sup>                                 | 1.25–5    | 3.2–12.8 oz.      | 0.05–0.2                      | 0–14 <sup>1</sup>                | Use higher rate for higher pest pressure or for longer residual. Pounce is a <b>RESTRICTED USE</b> pesticide. |
| <b>ARMYWORMS, CORN EARWORMS, FALL ARMYWORMS, YELLOW-STRIPED ARMYWORMS, GREEN CLOVERWORMS</b> |           |                   |                               |                                  |                                                                                                               |
| alpha-cypermethrin<br>FASTAC EC<br>Other trade names <sup>2</sup>                            | 34–58     | 2.2–3.8 fl.oz.    | 0.014–0.025                   | 3 (cutting, grazing)<br>7 (seed) | Fastac is a <b>RESTRICTED USE</b> pesticide.                                                                  |
| beta-cyfluthrin<br>BAYTHROID XL                                                              | 46–80     | 1.6–2.8 fl.oz.    | 0.0125–0.022                  | 7                                | Baythroid XL is a <b>RESTRICTED USE</b> pesticide. Use on small larvae (1st–2nd instar).                      |
| chlorantraniliprole<br>PREVATHON<br>Other trade names <sup>2</sup>                           | 6.4–9.1   | 14–20 fl.oz.      | 0.045–0.067                   | 0                                |                                                                                                               |

<sup>1</sup> See Table 3 for a list of insecticides, formulations, restricted entry intervals, and days to grazing or harvest.

<sup>2</sup> See Table 3 for other trade names.

**Table 2. Alfalfa Control <sup>1</sup> (cont.)**

| Insecticide and Formulation                                                                              | Acres per Gallon | Amount of Formulation per Acre | Lb. Active Ingredient per Acre | Minimum Days from Last Application to Harvest | Comments                                                                               |
|----------------------------------------------------------------------------------------------------------|------------------|--------------------------------|--------------------------------|-----------------------------------------------|----------------------------------------------------------------------------------------|
| <b>Caution:</b> Most insecticides cannot be used when alfalfa is in bloom. Read labels for instructions. |                  |                                |                                |                                               |                                                                                        |
| <b>ARMYWORMS, CORN EARWORMS, FALL ARMYWORMS, YELLOW-STRIPED ARMYWORMS, GREEN CLOVERWORMS (cont.)</b>     |                  |                                |                                |                                               |                                                                                        |
| chlorpyrifos + gamma-cyhalothrin<br>COBALT                                                               | 3.4–6.7          | 19–38 fl.oz.                   | 0.37–0.74<br>+<br>0.007–0.013  | 14–21 <sup>1</sup>                            | Cobalt is a <b>RESTRICTED USE</b> pesticide.                                           |
| chlorpyrifos + lambda-cyhalothrin<br>COBALT ADVANCED<br>Other trade names <sup>2</sup>                   | 3.4–8            | 16–38 fl.oz.                   | 0.31–0.74<br>+<br>0.016–0.038  | 14–21 <sup>1</sup>                            | Cobalt Advanced is a <b>RESTRICTED USE</b> pesticide.                                  |
| chlorpyrifos + zeta-cypermethrin<br>STALLION BRAND                                                       | 11–14            | 9.25–11.75 fl.oz.              | 0.2–0.25 +<br>0.02–0.025       | 7                                             | Stallion Brand is a <b>RESTRICTED USE</b> pesticide.                                   |
| cyfluthrin<br>TOMBSTONE<br>Other trade names <sup>2</sup>                                                | 46–80            | 1.6–2.8 fl.oz.                 | 0.025–0.044                    | 7                                             | Tombstone is a <b>RESTRICTED USE</b> pesticide. Use on small larvae (1st–2nd instar).  |
| gamma-cyhalothrin<br>DECLARE                                                                             | 83–125           | 1.02–1.54 fl.oz.               | 0.01–0.015                     | 7 (hay)<br>1 (forage)                         | Declare is a <b>RESTRICTED USE</b> pesticide. Use on small larvae (1st–2nd instar).    |
| indoxacarb<br>STEWARD                                                                                    | 11.5–19          | 6.7–11.3 fl.oz.                | 0.065–0.11                     | 7                                             | Use intermediate to higher rate on later instar larvae. One application per cutting.   |
| lambda-cyhalothrin<br>WARRIOR II with ZEON TECHNOLOGY<br>Other trade names <sup>2</sup>                  | 67–100           | 1.28–1.92 fl.oz.               | 0.02–0.03                      | 7 (hay)<br>1 (forage)                         | Warrior II is a <b>RESTRICTED USE</b> pesticide. Use the higher rate for large larvae. |
| lambda-cyhalothrin + chlorantraniliprole<br>BESIEGE                                                      | 13–21            | 6–10 fl.oz.                    | 0.02–0.03 +<br>0.04–0.06       | 7 (hay)<br>1 (forage)                         | Besiege is a <b>RESTRICTED USE</b> pesticide.                                          |
| methomyl<br>LANNATE 2.4LV<br>Other trade names <sup>2</sup>                                              | 2.7–5.3          | 1.5–3 pt.                      | 0.45–0.9                       | 7                                             | Use higher rate for larger caterpillars. Lannate is a <b>RESTRICTED USE</b> pesticide. |
| methoxyfenozide<br>INTREPID 2F                                                                           | 16–32            | 4–8 fl.oz.                     | 0.06–0.12                      | 3 (hay)<br>0 (grazing)                        | Use higher rate for heavier infestations.                                              |
| spinosad<br>ENTRUST SC                                                                                   | 32–64            | 2–4 fl.oz.                     | 0.03–0.06                      | 3 (hay)<br>0 (grazing)                        |                                                                                        |
| zeta-cypermethrin<br>MUSTANG MAXX 0.8E<br>Other trade names <sup>2</sup>                                 | 32–46            | 2.8–4 fl.oz.                   | 0.07–0.025                     | 3                                             | Mustang Maxx is a <b>RESTRICTED USE</b> pesticide.                                     |

<sup>1</sup> See Table 3 for a list of insecticides, formulations, restricted entry intervals, and days to grazing or harvest.<sup>2</sup> See Table 3 for other trade names.

**Table 2. Alfalfa Control <sup>1</sup> (cont.)**

| Insecticide and Formulation                                                                              | Acres per Gallon | Amount of Formulation per Acre | Lb. Active Ingredient per Acre | Minimum Days from Last Application to Harvest | Comments                                                                           |
|----------------------------------------------------------------------------------------------------------|------------------|--------------------------------|--------------------------------|-----------------------------------------------|------------------------------------------------------------------------------------|
| <b>Caution:</b> Most insecticides cannot be used when alfalfa is in bloom. Read labels for instructions. |                  |                                |                                |                                               |                                                                                    |
| <b>BLISTER BEETLES</b>                                                                                   |                  |                                |                                |                                               |                                                                                    |
| carbaryl<br>SEVIN XLR PLUS<br>Other trade names <sup>2</sup>                                             | 4–8              | 0.5–1 qt.                      | 0.5–1                          | 7                                             |                                                                                    |
| chlorpyrifos +<br>gamma-cyhalothrin<br>COBALT                                                            | 3.4–7            | 19–38 fl.oz.                   | 0.37–0.74<br>+<br>0.007–0.013  | 14–21 <sup>1</sup>                            | Cobalt is a <b>RESTRICTED USE</b> pesticide.                                       |
| chlorpyrifos +<br>lambda-cyhalothrin<br>COBALT ADVANCED<br>Other trade names <sup>2</sup>                | 3.4–8            | 16–38 fl.oz.                   | 0.31–0.74<br>+<br>0.016–0.038  | 14–21 <sup>1</sup>                            | Cobalt Advanced is a <b>RESTRICTED USE</b> pesticide.                              |
| gamma-cyhalothrin<br>DECLARE                                                                             | 83–125           | 1.02–1.54 fl.oz.               | 0.01–0.015                     | 7 (hay)<br>1 (forage)                         | Declare is a <b>RESTRICTED USE</b> pesticide.                                      |
| lambda-cyhalothrin<br>WARRIOR II with ZEON<br>TECHNOLOGY<br>Other trade names <sup>2</sup>               | 67–100           | 1.28–1.92 fl.oz.               | 0.02–0.03                      | 7 (hay)<br>1 (forage)                         | Warrior II is a <b>RESTRICTED USE</b> pesticide.                                   |
| lambda-cyhalothrin +<br>chlorantraniliprole<br>BESIEGE                                                   | 13–21            | 6–10 fl.oz.                    | 0.02–0.03 +<br>0.04–0.06       | 7 (hay)<br>1 (forage)                         | Besiege is a <b>RESTRICTED USE</b> pesticide.                                      |
| <b>GRASSHOPPERS</b>                                                                                      |                  |                                |                                |                                               |                                                                                    |
| alpha-cypermethrin<br>FASTAC EC<br>Other trade names <sup>2</sup>                                        | 34–46            | 2.8–3.8 fl.oz.                 | 0.017–0.025                    | 3 (cutting,<br>grazing)<br>7 (seed)           | Fastac is a <b>RESTRICTED USE</b> pesticide.                                       |
| beta-cyfluthrin<br>BAYTHROID XL                                                                          | 46–80            | 2.0–2.8 fl.oz.                 | 0.0155–0.022                   | 7                                             | Baythroid XL is a <b>RESTRICTED USE</b> pesticide.                                 |
| carbaryl<br>SEVIN XLR PLUS<br>Other trade names <sup>2</sup>                                             | 2.7–8            | 0.5–1.5 qt.                    | 0.5–1.5                        | 7                                             | Use 1.25 to 1.875 pounds for mature grasshoppers or applications to dense foliage. |
| chlorpyrifos<br>LORSBAN ADVANCED<br>Other trade names <sup>2</sup>                                       | 8–16             | 0.5–1 pt.                      | 0.235–0.47                     | 7–14 <sup>1</sup>                             | Lorsban Advanced is a <b>RESTRICTED USE</b> pesticide.                             |
| chlorpyrifos +<br>gamma-cyhalothrin<br>COBALT                                                            | 10–18            | 7–13 fl.oz.                    | 0.14–0.25<br>+<br>0.002–0.004  | 7                                             | Cobalt is a <b>RESTRICTED USE</b> pesticide.                                       |
| chlorpyrifos +<br>lambda-cyhalothrin<br>COBALT ADVANCED<br>Other trade names <sup>2</sup>                | 10–21            | 6–13 fl.oz.                    | 0.12–0.25<br>+<br>0.006–0.013  | 7                                             | Cobalt Advanced is a <b>RESTRICTED USE</b> pesticide.                              |

<sup>1</sup> See Table 3 for a list of insecticides, formulations, restricted entry intervals, and days to grazing or harvest.<sup>2</sup> See Table 3 for other trade names.

**Table 2. Alfalfa Control <sup>1</sup> (cont.)**

| Insecticide and Formulation | Acres per Gallon | Amount of Formulation per Acre | Lb. Active Ingredient per Acre | Minimum Days from Last Application to Harvest | Comments |
|-----------------------------|------------------|--------------------------------|--------------------------------|-----------------------------------------------|----------|
|-----------------------------|------------------|--------------------------------|--------------------------------|-----------------------------------------------|----------|

**Caution:** Most insecticides cannot be used when alfalfa is in bloom. Read labels for instructions.

| <b>GRASSHOPPERS (cont.)</b>                                                               |                  |                   |                               |                       |                                                       |
|-------------------------------------------------------------------------------------------|------------------|-------------------|-------------------------------|-----------------------|-------------------------------------------------------|
| chlorpyrifos + zeta-cypermethrin<br>STALLION BRAND                                        | 11–14            | 9.25–11.75 fl.oz. | 0.2–0.25 +<br>0.02–0.025      | 7                     | Stallion Brand is a <b>RESTRICTED USE</b> pesticide.  |
| cyfluthrin<br>TOMBSTONE<br>Other trade names <sup>2</sup>                                 | 46–64            | 2–2.8 fl.oz.      | 0.031–0.044                   | 7                     | Tombstone is a <b>RESTRICTED USE</b> pesticide.       |
| dimethoate<br>DIMETHOATE 4EC<br>Other trade names <sup>2</sup>                            | 8–16             | 0.5–1 pt.         | 0.25–0.5                      | 10                    |                                                       |
| gamma-cyhalothrin<br>DECLARE                                                              | 83–125           | 1.02–1.54 fl.oz.  | 0.01–0.015                    | 7 (hay)<br>1 (forage) | Declare is a <b>RESTRICTED USE</b> pesticide.         |
| lambda-cyhalothrin<br>WARRIOR II with ZEON TECHNOLOGY<br>Other trade names <sup>2</sup>   | 67–100           | 1.28–1.92 fl.oz.  | 0.02–0.03                     | 7 (hay)<br>1 (forage) | Warrior II is a <b>RESTRICTED USE</b> pesticide.      |
| lambda-cyhalothrin +<br>chlorantraniliprole<br>BESIEGE                                    | 13–21            | 6–10 fl.oz.       | 0.02–0.03 +<br>0.04–0.06      | 7 (hay)<br>1 (forage) | Besiege is a <b>RESTRICTED USE</b> pesticide.         |
| phosmet<br>IMIDAN 70-W                                                                    | 0.75–1 A per lb. | 1.0–1.33 lb.      | 0.7–1.0                       | 7                     |                                                       |
| zeta-cypermethrin<br>MUSTANG MAXX<br>Other trade names <sup>2</sup>                       | 32–46            | 2.8–4 fl.oz.      | 0.018–0.025                   | 3                     | Mustang Maxx is a <b>RESTRICTED USE</b> pesticide.    |
| <b>IMPORTED FIRE ANTS</b>                                                                 |                  |                   |                               |                       |                                                       |
| s-methoprene<br>EXTINGUISH<br>PROFESSIONAL ANT BAIT                                       | 0.7–1 A per lb.  | 1–1.5 lb.         | 0.005–0.0075                  | 0                     | Broadcast the bait according to label directions.     |
| <b>JAPANESE BEETLE ADULTS</b>                                                             |                  |                   |                               |                       |                                                       |
| beta-cyfluthrin<br>BAYTHROID XL                                                           | 46–80            | 1.6–2.8 fl.oz.    | 0.0125–0.022                  | 7                     | Baythroid XL is a <b>RESTRICTED USE</b> pesticide.    |
| carbaryl<br>SEVIN XLR PLUS<br>Other trade names <sup>2</sup>                              | 4                | 1 qt.             | 1                             | 7                     |                                                       |
| chlorpyrifos +<br>gamma-cyhalothrin<br>COBALT                                             | 3.4–7            | 19–38 fl.oz.      | 0.25–0.51<br>+<br>0.004–0.009 | 14–21 <sup>1</sup>    | Cobalt is a <b>RESTRICTED USE</b> pesticide.          |
| chlorpyrifos +<br>lambda-cyhalothrin<br>COBALT ADVANCED<br>Other trade names <sup>2</sup> | 3.4–8            | 16–38 fl.oz.      | 0.31–0.74<br>+<br>0.016–0.038 | 14–21 <sup>1</sup>    | Cobalt Advanced is a <b>RESTRICTED USE</b> pesticide. |

<sup>1</sup> See Table 3 for a list of insecticides, formulations, restricted entry intervals, and days to grazing or harvest.

<sup>2</sup> See Table 3 for other trade names.

**Table 2. Alfalfa Control <sup>1</sup> (cont.)**

| Insecticide and Formulation                                                                              | Acres per Gallon | Amount of Formulation per Acre | Lb. Active Ingredient per Acre | Minimum Days from Last Application to Harvest | Comments                                                                                                                 |
|----------------------------------------------------------------------------------------------------------|------------------|--------------------------------|--------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>Caution:</b> Most insecticides cannot be used when alfalfa is in bloom. Read labels for instructions. |                  |                                |                                |                                               |                                                                                                                          |
| <b>JAPANESE BEETLE ADULTS (cont.)</b>                                                                    |                  |                                |                                |                                               |                                                                                                                          |
| cyfluthrin<br>TOMBSTONE<br>Other trade names <sup>2</sup>                                                | 46–80            | 1.6–2.8 fl.oz.                 | 0.025–0.044                    | 7                                             | Tombstone is a <b>RESTRICTED USE</b> pesticide.                                                                          |
| gamma-cyhalothrin<br>DECLARE                                                                             | 83–125           | 1.02–1.54 fl.oz.               | 0.01–0.015                     | 7 (hay)<br>1 (forage)                         | Declare is a <b>RESTRICTED USE</b> pesticide.                                                                            |
| lambda-cyhalothrin<br>WARRIOR II with ZEON TECHNOLOGY<br>Other trade names <sup>2</sup>                  | 67–100           | 1.28–1.92 fl.oz.               | 0.02–0.03                      | 7 (hay)<br>1 (forage)                         | Warrior II is a <b>RESTRICTED USE</b> pesticide.                                                                         |
| lambda-cyhalothrin + chlorantraniliprole<br>BESIEGE                                                      | 13–21            | 6–10 fl.oz.                    | 0.02–0.03 +<br>0.04–0.06       | 7 (hay)<br>1 (forage)                         | Besiege is a <b>RESTRICTED USE</b> pesticide.                                                                            |
| <b>POTATO LEAFHOPPERS</b>                                                                                |                  |                                |                                |                                               |                                                                                                                          |
| alpha-cypermethrin<br>FASTAC EC<br>Other trade names <sup>2</sup>                                        | 34–58            | 2.2–3.8 fl.oz.                 | 0.014–0.025                    | 3 (cutting, grazing)<br>7 (seed)              | Fastac is a <b>RESTRICTED USE</b> pesticide.                                                                             |
| beta-cyfluthrin<br>BAYTHROID XL                                                                          | 80–160           | 0.8–1.6 fl.oz.                 | 0.0065–0.0125                  | 7                                             | Baythroid XL is a <b>RESTRICTED USE</b> pesticide.                                                                       |
| carbaryl<br>SEVIN XLR PLUS<br>Other trade names <sup>2</sup>                                             | 4                | 1 qt.                          | 1.0                            | 7                                             | Carbaryl may bleach tender foliage. <b>DO NOT</b> apply when crop is wet.                                                |
| chlorpyrifos<br>LORSBAN ADVANCED<br>Other trade names <sup>2</sup>                                       | 8–16             | 0.5–1 pt.                      | 0.235–0.47                     | 7–14 <sup>1</sup>                             | Some phytotoxic symptoms may be observed on young, tender growth. Lorsban Advanced is a <b>RESTRICTED USE</b> pesticide. |
| chlorpyrifos + gamma-cyhalothrin<br>COBALT                                                               | 10–18            | 7–13 fl.oz.                    | 0.14–0.25<br>+<br>0.002–0.004  | 7                                             | Cobalt is a <b>RESTRICTED USE</b> pesticide.                                                                             |
| chlorpyrifos + lambda-cyhalothrin<br>COBALT ADVANCED<br>Other trade names <sup>2</sup>                   | 10–21            | 6–13 fl.oz.                    | 0.12–0.25<br>+<br>0.006–0.013  | 7                                             | Cobalt Advanced is a <b>RESTRICTED USE</b> pesticide.                                                                    |
| chlorpyrifos + zeta-cypermethrin<br>STALLION BRAND                                                       | 11–26            | 5.0–11.75 fl.oz.               | 0.11–0.25 +<br>0.011–0.025     | 7                                             | Stallion Brand is a <b>RESTRICTED USE</b> pesticide                                                                      |
| cyfluthrin<br>TOMBSTONE<br>Other trade names <sup>2</sup>                                                | 80–160           | 0.8–1.6 fl.oz.                 | 0.013–0.025                    | 7                                             | Tombstone is a <b>RESTRICTED USE</b> pesticide.                                                                          |

<sup>1</sup> See Table 3 for a list of insecticides, formulations, restricted entry intervals, and days to grazing or harvest.<sup>2</sup> See Table 3 for other trade names.

**Table 2. Alfalfa Control <sup>1</sup> (cont.)**

| Insecticide and Formulation | Acres per Gallon | Amount of Formulation per Acre | Lb. Active Ingredient per Acre | Minimum Days from Last Application to Harvest | Comments |
|-----------------------------|------------------|--------------------------------|--------------------------------|-----------------------------------------------|----------|
|-----------------------------|------------------|--------------------------------|--------------------------------|-----------------------------------------------|----------|

**Caution:** Most insecticides cannot be used when alfalfa is in bloom. Read labels for instructions.

| <b>POTATO LEAFHOPPERS (cont.)</b>                                                       |                    |                  |                               |                                  |                                                       |
|-----------------------------------------------------------------------------------------|--------------------|------------------|-------------------------------|----------------------------------|-------------------------------------------------------|
| dimethoate<br>DIMETHOATE 4EC<br>Other trade names <sup>2</sup>                          | 8–16               | 0.5–1 pt.        | 0.25–0.5                      | 10                               |                                                       |
| flupyradifurone<br>SIVANTO PRIME                                                        | 12.2–18.3          | 7–10.5 fl.oz.    | 0.09–0.14                     | 7                                |                                                       |
| gamma-cyhalothrin<br>DECLARE                                                            | 100–166            | 0.77–1.28 fl.oz. | 0.0075–0.0125                 | 7 (hay)<br>1 (forage)            | Declare is a <b>RESTRICTED USE</b> pesticide.         |
| lambda-cyhalothrin<br>WARRIOR II with ZEON TECHNOLOGY<br>Other trade names <sup>2</sup> | 80–133             | 0.96–1.60 fl.oz. | 0.015–0.025                   | 7 (hay)<br>1 (forage)            | Warrior II is a <b>RESTRICTED USE</b> pesticide.      |
| lambda-cyhalothrin + chlorantraniliprole<br>BESIEGE                                     | 16–25.6            | 5–8 fl.oz.       | 0.016–0.026 +<br>0.03–0.065   | 7 (hay)<br>1 (forage)            | Besiege is a <b>RESTRICTED USE</b> pesticide.         |
| malathion<br>MALATHION 5<br>Other trade names <sup>2</sup>                              | 4–5.3              | 1.5–2 pt.        | 0.94–1.25                     | 0                                |                                                       |
| permethrin<br>POUNCE 25WP<br>Other trade names <sup>2</sup>                             | 1.25–2.5 A per lb. | 6.4–12.8 oz.     | 0.1–0.2                       | 0–14 <sup>1</sup>                | Pounce is a <b>RESTRICTED USE</b> pesticide.          |
| zeta-cypermethrin<br>MUSTANG MAXX 0.8E<br>Other trade names <sup>2</sup>                | 32–58              | 2.2–4 fl.oz.     | 0.014–0.025                   | 3                                | Mustang Maxx is a <b>RESTRICTED USE</b> pesticide.    |
| <b>THREE-CORNERED ALFALFA HOPPERS</b>                                                   |                    |                  |                               |                                  |                                                       |
| alpha-cypermethrin<br>FASTAC EC<br>Other trade names <sup>2</sup>                       | 34–58              | 2.2–3.8 fl.oz.   | 0.014–0.025                   | 3 (cutting, grazing)<br>7 (seed) | Fastac is a <b>RESTRICTED USE</b> pesticide.          |
| beta-cyfluthrin<br>BAYTHROID XL                                                         | 46–80              | 1.6–2.8 fl.oz.   | 0.0125–0.022                  | 7                                | Baythroid XL is a <b>RESTRICTED USE</b> pesticide.    |
| carbaryl<br>SEVIN XLR PLUS<br>Other trade names <sup>2</sup>                            | 4                  | 1 qt.            | 1                             | 7                                |                                                       |
| chlorpyrifos + gamma-cyhalothrin<br>COBALT                                              | 3.4–7              | 19–38 fl.oz.     | 0.37–0.74<br>+<br>0.007–0.013 | 14–21 <sup>1</sup>               | Cobalt is a <b>RESTRICTED USE</b> pesticide.          |
| chlorpyrifos + lambda-cyhalothrin<br>COBALT ADVANCED<br>Other trade names <sup>2</sup>  | 3.4–8              | 16–38 fl.oz.     | 0.31–0.74<br>+<br>0.016–0.038 | 14–21 <sup>1</sup>               | Cobalt Advanced is a <b>RESTRICTED USE</b> pesticide. |
| chlorpyrifos + zeta-cypermethrin<br>STALLION BRAND                                      | 11–26              | 5.0–11.75 fl.oz. | 0.11–0.25 +<br>0.011–0.025    | 7                                | Stallion Brand is a <b>RESTRICTED USE</b> pesticide   |

**Table 2. Alfalfa Control <sup>1</sup> (cont.)**

| Insecticide and Formulation | Acres per Gallon | Amount of Formulation per Acre | Lb. Active Ingredient per Acre | Minimum Days from Last Application to Harvest | Comments |
|-----------------------------|------------------|--------------------------------|--------------------------------|-----------------------------------------------|----------|
|-----------------------------|------------------|--------------------------------|--------------------------------|-----------------------------------------------|----------|

**Caution:** Most insecticides cannot be used when alfalfa is in bloom. Read labels for instructions.

**THREE-CORNERED ALFALFA HOPPERS (cont.)**

|                                                                                         |          |                  |                            |                       |                                                    |
|-----------------------------------------------------------------------------------------|----------|------------------|----------------------------|-----------------------|----------------------------------------------------|
| cyfluthrin<br>TOMBSTONE                                                                 | 46–80    | 1.6–2.8 fl.oz.   | 0.025–0.044                | 7                     | Tombstone is a <b>RESTRICTED USE</b> pesticide.    |
| gamma-cyhalothrin<br>DECLARE                                                            | 100–166  | 0.77–1.28 fl.oz. | 0.0075–0.0125              | 7 (hay)<br>1 (forage) | Declare is a <b>RESTRICTED USE</b> pesticide.      |
| flupyradifurone<br>SIVANTO PRIME                                                        | 9.1–12.2 | 10.5–14 fl.oz.   | 0.14–0.18                  | 7                     |                                                    |
| lambda-cyhalothrin<br>WARRIOR II with ZEON TECHNOLOGY<br>Other trade names <sup>2</sup> | 80–133   | 0.96–1.60 fl.oz. | 0.015–0.025                | 7 (hay)<br>1 (forage) | Warrior II is a <b>RESTRICTED USE</b> pesticide.   |
| lambda-cyhalothrin +<br>chlorantraniliprole<br>BESIEGE                                  | 16–25.6  | 5–8 fl.oz.       | 0.016–0.026 +<br>0.03–0.05 | 7 (hay)<br>1 (forage) | Besiege is a <b>RESTRICTED USE</b> pesticide.      |
| zeta-cypermethrin<br>MUSTANG MAXX 0.8E<br>Other trade names <sup>2</sup>                | 32–58    | 2.2–4 fl.oz.     | 0.014–0.025                | 3                     | Mustang Maxx is a <b>RESTRICTED USE</b> pesticide. |

<sup>1</sup> See Table 3 for a list of insecticides, formulations, restricted entry intervals, and days to grazing or harvest.

<sup>2</sup> See Table 3 for other trade names.

**Table 3. Insecticides Labeled for Use on Alfalfa**

| Insecticide and Trade Name                | A.I./ Formulated Product | Formulation              | Restricted Entry Interval (hr) | Minimum Days from Last Application to Harvest (h) or Grazing (g) | Bee Hazard Restriction |
|-------------------------------------------|--------------------------|--------------------------|--------------------------------|------------------------------------------------------------------|------------------------|
| <b>alpha-cypermethrin</b> *MoA Group 3A   |                          |                          |                                |                                                                  |                        |
| FASTAC CS<br>( <b>RESTRICTED USE</b> )    | 0.83 lb./gal.            | capsule suspension       | 12                             | 3 (cutting or grazing)<br>7 (seed)                               | yes <sup>1</sup>       |
| FASTAC EC<br>( <b>RESTRICTED USE</b> )    | 0.83 lb./gal.            | emulsifiable concentrate | 12                             | 3 (cutting or grazing)<br>7 (seed)                               | yes <sup>1</sup>       |
| <b>beta-cyfluthrin</b> MoA Group 3A       |                          |                          |                                |                                                                  |                        |
| BAYTHROID XL<br>( <b>RESTRICTED USE</b> ) | 1 lb./gal.               | emulsifiable concentrate | 12                             | 7                                                                | yes <sup>4</sup>       |
| <b>carbaryl</b> MoA Group 1A              |                          |                          |                                |                                                                  |                        |
| SEVIN 4F                                  | 4 lb./gal.               | liquid suspension        | 12                             | 7                                                                | yes <sup>2</sup>       |
| SEVIN XLR PLUS                            | 4 lb./gal.               | liquid suspension        | 12                             | 7                                                                | yes <sup>2</sup>       |
| CARBARYL 4L, others                       | 4 lb./gal.               | liquid suspension        | 12                             | 7                                                                | yes <sup>2</sup>       |

<sup>1</sup>This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops if bees are visiting the treatment area.

<sup>2</sup>BEE CAUTION: May kill honeybees and other bees in substantial numbers. Do not apply this product to target crops or weeds in bloom. This product may show residual toxicity to honeybees, especially in humid climates and under slow drying conditions. This product is highly toxic to bees exposed to direct treatment or residues on crops or weeds in bloom. Notifying beekeepers within 1 mile of treatment area at least 48 hours before product is applied will allow them to take additional steps to protect their bees. Limiting applications to times when bees are least active, e.g., within 2 hours of sunrise or sunset, will minimize risk to bees.

<sup>4</sup>This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds on which bees are actively foraging. Additional information may be obtained by consulting your Cooperative Extension Service.

**Table 3. Insecticides Labeled for Use on Alfalfa (cont.)**

| Insecticide and Trade Name                                           | A.I./<br>Formulated<br>Product   | Formulation                  | Restricted<br>Entry<br>Interval (hr) | Minimum Days from<br>Last Application<br>to Harvest (h) or<br>Grazing (g) | Bee Hazard<br>Restriction |
|----------------------------------------------------------------------|----------------------------------|------------------------------|--------------------------------------|---------------------------------------------------------------------------|---------------------------|
| <b>chlorantraniliprole</b> MoA Group 28                              |                                  |                              |                                      |                                                                           |                           |
| CORAGEN                                                              | 1.67 lb./gal.                    | suspension concentrate       | 4                                    | 0                                                                         | no                        |
| PREVATHON                                                            | 0.43 lb./gal.                    | suspension concentrate       | 4                                    | 0                                                                         | no                        |
| <b>chlorpyrifos</b> MoA Group 1B                                     |                                  |                              |                                      |                                                                           |                           |
| LORSBAN 4E<br>(RESTRICTED USE)                                       | 4 lb./gal.                       | emulsifiable concentrate     |                                      | 7 (0.5 pt./A)<br>14 (1 pt./A)<br>21 (>1 pt./A)                            | yes <sup>3</sup>          |
| LORSBAN ADVANCED<br>(RESTRICTED USE)                                 | 3.7 lb./gal.                     | water emulsion               | 24                                   | Same as above                                                             | yes <sup>3</sup>          |
| GOVERN<br>(RESTRICTED USE)                                           | 4 lb./gal.                       | emulsifiable concentrate     | 24                                   | Same as above                                                             | yes <sup>3</sup>          |
| HATCHET<br>(RESTRICTED USE)                                          | 4 lb./gal.                       | emulsifiable concentrate     | 24                                   | Same as above                                                             | yes <sup>3</sup>          |
| CHLORPYRIFOS 4E AG, others<br>(RESTRICTED USE)                       | 4 lb./gal.                       | emulsifiable concentrate     | 24                                   | Same as above                                                             | yes <sup>3</sup>          |
| CPF 4E<br>(RESTRICTED USE)                                           | 4 lb./gal.                       | emulsifiable concentrate     | 24                                   | Same as above                                                             | yes <sup>3</sup>          |
| NUFOS 4E<br>(RESTRICTED USE)                                         | 4 lb./gal.                       | emulsifiable concentrate     | 24                                   | Same as above                                                             | yes <sup>3</sup>          |
| VULCAN<br>(RESTRICTED USE)                                           | 3.76 lb./gal.                    | emulsifiable concentrate     | 24                                   | Same as above                                                             | yes <sup>3</sup>          |
| WARHAWK<br>(RESTRICTED USE)                                          | 4 lb./gal.                       | emulsifiable concentrate     | 24                                   | Same as above                                                             | yes <sup>3</sup>          |
| WARHAWK CLEARFORM<br>(RESTRICTED USE)                                | 4 lb./gal.                       | emulsifiable concentrate     | 24                                   | Same as above                                                             | yes <sup>3</sup>          |
| WHIRLWIND<br>(RESTRICTED USE)                                        | 4 lb./gal.                       | emulsifiable concentrate     | 24                                   | Same as above                                                             | yes <sup>3</sup>          |
| YUMA 4E<br>(RESTRICTED USE)                                          | 4 lb./gal.                       | emulsifiable concentrate     | 24                                   | Same as above                                                             | yes <sup>3</sup>          |
| LORSBAN 75WG                                                         | 12 oz./lb.                       | water dispersable<br>granule | 24<br>24                             | 7 (0.33 lb./A)<br>14 (0.67 lb./A)<br>21 (>0.67 lb./A)                     | yes <sup>3</sup>          |
| <b>chlorpyrifos + gamma-cyhalothrin</b> MoA Group 1B + MoA Group 3A  |                                  |                              |                                      |                                                                           |                           |
| COBALT<br>(RESTRICTED USE)                                           | 2.5 lb./gal. +<br>0.045 lb./gal. | emulsifiable concentrate     | 24                                   | 7 (≤13 fl.oz./A)<br>14 (13–26 fl.oz./A)<br>21 (>26 fl.oz./A)              | yes <sup>3</sup>          |
| BOLTON<br>(RESTRICTED USE)                                           | 2.5 lb./gal. +<br>0.083 lb./gal. | emulsifiable concentrate     | 24                                   | 7 (5–9 fl.oz./A)<br>14 (9–18 fl.oz./A)<br>21 (>18 fl.oz./A)               | yes <sup>3</sup>          |
| <b>chlorpyrifos + lambda-cyhalothrin</b> MoA Group 1B + MoA Group 3A |                                  |                              |                                      |                                                                           |                           |
| COBALT ADVANCED<br>(RESTRICTED USE)                                  | 2.5 lb./gal. +<br>0.129 lb./gal. | emulsifiable concentrate     | 24                                   | 7 (6–13 fl.oz./A)<br>14 (13–26 fl.oz./A)<br>21 (>26 fl.oz./A)             | yes <sup>3</sup>          |
| <b>chlorpyrifos + zeta-cypermethrin</b> MoA Group 1B + MoA Group 3A  |                                  |                              |                                      |                                                                           |                           |
| STALLION BRAND                                                       | 2.75 lb./gal.                    | liquid suspension            | 24                                   | 7                                                                         | yes <sup>1</sup>          |

<sup>3</sup>This product is highly toxic to bees exposed to direct treatment on alfalfa. Do not apply if nearby bees are clustered outside of hives and bees are foraging in the treated area. Do not apply this product or allow it to drift to blooming crops if bees are visiting the treatment area.

**Table 3. Insecticides Labeled for Use on Alfalfa (cont.)**

| Insecticide and Trade Name                             | A.I./<br>Formulated<br>Product | Formulation                     | Restricted<br>Entry<br>Interval (hr) | Minimum Days from<br>Last Application<br>to Harvest (h) or<br>Grazing (g) | Bee Hazard<br>Restriction |
|--------------------------------------------------------|--------------------------------|---------------------------------|--------------------------------------|---------------------------------------------------------------------------|---------------------------|
| <b>cyfluthrin</b> MoA Group 3A                         |                                |                                 |                                      |                                                                           |                           |
| TOMBSTONE<br>(RESTRICTED USE)                          | 2 lb./gal.                     | emulsifiable concentrate        | 12                                   | 7                                                                         | yes <sup>1</sup>          |
| TOMBSTONE HELIOS                                       | 2 lb./gal.                     | emulsifiable concentrate        | 12                                   | 7                                                                         | yes <sup>1</sup>          |
| <b>dimethoate</b> MoA Group 1B                         |                                |                                 |                                      |                                                                           |                           |
| CHEMINOVA DIMETHOATE 4E                                | 4 lb./gal.                     | emulsifiable concentrate        | 48                                   | 10                                                                        | yes <sup>1</sup>          |
| DIMATE 4E                                              | 4 lb./gal.                     | emulsifiable concentrate        | 48                                   | 10                                                                        | yes <sup>1</sup>          |
| DIMETHOATE 400, others                                 | 4 lb./gal.                     | emulsifiable concentrate        | 48                                   | 10                                                                        | yes <sup>1</sup>          |
| DIMETHOATE 4EC                                         | 4 lb./gal.                     | emulsifiable concentrate        | 48                                   | 10                                                                        | yes <sup>1</sup>          |
| DIMETHOATE LV-4                                        | 4 lb./gal.                     | emulsifiable concentrate        | 48                                   | 10                                                                        | yes <sup>1</sup>          |
| <b>flupyradifurone</b> MoA Group 4D                    |                                |                                 |                                      |                                                                           |                           |
| SIVANTO PRIME                                          | 1.67 lb./gal.                  | soluble liquid                  | 4                                    | 7                                                                         | yes <sup>5</sup>          |
| <b>gamma-cyhalothrin</b> MoA Group 3A                  |                                |                                 |                                      |                                                                           |                           |
| DECLARE<br>(RESTRICTED USE)                            | 1.25 lb./gal.                  | microencapsulated<br>suspension | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| PROAXIS<br>(RESTRICTED USE)                            | 0.5 lb./gal.                   | microencapsulated<br>suspension | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| <b>indoxacarb</b> MoA Group 22A                        |                                |                                 |                                      |                                                                           |                           |
| STEWART EC                                             | 1.25 lb./gal.                  | emulsifiable concentrate        | 12                                   | 7                                                                         | yes <sup>1</sup>          |
| <b>lambda-cyhalothrin</b> MoA Group 3A                 |                                |                                 |                                      |                                                                           |                           |
| WARRIOR II with ZEON<br>TECHNOLOGY<br>(RESTRICTED USE) | 2.08 lb./gal.                  | capsule suspension              | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| KENDO<br>(RESTRICTED USE)                              | 1 lb./gal.                     | microencapsulated<br>suspension | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| LAMBDA-CY, AG, EC, 1EC<br>(RESTRICTED USE)             | 1 lb./gal.                     | emulsifiable concentrate        | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| LAMBDA-CYHALOTHRIN<br>1EC<br>(RESTRICTED USE)          | 1 lb./gal.                     | capsule suspension              | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| LAMBDASTAR<br>(RESTRICTED USE)                         | 1 lb./gal.                     | emulsifiable concentrate        | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| LAMBDASTAR 1CS<br>(RESTRICTED USE)                     | 1 lb./gal.                     | emulsifiable concentrate        | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| LAMBDASTAR PLUS<br>(RESTRICTED USE)                    | 2 lb./gal.                     | capsule suspension              | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| LAMBDA-T<br>(RESTRICTED USE)                           | 1 lb./gal.                     | capsule suspension              | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| LAMCAP<br>(RESTRICTED USE)                             | 1 lb./gal.                     | capsule suspension              | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| L-C INSECTICIDE<br>(RESTRICTED USE)                    | 1 lb./gal.                     | emulsifiable<br>concentrate     | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>1</sup>          |

<sup>1</sup>This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops if bees are visiting the treatment area.

<sup>5</sup>Toxic to adult bees in laboratory studies via oral exposure; however, it is not toxic to bees through contact exposure. Field studies conducted with this product have shown no effects on honeybee colony development.

<sup>6</sup>Avoid application when bees are actively foraging by applying during the early morning or during the evening hours. Be aware of bee hazard resulting from a cool evening and/or morning dew. It may be advisable to remove bee shelters during and for 2 or 3 days following application. Avoid direct application to bee shelters. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops if bees are visiting the treatment area.

**Table 3. Insecticides Labeled for Use on Alfalfa (cont.)**

| Insecticide and Trade Name                                                  | A.I./<br>Formulated<br>Product | Formulation              | Restricted<br>Entry<br>Interval (hr) | Minimum Days from<br>Last Application<br>to Harvest (h) or<br>Grazing (g) | Bee Hazard<br>Restriction |
|-----------------------------------------------------------------------------|--------------------------------|--------------------------|--------------------------------------|---------------------------------------------------------------------------|---------------------------|
| <b>lambda-cyhalothrin MoA Group 3A (cont.)</b>                              |                                |                          |                                      |                                                                           |                           |
| PARADIGM INSECTICIDE<br>(RESTRICTED USE)                                    | 1 lb./gal.                     | capsule suspension       | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| PROVINCE INSECTICIDE<br>(RESTRICTED USE)                                    | 1 lb./gal.                     | capsule suspension       | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| PROVINCE II<br>(RESTRICTED USE)                                             | 2.08 lb./gal.                  | capsule suspension       | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| RAVAGE<br>(RESTRICTED USE)                                                  | 1 lb./gal.                     | emulsifiable concentrate | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| SILENCER<br>(RESTRICTED USE)                                                | 1 lb./gal.                     | emulsifiable concentrate | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| SILENCER VXN<br>(RESTRICTED USE)                                            | 1 lb./gal.                     | capsule suspension       | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| PROVINCE II<br>(RESTRICTED USE)                                             | 2.08 lb./gal.                  | capsule suspension       | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| GRIZZLY TOO<br>(RESTRICTED USE)                                             | 2.08 lb./gal.                  | capsule suspension       | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| <b>lambda-cyhalothrin + chlorantraniliprole MoA Group 3A + MOA Group 28</b> |                                |                          |                                      |                                                                           |                           |
| BESIEGE<br>(RESTRICTED USE)                                                 | 0.42 +<br>0.83 lb./gal.        | water suspension         | 24                                   | 7 (h), 1 (g)                                                              | yes <sup>6</sup>          |
| <b>malathion MoA Group 1B</b>                                               |                                |                          |                                      |                                                                           |                           |
| MALATHION 5, 5E,<br>57EC, others                                            | 5 lb./gal.                     | emulsifiable concentrate | 12                                   | 0                                                                         | yes <sup>7</sup>          |
| MALATHION 8, others                                                         | 8 lb./gal.                     | emulsifiable concentrate | 12                                   | 0                                                                         | yes <sup>7</sup>          |
| FYFANON MALATHION<br>INSECTICIDE                                            | 5 lb./gal.                     | emulsifiable concentrate | 12                                   | 0                                                                         | yes <sup>7</sup>          |
| FYFANON ULV AG                                                              | 9.9 lb./gal.                   | emulsifiable concentrate | 12                                   | 0                                                                         | yes <sup>7</sup>          |
| FYFANON 8 LB EMULSION                                                       | 8 lb./gal.                     | emulsifiable concentrate | 12                                   | 0                                                                         | yes <sup>7</sup>          |
| <b>methomyl MoA Group 1A</b>                                                |                                |                          |                                      |                                                                           |                           |
| ANNIHILATE LV<br>(RESTRICTED USE)                                           | 2.4 lb./gal.                   | water soluble liquid     | 48                                   | 7                                                                         | yes <sup>1</sup>          |
| ANNIHILATE SP<br>(RESTRICTED USE)                                           | 14.4 oz./lb.                   | water soluble bags       | 48                                   | 7                                                                         | yes <sup>1</sup>          |
| CORRIDA 29 SL<br>(RESTRICTED USE)                                           | 2.4 lb./gal.                   | water soluble liquid     | 48                                   | 7                                                                         | yes <sup>1</sup>          |
| CORRIDA 90 WSP<br>(RESTRICTED USE)                                          | 14.4 oz./lb.                   | water soluble bags       | 48                                   | 7                                                                         | yes <sup>1</sup>          |
| LANNATE LV<br>(RESTRICTED USE)                                              | 2.4 lb./gal.                   | water soluble liquid     | 48                                   | 7                                                                         | yes <sup>1</sup>          |

<sup>1</sup> This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops if bees are visiting the treatment area.

<sup>6</sup> Avoid application when bees are actively foraging by applying during the early morning or during the evening hours. Be aware of bee hazard resulting from a cool evening and/or morning dew. It may be advisable to remove bee shelters during and for 2 or 3 days following application. Avoid direct application to bee shelters. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops if bees are visiting the treatment area.

<sup>8</sup> Avoid application when bees are actively foraging by applying in the early morning or during the evening hours. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops if bees are visiting the treatment area.

**Table 3. Insecticides Labeled for Use on Alfalfa (cont.)**

| Insecticide and Trade Name                                           | A.I./<br>Formulated<br>Product | Formulation                 | Restricted<br>Entry<br>Interval (hr) | Minimum Days from<br>Last Application<br>to Harvest (h) or<br>Grazing (g) | Bee Hazard<br>Restriction |
|----------------------------------------------------------------------|--------------------------------|-----------------------------|--------------------------------------|---------------------------------------------------------------------------|---------------------------|
| <b>methomyl MoA Group 1A (cont.)</b>                                 |                                |                             |                                      |                                                                           |                           |
| LANNATE SP<br>(RESTRICTED USE)                                       | 14.4 oz./lb.                   | water soluble bags          | 48                                   | 7                                                                         | yes <sup>1</sup>          |
| NUDRIN LV<br>(RESTRICTED USE)                                        | 2.4 lb./gal.                   | water soluble liquid        | 48                                   | 7                                                                         | yes <sup>1</sup>          |
| NUDRIN SP<br>(RESTRICTED USE)                                        | 14.4 oz./lb.                   | water soluble packet        | 48                                   | 7                                                                         | yes <sup>1</sup>          |
| <b>methoxyfenozide MoA Group 18</b>                                  |                                |                             |                                      |                                                                           |                           |
| INTREPID 2F                                                          | 2 lb./gal.                     | liquid                      | 4                                    | 3 (h), 0 (g)                                                              | no                        |
| TROUBADOUR 2F                                                        | 2 lb./gal.                     | flowable liquid             | 4                                    | 7 (h), 0 (g)                                                              | no                        |
| <b>permethrin MoA Group 3A</b>                                       |                                |                             |                                      |                                                                           |                           |
| ARCTIC 3.2EC<br>(RESTRICTED USE)                                     | 3.2 lb./gal.                   | emulsifiable concentrate    | 12                                   | 0 ( $\leq 0.1$ lb.a.i./A)<br>14 ( $> 0.1$ lb.a.i./A)                      | yes <sup>8</sup>          |
| PERMASTAR AG                                                         | 3.2 lb./gal.                   | emulsifiable concentrate    | 12                                   | Same as above                                                             | yes <sup>1</sup>          |
| PERMETHRIN<br>(RESTRICTED USE)                                       | 3.2 lb./gal.                   | emulsifiable concentrate    | 12                                   | Same as above                                                             | yes <sup>1</sup>          |
| PERMETHRIN 3.2 AG<br>(RESTRICTED USE)                                | 3.2 lb./gal.                   | emulsifiable concentrate    | 12                                   | Same as above                                                             | yes <sup>8</sup>          |
| PERMETHRIN 3.2 EC, others<br>(RESTRICTED USE)                        | 3.2 lb./gal.                   | emulsifiable concentrate    | 12                                   | Same as above                                                             | yes <sup>8</sup>          |
| PERM-UP 3.2 EC<br>(RESTRICTED USE)                                   | 3.2 lb./gal.                   | emulsifiable concentrate    | 12                                   | Same as above                                                             | yes <sup>8</sup>          |
| POUNCE 25 WP<br>(RESTRICTED USE)                                     | 4 oz./lb.                      | wettable powder             | 12                                   | Same as above                                                             | yes <sup>1</sup>          |
| STILETTO<br>(RESTRICTED USE)                                         | 0.08 oz./lb.                   | pellet                      | 12                                   | 0                                                                         | yes <sup>1</sup>          |
| <b>phosmet MoA Group 1B</b>                                          |                                |                             |                                      |                                                                           |                           |
| IMIDAN 70-W                                                          | 11.2 oz./lb.                   | water soluble bag           | 120                                  | 7                                                                         | yes <sup>9</sup>          |
| <b>s-methoprene MoA Group 7A</b>                                     |                                |                             |                                      |                                                                           |                           |
| EXTINGUISH PROFESSIONAL<br>FIRE ANT BAIT                             | 0.08 oz./lb.                   | bait                        | 4                                    | 0                                                                         | no                        |
| <b>spinosad MoA Group 5</b>                                          |                                |                             |                                      |                                                                           |                           |
| ENTRUST SC                                                           | 2 lb./gal.                     | soluble concentrate         | 4                                    | 3 (hay, fodder)<br>0 (grazing)                                            | yes <sup>10</sup>         |
| <b>zeta-cypermethrin MoA Group 3A</b>                                |                                |                             |                                      |                                                                           |                           |
| MUSTANG MAXX<br>INSECTICIDE<br>(RESTRICTED USE)                      | 0.8 lb./gal.                   | emulsifiable concentrate    | 12                                   | 3 (h, g)<br>7 (seed)                                                      | yes <sup>1</sup>          |
| RESPECT INSECTICIDE OR<br>RESPECT EC INSECTICIDE<br>(RESTRICTED USE) | 0.8 lb./gal.                   | emulsifiable<br>concentrate | 12                                   | 3 (g, h)<br>7 (seed)                                                      | yes <sup>1</sup>          |

<sup>1</sup>This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops if bees are visiting the treatment area.

<sup>8</sup>Avoid application when bees are actively foraging by applying in the early morning or during the evening hours. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops if bees are visiting the treatment area.

<sup>9</sup>Do not apply to alfalfa in the bloom period. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops if bees are visiting the treatment area.

<sup>10</sup>This product is highly toxic to bees exposed to treatment and for 3 hours following treatment. Do not apply this pesticide to blooming, pollen-shedding, or nectar-producing parts of plants if bees may forage on the plants during this time period.

## WEED CONTROL (2023 UPDATES)

**Table 4. Alfalfa Herbicides**

| Herbicide<br>(Trade Name)         | Herbicide<br>(Common Name) | REI/PHI<br>(hr/d) | Rate/Acre Broadcast         |                            | Herbicide Group | Time of Application                                                                                                            | Weeds Controlled                                                                                         | Comments                                                                                                                                                                                                                        |
|-----------------------------------|----------------------------|-------------------|-----------------------------|----------------------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                   |                            |                   | Formulation                 | Active Ingredient          |                 |                                                                                                                                |                                                                                                          |                                                                                                                                                                                                                                 |
| PREPLANT OR PREPLANT INCORPORATED |                            |                   |                             |                            |                 |                                                                                                                                |                                                                                                          |                                                                                                                                                                                                                                 |
| EPTAM 20-G                        | EPTC                       | 12 hr/14 d        | 15 lb.                      | 3 lb.                      | 8               | Apply just prior to planting and incorporate 3 inches deep immediately after application (within 30 minutes).                  | Controls many annual grasses and small-seeded broadleaf weeds and suppresses nutsedge.                   | Some temporary injury to alfalfa seedlings should be expected if conditions for germination and growth are not optimum. Alfalfa is sensitive to soil residues of atrazine. DO NOT use EPTAM on alfalfa if atrazine was applied. |
| Gramoxone SL                      | paraquat                   | 12 hr./ 60 d      | 0.75-4.0 pt                 | 0.19 - 1 lb a.i.           | 22              | Apply prior to emergence to the crop.                                                                                          | Controls annual broadleaf and grasses.                                                                   | Crop plants that are emerged will be killed. Coverage is necessary for adequate weed control. Seeding should be done for with a minimum amount of soil disturbance. Always apply a COC at 0.5% v/v or an NIS at 0.25% v/v.      |
| POSTEMERGENCE SEEDLING ALFALFA    |                            |                   |                             |                            |                 |                                                                                                                                |                                                                                                          |                                                                                                                                                                                                                                 |
| Various                           | bromoxynil                 | 24 hr. / 30 d     | 1.0-1.5 pt.                 | 0.25 -0.375 lb.            | 6               | Apply in the fall or spring to seedling alfalfa when majority of field has a minimum of 4 trifoliate leaves.                   | Controls certain annual broadleaf weeds.                                                                 | If applied when temperature exceeds 70 F for 3 days, crop injury may occur. See label for additives and amounts needed. Surfactant may increase alfalfa injury.                                                                 |
| Various                           | 2,4-DB<br>200<br>175       | 48 hr. / 60 d     | 1-3 qt<br>or<br>4.33-6.5 pt | 0.5-1.5<br>or<br>0.94-1.42 | 4               | Apply after alfalfa has three or more true leaves when weeds are no more than 3 inches tall and temperatures is 60°F or above. | Does not control chickweed. See label for spraying precautions. Controls certain annual broadleaf weeds. | Does not control chickweed. See label for spraying precautions.                                                                                                                                                                 |

**Table 4. Alfalfa Herbicides**

| Herbicide<br>(Trade Name)                                                   | Herbicide<br>(Common<br>Name) | REI/PHI<br>(hr/d)                                     | Rate/Acre Broadcast           |                      | Herbicide<br>Group | Time of<br>Application                                                                                                       | Weeds Controlled                                                            | Comments                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------------------------------------------------|-------------------------------|-------------------------------------------------------|-------------------------------|----------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                             |                               |                                                       | Formulation                   | Active<br>Ingredient |                    |                                                                                                                              |                                                                             |                                                                                                                                                                                                                                                                                                                           |
| POSTEMERGENCE SEEDLING ALFALFA (cont.)                                      |                               |                                                       |                               |                      |                    |                                                                                                                              |                                                                             |                                                                                                                                                                                                                                                                                                                           |
| Extreme<br>(FOR USE ON<br>ROUNDUP<br>READY<br>ALFALFA<br>VARIETIES<br>ONLY) | glyphosate +<br>imazethapyr   | 48 hr. / 30 d                                         | 2.2-4.4 pt.                   | 0.047 -0.094<br>lb.  | 9 + 2              | Apply to Seeding<br>Roundup Ready<br>Alfalfa only.                                                                           | Controls broadleaf and grasses.                                             | For optimum weed control,<br>an NIS at 0.125% v/v and<br>AMS at 2.5 lbs./A must be<br>added to the spray solution.<br>Allow a minimum of 7<br>days between sequential<br>applications. Do not apply<br>more than 3.0 pts./A of<br>Extreme to Roundup Ready<br>alfalfa during the last year<br>of the stand.               |
| Kerb SC                                                                     | pronamide                     | 24 hr. / 120 d                                        | 1.25-2 pt.                    | 0.5-0.82 lb.         | 3                  | Apply to fall-<br>seeded when<br>temperatures are<br>less than 55 F<br>after seedlings are<br>beyond the first<br>true leaf. | Controls chickweed, annual<br>grasses, and other winter<br>annuals.         | Applications should not<br>exceed 5 pt / A Kerb SC<br>(2 lb. / A a.i.) per year.<br>See label for rotation crop<br>plantback restrictions.                                                                                                                                                                                |
| Poast (1.5 lb./gal)<br>Poast plus (1.0 lb./<br>gal.)                        | sethoxydim                    | 12 hr. / 14 d<br>(Cutting) 7d<br>(Forage)             | 1.0 - 1.5 pt.<br>1.5-2.25 pt. | 0.188-0.28 lb.       | 1                  | Apply over-the-<br>top when annual<br>grasses are small<br>and actively<br>growing.                                          | Controls annual grasses and<br>some perennial grasses                       | Use a minimum of 10<br>gallons of water per acre.<br>DO NOT apply with<br>any other pesticide as<br>antagonism will most<br>likely occur. Sethoxydim<br>does not control nutgrass<br>(nutsedges). DO NOT use<br>more than 6.5 pts. of Poast<br>or 9.75 pts. of Poast Plus per<br>acre season. Add COC at<br>0.5-1.0% v/v. |
| Prowl H2O                                                                   | pendimethalin                 | 24 hr. / 28<br>d w < 2.1 qt<br>or 50 d with<br>higher | 1.1-2.1 pt.                   | 0.95 lb.             | 3                  | Apply with a<br>minimum of 2<br>trifoliolate leaves.                                                                         | Controls grasses and small-<br>seeded broadleaves that have<br>not emerged. | Must be incorporated or<br>activated by water because<br>it must have soil to seed<br>contact. Refer to the label<br>for crop restrictions.                                                                                                                                                                               |

Table 4. Alfalfa Herbicides

| Herbicide<br>(Trade Name)                                    | Herbicide<br>(Common Name) | REI/PHI<br>(hr/d) | Rate/Acre Broadcast                      |                            | Herbicide Group | Time of Application                                                                                    | Weeds Controlled                                                                                                    | Comments                                                                                                                                                                                                                                                   |
|--------------------------------------------------------------|----------------------------|-------------------|------------------------------------------|----------------------------|-----------------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                              |                            |                   | Formulation                              | Active Ingredient          |                 |                                                                                                        |                                                                                                                     |                                                                                                                                                                                                                                                            |
| POSTEMERGENCE SEEDLING ALFALFA (cont.)                       |                            |                   |                                          |                            |                 |                                                                                                        |                                                                                                                     |                                                                                                                                                                                                                                                            |
| Pursuit 2EC                                                  | imazethapyr                | 4 hr. / 30 d      | 3.0-6.0 fl oz.                           | 0.047-0.094 lb.            | 2               | Apply when seedling alfalfa is in second trifoliolate but before it reaches 6 inches in height.        | Controls broadleaf weeds.                                                                                           | Add a COC at 1.0% v/v or a NIS at 0.25% v/v. Can be applied in liquid fertilizer. See label for restrictions. Do NOT apply more than 6 ounces of Pursuit per acre per year. Lengthy plant back restrictions.                                               |
| Raptor                                                       | imazamox                   | 4 hr. / 0 d       | 4-6 fl oz.                               | 0.031-0.047 lb.            | 2               | Apply when seedling alfalfa is in second trifoliolate or larger but when weeds are 1 to 3 inches tall. | Controls broadleaf and some grass weeds. At higher rates, will control yellow and purple nutsedge.                  | Add a COC at 1.0% v/v or a NIS at 0.25% v/v. or an MSO at 1% v/v. Can be applied in liquid fertilizer. See label for restrictions. Do NOT apply more than 6 fluid ounces of Raptor per acre per year.                                                      |
| Select Max (97 lb./gal.) or Clethodim (various) (2 lb./gal.) | clethodim                  | 24 hr. / 15 d     | 12-32 fl.oz. or 10-16 fl.oz (2 lb./gal.) | 0.09-0.24 lb. or 0.16-0.25 | 1               | Apply over the top of established alfalfa to control actively growing grasses                          | Controls annual grasses and perennial grasses. Does not control nutgrass (nutsedge).                                | See label about adding COC at 0.5% is needed for the generic clethodims. For Select Max, add either a COC (0.5% v/v) or an NIS (0.25% v/v) to spray mix. Do not tank mix with other herbicides as antagonism can occur.                                    |
| Treflan TR-10 G                                              | <u>trifluralin</u>         | 12 hr. / 21 d     | 20 lb.                                   | 2 lb.                      | 3               | Apply to established alfalfa during dormancy or during the growing season immediately after cutting.   | Controls barnyardgrass, crabgrass, bromegrass, cupgrass, foxtail, juglerice, sandbur, wild barley, and canarygrass. | Does not control established weeds, so applications must be made prior to the expected time of weed germination. Mechanical incorporation, irrigation, or rainfall is needed to activate this herbicide. Do not apply more than 4 pints per acre per year. |

**Table 4. Alfalfa Herbicides**

| Herbicide<br>(Trade Name)                                                    | Herbicide<br>(Common Name) | REI/PHI<br>(hr/d) | Rate/Acre Broadcast                                             |                                                              | Herbicide<br>Group | Time of<br>Application                                                                                                             | Weeds Controlled                                                                                                                | Comments                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------|----------------------------|-------------------|-----------------------------------------------------------------|--------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                              |                            |                   | Formulation                                                     | Active<br>Ingredient                                         |                    |                                                                                                                                    |                                                                                                                                 |                                                                                                                                                                                                                                   |
| POSTEMERGENCE SEEDLING ALFALFA (cont.)                                       |                            |                   |                                                                 |                                                              |                    |                                                                                                                                    |                                                                                                                                 |                                                                                                                                                                                                                                   |
| Treflan 4 EC                                                                 | trifluralin                | 12 hr. / 21 d     | 1.5-2 pts./A<br>mechanically<br>or 2 lb. water<br>incorporated. | 0.75-1 lb.<br>mechanically<br>or 2 lb. water<br>incorporated | 3                  | Apply to<br>established alfalfa<br>during dormancy<br>or during the<br>growing season<br>immediately after<br>cutting.             | Controls barnyardgrass,<br>crabgrass, bromegrass,<br>cupgrass, foxtail, juglerice,<br>sandbur, wild barley, and<br>canarygrass. | Do not apply more than 4<br>pts. product/A per year.                                                                                                                                                                              |
| Various*<br>(FOR USE ON<br>ROUNDUP<br>READY<br>ALFALFA<br>VARIETIES<br>ONLY) | glyphosate                 | 4 hr. / 36 hr.    | 22-44 fl oz.                                                    | 0.95-1.9                                                     | 9                  | Apply from<br>emergence to 5<br>days after cutting.                                                                                | Controls annual grasses and<br>perennial grasses THAT<br>ARE NOT GLYPHOSATE<br>RESISTANT.                                       | See label to determine if<br>a surfactant needs to be<br>added.                                                                                                                                                                   |
| POSTEMERGENCE SEEDLING ALFALFA (BETWEEN CUTTINGS)                            |                            |                   |                                                                 |                                                              |                    |                                                                                                                                    |                                                                                                                                 |                                                                                                                                                                                                                                   |
| Pursuit 2EC                                                                  | imazethapyr                | 4 hr. / 30 d      | 3.0-6.0 fl oz.                                                  | 0.047-0.094<br>lb.                                           | 2                  | Apply between<br>cuttings.                                                                                                         | Controls broadleaf weeds.                                                                                                       | Add a COC at 1.0% v/v or<br>a NIS at 0.25% v/v. Can be<br>applied in liquid fertilizer.<br>See label for restrictions.<br>Do NOT apply more than 6<br>ounces of Pursuit per acre<br>per year. Lengthy plant<br>back restrictions. |
| Various*<br>(FOR USE ON<br>ROUNDUP<br>READY<br>ALFALFA<br>VARIETIES<br>ONLY) | glyphosate                 | 4 hr. / 36 hr.    | 22-44 fl oz.                                                    | 0.95-1.9                                                     | 9                  | Apply from<br>emergence to 5<br>days after cutting.                                                                                | Controls annual grasses and<br>perennial grasses THAT<br>ARE NOT GLYPHOSATE<br>RESISTANT.                                       | See label to determine if<br>a surfactant needs to be<br>added.                                                                                                                                                                   |
| Gramoxone SL                                                                 | paraquat                   | 12 hr. /30 d      | 1 pt.                                                           | 0.25 lb.                                                     | 22                 | Apply immediately<br>after alfalfa has<br>been removed<br>for hay or silage.<br>Do not treat more<br>than 5 days after<br>cutting. | Controls annual broadleaf and<br>grasses.                                                                                       | Make 1-3 applications as<br>needed during the growing<br>season. These sprays may<br>be applied in addition to<br>dormant sprays. Alfalfa<br>foliage present at the time<br>of application will be<br>burned.                     |

**Table 4. Alfalfa Herbicides**

| Herbicide<br>(Trade Name)                                                   | Herbicide<br>(Common<br>Name) | REI/PHI<br>(hr/d) | Rate/Acre Broadcast           |                      | Herbicide<br>Group | Time of<br>Application                                                                                                                                                                 | Weeds Controlled                                                                 | Comments                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------|-------------------------------|-------------------|-------------------------------|----------------------|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                             |                               |                   | Formulation                   | Active<br>Ingredient |                    |                                                                                                                                                                                        |                                                                                  |                                                                                                                                                                                                                                                                              |
| POST-EMERGENCE-ESTABLISHED DORMANT ALFALFA (SECOND YEAR OR OLDER)           |                               |                   |                               |                      |                    |                                                                                                                                                                                        |                                                                                  |                                                                                                                                                                                                                                                                              |
| Aim EC                                                                      | carfentrazone-ethyl           | 12 hr / 21 d      | 0.5-2.5 oz.                   | 0.008-0.04 lb        | 14                 | Apply during dormancy and between hay cutting in season.                                                                                                                               | Controls many annual broadleaf weeds.                                            | Coverage is required for herbicide activity. Applications in season can be made from hay cutting up to 6 inches of new growth. Use an NIS at 0.25% v/v or COC at 0.5-1.0% v/v. Do not apply more than 2.5 oz/year.                                                           |
| Various                                                                     | glyphosate                    | 4 hr./ 36 hr.     | 6 - 8 fl. oz.<br>(5.5 lb/gal) | 0.26 - 0.34 lb.      | 9                  | Apply in the spring when the alfalfa is still dormant after spring temperatures have warmed up enough to stimulate weed growth but prior to initiation of trifoliolate leaf expansion. | Controls annual grasses and perennial grasses THAT ARE NOT GLYPHOSATE RESISTANT. | Check label to determine if a surfactant needs to be added. Some labels state NOT to add AMS to dormant alfalfa application. Can apply only once per year.                                                                                                                   |
| Extreme<br>(FOR USE ON<br>ROUNDUP<br>READY<br>ALFALFA<br>VARIETIES<br>ONLY) | glyphosate +<br>imazethapyr   | 48 hr. / 30 d     | 2.2-4.4 pt.                   | 0.047 -0.094 lb.     | 9 + 2              | Apply to Dormant or semi-dormant established Roundup Ready Alfalfa only.                                                                                                               | Controls broadleaf and grasses.                                                  | For optimum weed control, an NIS at 0.125% v/v and AMS at 2.5 lbs./A must be added to the spray solution. Allow a minimum of 7 days between sequential applications. Do not apply more than 3.0 pts/A of Extreme to Roundup Ready alfalfa during the last year of the stand. |
| Gramoxone SL                                                                | paraquat                      | 12 hr. / 60 d     | 1-2 pt. (2 lb/gal)            | 0.25 lb. - 0.58      | 22                 | Apply to well-established stands (at least 1 year old) after crop is dormant.                                                                                                          | Controls annual broadleaf and grasses.                                           | Do not apply if fall regrowth following last fall cutting is greater than 6 inches or if spring regrowth is greater than 2 inches.                                                                                                                                           |
| Kerb SC                                                                     | pronamide                     | 24 hr. / 120 d    | 1.25-3.5 pt.                  | 0.5-1.44 lb.         | 3                  | Apply in the fall or winter alfalfa when temperatures are less than 55° F.                                                                                                             | Controls a wide range of grasses and some broadleaf weeds.                       | Applications should not exceed 5 pt. / A Kerb SC (2 lb. / A a.i.) per year. See label for rotation crop plantback restrictions.                                                                                                                                              |

**Table 4. Alfalfa Herbicides**

| Herbicide<br>(Trade Name)                                                | Herbicide<br>(Common Name) | REI/PHI<br>(hr/d) | Rate/Acre Broadcast |                   | Herbicide Group | Time of Application                                                                                                                                                        | Weeds Controlled                                        | Comments                                                                                                                                                                                                                   |
|--------------------------------------------------------------------------|----------------------------|-------------------|---------------------|-------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                          |                            |                   | Formulation         | Active Ingredient |                 |                                                                                                                                                                            |                                                         |                                                                                                                                                                                                                            |
| POSTEMERGENCE-ESTABLISHED DORMANT ALFALFA (SECOND YEAR OR OLDER) (cont.) |                            |                   |                     |                   |                 |                                                                                                                                                                            |                                                         |                                                                                                                                                                                                                            |
| Sinbar                                                                   | terbacil                   | 12 hr. / N/A      | 0.5-1.5 lb.         | 0.4-1.2 lb.       | 5               | Apply either in the fall after alfalfa becomes dormant or in the spring before new plant growth begins and before weed emergence and before alfalfa is 2 inches in height. | Control annual broadleaf and grasses                    | Do not apply to established stands after new growth begins in the spring as injury to the crop may result.                                                                                                                 |
| Metribuzin DF                                                            | metribuzin                 | 12 hr. / 28 d     | 0.3 - 1.3 lb.       | 0.04 - 1.73 lb.   | 5               | Apply when weeds are less than 2 inches tall or before weed foliage is 2 inches in diameter.                                                                               | Controls certain annual grasses and broadleaf weeds     | Crop injury may occur if crop is in stressed conditions, crop is treated within 12 months of seeding, or excessive rainfall or irrigation occur after application                                                          |
| Velpar DF CU                                                             | hexazinone                 | 48 hr. / 30 d     | 0.3 - 2 lb.         | 0.25 - 1.5 lb.    | 5               | Apply after alfalfa becomes dormant or before new growth exceeds 2 inches in height.                                                                                       | Controls broadleaf and some grasses including smutgrass | For dormant alfalfa, use an NIS at 0.25% v/v. Do not exceed 2 lb. product / A per year.                                                                                                                                    |
| PREEMERGENCE-ESTABLISHED ALFALFA                                         |                            |                   |                     |                   |                 |                                                                                                                                                                            |                                                         |                                                                                                                                                                                                                            |
| Chateau                                                                  | flumioxazin                | 12 hr. / 25 d     | 1 - 4 oz.           | 0.032 - 0.128 lb  | 14              | Apply to established alfalfa with a maximum amount of 6 inches of growth or less for PRE control.                                                                          | Controls many broadleaf weeds and some annual grasses   | DO NOT apply more than 4 oz. in a single application and 8 oz. over a growing season. Sequential application should be at least 60 d after first one.                                                                      |
| Gramoxone SL                                                             | paraquat                   | 12 hr./60 d       | 2.5 - 4.0 pt.       | (0.63 - 1 lb)     | 22              | Apply prior to emergence to the crop.                                                                                                                                      | Controls annual broadleaf and grasses.                  | Crop plants that are emerged will be killed. Coverage is necessary for adequate weed control. Seeding should be done for with a minimum amount of soil disturbance. Always apply a COC at 0.5% v/v or an NIS at 0.25% v/v. |

**Table 4. Alfalfa Herbicides**

| Herbicide<br>(Trade Name)                | Herbicide<br>(Common<br>Name) | REI/PHI<br>(hr/d) | Rate/Acre Broadcast                                           |                      | Herbicide<br>Group | Time of<br>Application                                                                                                                                                                                  | Weeds Controlled                                                                                                          | Comments                                                                                                                                                                                   |
|------------------------------------------|-------------------------------|-------------------|---------------------------------------------------------------|----------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                          |                               |                   | Formulation                                                   | Active<br>Ingredient |                    |                                                                                                                                                                                                         |                                                                                                                           |                                                                                                                                                                                            |
| PREEMERGENCE-ESTABLISHED ALFALFA (cont.) |                               |                   |                                                               |                      |                    |                                                                                                                                                                                                         |                                                                                                                           |                                                                                                                                                                                            |
| Diuron 4L<br>or<br>Karmex DF<br>(80%)    | diuron                        | 12 hr. / N/A      | 1.2-2.4 qt<br>or<br>1.5-3 lb.                                 | 1.2-2.4 lb.          | 7                  | Treat areas where<br>alfalfa becomes<br>winter dormant in<br>late winter/early<br>spring, but before<br>spring growth and<br>weed emergence.<br>Treat only stands<br>established for 1<br>year or more. | Small-seeded annual<br>broadleaves and grasses.                                                                           | Do not apply to seedling<br>alfalfa nor to alfalfa/<br>grass mixtures. Rainfall<br>is necessary for soil<br>activation of this product.                                                    |
|                                          | Prowl H2O                     | pendimethalin     | 24 hr. / 28 d<br>with <2.1 qt<br>or 50 d with<br>higher rates | 1.1-4.2 qt           | 1.05-3.99 lb       | 3                                                                                                                                                                                                       | Apply to alfalfa<br>in the fall after<br>last cutting during<br>dormancy or the<br>spring prior to 6<br>inches in growth. | Small-seeded broadleaves and<br>grasses.                                                                                                                                                   |
| Sinbar                                   | terbacil                      | 12 hr. / N/A      | 0.5-4.0 lb.                                                   | 0.4-1.2 lb.          | 5                  | Make a single<br>application in the<br>fall after alfalfa<br>becomes dormant<br>or in the spring<br>before new plant<br>growth.                                                                         | Controls annual grasses and<br>perennial grasses THAT<br>ARE NOT GLYPHOSATE<br>RESISTANT.                                 | May use on alfalfa<br>established 1 year or longer.<br>Apply before emergence<br>of weeds and before alfalfa<br>exceeds 2 inches in height.<br>Do not apply more than 1.5<br>lb. per year. |
| Solicam                                  | norflurazon                   | 12 hr. / 28 d     | 1.25-2.5 lb.                                                  | 1.0-2.0 lb.          | 12                 | Apply to<br>established alfalfa<br>in spring or early<br>fall to actively<br>growing alfalfa<br>following hay<br>removal.                                                                               | Controls annual broadleaf and<br>grasses.                                                                                 | See label for restrictions.<br>DO NOT apply to seedling<br>alfalfa earlier than 5 months<br>after emergence.                                                                               |
| POSTEMERGENCE-ESTABLISHED ALFALFA        |                               |                   |                                                               |                      |                    |                                                                                                                                                                                                         |                                                                                                                           |                                                                                                                                                                                            |
| Butyrac                                  | 2,4-DB                        | 48 hr. / 60 d     | 2-3 qt.                                                       | 1.0-1.5 lb.          | 4                  | Apply when weeds<br>are no more than<br>3 inches tall and<br>temperatures are<br>60 F or above.                                                                                                         | Controls certain annual<br>broadleaf weeds.                                                                               | Does not control<br>chickweed. See label for<br>spraying precautions.                                                                                                                      |

**Table 4. Alfalfa Herbicides**

| Herbicide<br>(Trade Name)                                                    | Herbicide<br>(Common<br>Name) | REI/PHI<br>(hr/d) | Rate/Acre Broadcast                                  |                                    | Herbicide<br>Group | Time of<br>Application                                                                                                                  | Weeds Controlled                                                                                            | Comments                                                                                                                                                                                                                                                                                                   |
|------------------------------------------------------------------------------|-------------------------------|-------------------|------------------------------------------------------|------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                              |                               |                   | Formulation                                          | Active<br>Ingredient               |                    |                                                                                                                                         |                                                                                                             |                                                                                                                                                                                                                                                                                                            |
| POSTEMERGENCE-ESTABLISHED ALFALFA (cont.)                                    |                               |                   |                                                      |                                    |                    |                                                                                                                                         |                                                                                                             |                                                                                                                                                                                                                                                                                                            |
| Extreme<br>(FOR USE ON<br>ROUNDUP<br>READY<br>ALFALFA<br>VARIETIES<br>ONLY)  | glyphosate +<br>imazethapyr   | 48 hr. / 30 d     | 2.2-4.4 pt.                                          | 0.047 -0.094<br>lb.                | 9 + 2              | Apply to<br>established<br>Roundup Ready<br>Alfalfa only.                                                                               | Controls broadleaf and grasses.                                                                             | For optimum weed control,<br>an NIS at 0.125% v/v and<br>AMS at 2.5 lbs./A must be<br>added to the spray solution.<br>Allow a minimum of 7<br>days between sequential<br>applications. DO NOT<br>apply more than 3.0 pts/A<br>of Extreme to Roundup<br>Ready alfalfa during the<br>last year of the stand. |
| Various*<br>(FOR USE ON<br>ROUNDUP<br>READY<br>ALFALFA<br>VARIETIES<br>ONLY) | glyphosate                    | 4 hr. / 36 hr.    | 22-44 fl oz.                                         | 0.95-1.9                           | 9                  | Apply to actively<br>growing weeds.                                                                                                     | Controls annual grasses and<br>perennial grasses THAT<br>ARE NOT GLYPHOSATE<br>RESISTANT.                   | See label for additive<br>information. Glyphosate<br>formulations differ with<br>additives depending on the<br>timing and the brand.                                                                                                                                                                       |
| Pursuit 2EC                                                                  | imazethapyr                   | 4 hr. / 30 d      | 3.0-6.0 fl oz.                                       | 0.047-0.094<br>lb.                 | 2                  | Apply to<br>established alfalfa<br>in the fall or in the<br>spring to dormant<br>or semi-dormant<br>(less than 3 inches<br>new growth). | Controls broadleaf weeds.                                                                                   | Add a COC at 1.0% v/v or<br>a NIS at 0.25% v/v. Can be<br>applied in liquid fertilizer.<br>See label for restrictions.<br>Do NOT apply more than 6<br>ounces of Pursuit per acre<br>per year.                                                                                                              |
| Raptor                                                                       | imazamox                      | 4 hr. / 0 d       | 4-6 fl oz.                                           | 0.031-0.047<br>lb.                 | 2                  | Apply to<br>established alfalfa<br>in the fall or in the<br>spring to dormant<br>or semi-dormant<br>(less than 3 inches<br>new growth). | Controls broadleaf and some<br>grass weeds. At higher rates,<br>will control yellow and purple<br>nutsedge. | Add a COC at 1.0% v/v or<br>a NIS at 0.25% v/v. or an<br>MSO at 1% v/v. Can be<br>applied in liquid fertilizer.<br>See label for restrictions.<br>Do NOT apply more than 6<br>fluid ounces of Raptor per<br>acre per year.                                                                                 |
| Select Max (.97<br>lb/gal)<br>or<br>Clethodim<br>(various) (2 lb/<br>gal)    | clethodim                     | 24 hr. / 15d      | 12 - 32 fl.oz.<br>or<br>10 - 16 fl. oz<br>(2 lb/gal) | 0.09-0.24 lb.<br>or<br>0.16 - 0.25 | 1                  | Apply over the<br>top of established<br>alfalfa to control<br>actively growing<br>grasses.                                              | Controls annual grasses and<br>perennial grasses. Does not<br>control nutgrass (nutsedge).                  | See label about adding<br>COC at 0.5% is needed for<br>the generic clethodims. For<br>Select Max, add either a<br>COC (0.5% v/v) or an NIS<br>(0.25% v/v) to spray mix.<br>Do not tank mix with other<br>herbicides as antagonism<br>can occur.                                                            |

**Table 4. Alfalfa Herbicides**

| Herbicide<br>(Trade Name)                                     | Herbicide<br>(Common Name) | REI/PHI<br>(hr/d)                                   | Rate/Acre Broadcast |                   | Herbicide Group | Time of Application                                                                                                                                                        | Weeds Controlled                                                                                   | Comments                                                                                                                                                                                                                                                 |
|---------------------------------------------------------------|----------------------------|-----------------------------------------------------|---------------------|-------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                               |                            |                                                     | Formulation         | Active Ingredient |                 |                                                                                                                                                                            |                                                                                                    |                                                                                                                                                                                                                                                          |
| POSTEMERGENCE-ESTABLISHED ALFALFA (BETWEEN CUTTINGS)          |                            |                                                     |                     |                   |                 |                                                                                                                                                                            |                                                                                                    |                                                                                                                                                                                                                                                          |
| Chateau                                                       | flumioxazin                | 12 hr. / 25 d                                       | 1 - 4 oz.           | 0.032 - 0.128 lb  | 14              | Apply to established alfalfa with a maximum amount of 6 inches of growth or less for PRE control                                                                           | Controls many broadleaf weeds and some annual grasses.                                             | DO NOT apply more than 4 oz. in a single application and 8 oz. over a growing season. Sequential application should be at least 60 d after first one.                                                                                                    |
| Various*<br>(FOR USE ON ROUNDUP READY ALFALFA VARIETIES ONLY) | glyphosate                 | 4 hr. / 36 hr.                                      | 22-44 fl oz.        | 0.95-1.9 lb.      | 9               | Apply to established bermudagrass, up to 5 days before cutting                                                                                                             | Controls annual grasses and perennial grasses THAT ARE NOT GLYPHOSATE RESISTANT.                   | See label for additive information. Glyphosate formulations differ with additives depending on the timing and the brand.                                                                                                                                 |
| Prowl H2O                                                     | pendimethalin              | 24 hr./28 d with <2.1 qt. or 50 d with higher rates | 1.1-4.2 qt.         | 1.05-3.99 lb.     | 3               | Apply in the fall or spring which has gone through a first cutting. Applications may also be made during winter dormancy. Make applications prior to 6 inches in regrowth. | Controls small-seeded broadleaves and grasses.                                                     | Soil contact is essential so applications made after 6 inches in height may result in poor weed control because of possible reduced coverage. Provides residual weed control. Needs water for activation. Refer to label for crop rotation restrictions. |
| Pursuit 2EC                                                   | imazethapyr                | 4 hr. / 30 d                                        | 3.0-6.0 fl oz.      | 0.047-0.094 lb.   | 2               | Apply to established alfalfa before significant growth or regrowth (3 inches) occurs                                                                                       | Controls broadleaf weeds.                                                                          | See label for approved adjuvants. Adjuvants must be added for POST applications.                                                                                                                                                                         |
| Raptor                                                        | imazamox                   | 4 hr. / 20 d                                        | 4-6 fl oz.          | 0.031-0.047 lb.   | 2               | Apply to established alfalfa in the fall or in the spring to dormant or semi-dormant (less than 3 inches new growth)                                                       | Controls broadleaf and some grass weeds. At higher rates, will control yellow and purple nutsedge. | Add a COC at 1.0% v/v or a NIS at 0.25% v/v. or an MSO at 1% v/v. Can be applied in liquid fertilizer. See label for restrictions. Do NOT apply more than 6 fluid ounces of Raptor per acre per year.                                                    |

**Table 5. Weed Response to Alfalfa Herbicides**

| Herbicides                     | Treflan               | 2, 4-DB                          | Buctril | Gramoxone SL | Poast (1.5 lb./gal.)<br>Poast plus (1.0 lb./gal.) | Prowl H <sub>2</sub> O | Pursuit 2EC | Raptor | Select Max (.97 lb/gal)<br>Clethodim (2 lb/gal) | Glyphosate | Glyphosate | Gramoxone SL                                     |
|--------------------------------|-----------------------|----------------------------------|---------|--------------|---------------------------------------------------|------------------------|-------------|--------|-------------------------------------------------|------------|------------|--------------------------------------------------|
| Application Timing             | Preplant Incorporated | Postemergence on Seeding Alfalfa |         |              |                                                   |                        |             |        |                                                 |            |            | Postemergence Seeding Alfalfa (Between Cuttings) |
| Site of Action Group           |                       |                                  |         |              |                                                   |                        |             |        |                                                 |            |            |                                                  |
| <b>Weeds</b>                   |                       |                                  |         |              |                                                   |                        |             |        |                                                 |            |            |                                                  |
| <b>GRASSES/SEDGES</b>          |                       |                                  |         |              |                                                   |                        |             |        |                                                 |            |            |                                                  |
| ANNUAL GRASSES                 | G-E                   | NC                               | NC      | E            | G                                                 | NC                     | F           | G      | E                                               | E          | E          | E                                                |
| ryegrass, Italian              | G-E                   | NC                               | NC      |              | G                                                 | NC                     | F           | G      | G-E                                             | F-P*       | F-P*       | G                                                |
| ANNUAL BROADLEAVES             |                       |                                  |         |              |                                                   |                        |             |        |                                                 |            |            |                                                  |
| chickweed                      |                       | P                                | F       |              | NC                                                | NC                     | G           | G      | NC                                              | E          | E          | E                                                |
| common ragweed                 |                       | F                                | G       |              | NC                                                | NC                     | F           | F      | NC                                              | E          | E          | E                                                |
| curly dock                     |                       | P                                | NC      |              | NC                                                | NC                     | P           | P      | NC                                              | G          | G          | E                                                |
| henbit                         |                       | P                                | F       |              | NC                                                | NC                     | F           | F      | NC                                              | E          | G          | G                                                |
| johnsongrass, rhizome          | NC                    | NC                               | NC      |              | F                                                 | NC                     | F           | F      | E                                               | F-G        | F-G        | F                                                |
| johnsongrass, seedling         | NC                    | NC                               | NC      |              | E                                                 | NC                     | F-G         | G      | E                                               | E          | E          | G                                                |
| lambsquartars                  |                       | P                                |         |              | NC                                                | NC                     | F           | G      | NC                                              | E          | E          | E                                                |
| morningglory                   |                       | G                                | G       |              | NC                                                | NC                     | G           | G      | NC                                              | P          | F          | E                                                |
| musk thistle                   | NC                    | F**                              | F       |              | NC                                                | NC                     | P           | P      | NC                                              | F-G        | F-G        | F-G                                              |
| nutsedge                       | NC                    | P                                | NC      |              | NC                                                | NC                     | P           | F      | NC                                              | G-E        | G-E        | G-E                                              |
| pigweed (not resistant Palmer) | G                     | F                                | G       |              | NC                                                | NC                     | G           | G      | NC                                              | E          | E          | P-F*                                             |
| plantain                       |                       | P                                | G       |              | NC                                                | NC                     | P           | P      | NC                                              | E          | E          | E                                                |
| purple deadnettle              |                       | P                                | F       |              | NC                                                | NC                     | F           | F      | NC                                              | E          | G          | G                                                |

\* Glyphosate-resistant

\*\*Fall application

1 - Will not control ALS-resistant ryegrass

2- Weeds must not be larger than 2 inches at time of application.

**Table 5. Weed Response to Alfalfa Herbicides (cont.)**

| Herbicides                     | Glyphosate                                       | Extreme | Prowl<br>H <sub>2</sub> O               | Extreme | Pursuit                                  | Raptor |
|--------------------------------|--------------------------------------------------|---------|-----------------------------------------|---------|------------------------------------------|--------|
| Application Timing             | <b>Postemergence Established Dormant Alfalfa</b> |         | <b>Preemergence Established Alfalfa</b> |         | <b>Postemergence Established Alfalfa</b> |        |
| Site of Action Group           |                                                  |         |                                         |         |                                          |        |
| <b>Weeds</b>                   |                                                  |         |                                         |         |                                          |        |
| <b>GRASSES/SEDGES</b>          |                                                  |         |                                         |         |                                          |        |
| ANNUAL GRASSES                 | E                                                | G       | G                                       | G       | F                                        | G      |
| ryegrass, Italian              | F-P*                                             | G       | G                                       | G       | F                                        | G      |
| ANNUAL BROADLEAVES             |                                                  |         |                                         |         |                                          |        |
| chickweed                      | E                                                | G       | G                                       | G       | G                                        | G      |
| common ragweed                 | E                                                | G       | P                                       | G       | F                                        | F      |
| curly dock                     | G                                                | F       | P                                       | F       | P                                        | P      |
| henbit                         | G                                                | G       | G                                       | G       | F                                        | F      |
| johnsongrass, rhizome          | F-G                                              | G       | P                                       | G       | F                                        | F      |
| johnsongrass, seedling         | E                                                | G       | G                                       | G       | F-G                                      | G      |
| lambsquarters                  | E                                                | G       | G                                       | G       | F                                        | G      |
| morningglory                   | F                                                | G       | P                                       | G       | G                                        | G      |
| musk thistle                   | F-G                                              | F       | P                                       | F       | P                                        | P      |
| nutsedge                       | G-E                                              | G       | P                                       | G       | P                                        | E      |
| pigweed (not resistant Palmer) | E                                                | G       | G                                       | G       | G                                        | G      |
| plantain                       | E                                                | F       | P                                       | F       | P                                        | P      |
| purple deadnettle              | G                                                | G       | F                                       | G       | F                                        | F      |

\* Glyphosate-resistant

\*\*Fall application

1 - Will not control ALS-resistant ryegrass

2- Weeds must not be larger than 2 inches at time of application.

Weeds section prepared by **David Russell**, *Extension Specialist*, Assistant Professor, Crop, Soil, and Environmental Sciences, Auburn University



**FOR MORE INFORMATION** on pesticides, pesticide safety, or submitting samples for analysis, see the following publications in the IPM series:

IPM 1293, "Safety." Safety contact information; worker protection standards; the safe use, handling, and storage of pesticides

IPM 1294, "Submitting Samples." Procedures for submitting samples for diagnosis, analysis, and identification

IPM 1295, "General Pesticide Information." Federal and state restricted use pesticide lists; pesticides and water quality

IPM 1317, "Appendix." Pesticide guidelines for agronomic crops, including preharvest intervals; rain-free requirements; grazing restrictions; crop rotation guidelines; and the names, classifications, and toxicities of pesticides.

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