

Chapter 4 – Weed Control in Forages

This chapter is intended to provide herbicide information for weed control in forage legumes and grasses. The best weed control practice in forages is to establish and maintain vigorous forage stands that compete with weeds. This greatly reduces the need for herbicide use. If forage stand health declines, weeds will become established. Unless the management problem that caused forage decline is corrected, the desired forage will not grow/re-establish and weeds will continue to re-infest.

Recommendations and Considerations:

1. To maintain a highly competitive forage crop the below management recommendations should be followed:

- Plant suitable forage species for the site and current weather conditions.
- Maintain fertility to fight weeds. Soil and/or tissue test and correct any pH or fertility issues, forage crops differ in their nutrient requirements and nutrient-stressed forage crops cannot compete with weeds.
- Harvest management. Perennial forages must have a chance to fully recharge nutrient stores in roots after each harvest or grazing event. If not, forages are weakened or die and weeds will invade.
- See MSU Forage Connection website (forage.msu.edu) for detailed resources on these topics.

2. Effective establishment and maintenance of forage legumes and grass pastures minimize weed problems. Starting weed-free through tillage or in no-till fields the application of a burndown herbicide prior to planting (examples include non-selective herbicides such as glyphosate or paraquat). Perennial weeds should be controlled in the previous crop or in the fall prior to a spring seeding. Fall herbicide options include: glyphosate, 2,4-D ester, or a combination of glyphosate plus 2,4-D amine. Do not apply 2,4-D in the spring prior to planting. Removing existing weeds prior to planting will improve forage quality and also provide insurance against stand loss due to weed competition.

3. **Table 4A** provides the effectiveness of herbicides in forage legumes, **Table 4B** provides the effectiveness of herbicides in established forage grasses, and **Tables 4C** and **4D** provide important information on each herbicide used in legumes and grass pastures, respectively. **Tables 4E** and **4F** provide

information on harvest restrictions in forage legumes and grasses, respectively.

4. Rotation restrictions. Prior to herbicide use it is always important to determine if the herbicide application that you make this year may affect your crop rotation plan for the following years. **Table 12** provides a complete listing of crop rotation restrictions for all forage herbicides.

5. **Mixed grass-legume stands present special challenges for herbicide use.** Mixtures are widely used to increase forage yield and quality, improve hay drying rate, fix nitrogen, and increase soil health, but there are no easy herbicide options for controlling weeds in mixed grass-legume stands. There is only one dormant season herbicide available with limited activity on many troublesome weeds. Plant mixed grass-legume stands into clean fields only.

Abbreviations for this chapter:

Herbicide Formulations: Table 14

Herbicide Sites of Action: Pages 14-15

Application Timings:

PPI = preplant incorporated
POST = postemergence

Units of Measure:

fl oz = fluid ounces
lb = pounds
oz = ounces
pt = pints
qt = quarts
% v/v = % volume/volume

Additives:

AMS = ammonium sulfate
COC = crop oil concentrate
MSO = methylated seed oil
NIS = non-ionic surfactant

Alfalfa Traits:

N = no specific trait required
RR = Roundup Ready

TABLE 4A – Weed Response to Herbicides in Forage Legumes*

| Seedling Legumes | Site of Action | Crop Tolerance** | Annual Broadleaves | | | | | | | | | | | | | Annual Grasses | | | | | | Perennials | | | | | | |
|-------------------------------------|----------------|------------------|--------------------|------------|---------------|-----------------------|----------|------------------|-----------|------------|--------------|---------------|---------------|--------------------|-------------------|----------------|-----------|---------------|---------------|----------------|--------------|------------|------------------|----------------|------------|-----------------|-----------|------------|
| | | | Cocklebur | Jimsonweed | Lambsquarters | Nightshade (E. black) | Pigweed | Ragweed (Common) | Smartweed | Velvetleaf | Wild mustard | Hoary alyssum | Yellow rocket | Chickweed (Common) | Henbit/Deadnettle | Barnyardgrass | Crabgrass | Giant foxtail | Green foxtail | Yellow foxtail | Fall panicum | Witchgrass | Bindweed (Field) | Canada thistle | Quackgrass | Yellow nutsedge | Dandelion | Curly dock |
| 2,4-DB | 4 | 2 | P | P | G | F | G | F | P | F | F | F | F | P | F | N | N | N | N | N | N | N | P | P | N | N | N | F |
| Buctril/Moxy | 6 | 3 | G | G | E | G | F | G | G | G | F | F | F | P | G | N | N | N | N | N | N | N | P | P | N | N | P | P |
| Eptam | 15 | 2 | P | P | G | P | F | F | F | F | F | F | F | E | E | E | E | E | E | E | E | E | N | N | F | P | N | P |
| Kerb | 3 | 1 | P | P | P | P | P | P | P | P | P | P | G | G | F | F | P | F | F | P | P | N | N | G | N | N | P | |
| Poast | 1 | 1 | N | N | N | N | N | N | N | N | N | N | N | N | E | G | E | E | E | E | E | N | N | F | N | N | N | |
| Prowl H ₂ O | 3 | 2 | N | N | G | P | F | P | P | F | P | N | P | P | G | G | G | G | G | G | G | N | N | N | N | N | N | |
| Pursuit | 2 | 2 | E | F | P | E | E | F | G | G | G | – | G | G | F | F | G | G | G | F | F | P | P | N | F | P | P | |
| Raptor | 2 | 2 | G | G | G | E | E | F | G | G | E | – | G | G | P | F | F | E | G | G | F | F | P | F | P | P | – | – |
| Select Max | 1 | 1 | N | N | N | N | N | N | N | N | N | N | N | N | E | G | E | E | E | E | E | N | N | G | N | N | N | |
| Warrant | 15 | 2 | P | N | F | G | G | F | P | P | P | N | N | G | E | E | E | E | E | E | E | N | N | N | F | N | N | |
| Established Alfalfa | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chateau SW/EZ | 14 | 2 | P | F | E | E | E | G | F | F | G | – | N | E | E | N | N | P | P | P | N | N | N | N | N | P | N | N |
| Metribuzin | 5 | 3 | E | G | E | N | E | E | E | E | E | E | E | E | G | G | G | E | E | G | G | N | N | P | P | G | P | |
| Sinbar | 5 | 3 | G | G | G | G | G | G | G | G | G | G | E | E | E | G | G | G | G | G | G | P | F | F | P | F | P | |
| Velpar | 5 | 3 | G | G | E | F | E | E | E | G | E | E | E | E | E | G | E | E | E | E | E | F | F | F | F | E | P | |
| Glyphosate-Resistant Alfalfa | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Extreme | 2/9 | 2 | E | E | E | E | E | E | G | G | E | G | E | E | F | E | E | E | E | E | E | G | G | E | F | F | F | |
| Glyphosate | 9 | 1 | E | E | E | E | E | E | G | G | E | G | E | E | G | E | E | E | E | E | E | G | G | E | F | G | F | |

Herbicide Site of Action: The site of action key is located on pages 14-15.

Herbicide Effectiveness: P = Poor; F = Fair; **G** = Good; **E** = Excellent; N = None; – = Not enough information to rank

* The above ratings are a relative comparison of herbicide effectiveness. Weather conditions greatly influence the herbicide's effectiveness, and weed control may be better under favorable conditions or poorer under unfavorable conditions.

** Crop Tolerance: 1=Minimal risk of crop injury; 2=Crop injury can occur under certain conditions (cold, wet); 3=Severe crop injury can occur. Follow precautions under Remarks and Limitations and on the label; 4=Risk of severe crop injury is high.

TABLE 4B – Weed Response to Herbicides in Established Forage Grasses*

| Herbicide | Site of Action | | Annual Broadleaves | | | | | | | | | | | | | Annual Grasses | | | | | | | Perennials | | | | | |
|----------------|----------------|------------------|--------------------|------------|---------------|-----------------------|----------|------------------|-----------|------------|--------------|---------------|---------------|--------------------|-------------------|----------------|-----------|---------------|---------------|----------------|--------------|------------|------------------|----------------|------------|-----------------|-----------|------------|
| | Site of Action | Crop Tolerance** | Cocklebur | Jimsonweed | Lambsquarters | Nightshade (E. black) | Pigweed | Ragweed (Common) | Smartweed | Velvetleaf | Wild mustard | Hoary alyssum | Yellow rocket | Chickweed (Common) | Henbit/Deadnettle | Barnyardgrass | Crabgrass | Giant foxtail | Green foxtail | Yellow foxtail | Fall panicum | Witchgrass | Bindweed (Field) | Canada thistle | Quackgrass | Yellow nutsedge | Dandelion | Curly dock |
| 2,4-D Ester | 4 | 2 | G | F | G | G | G | G | F | G | G | G | G | P | F | N | N | N | N | N | N | N | F | F | N | N | G | P |
| Banvel/Clarity | 4 | 2 | G | G | G | G | G | G | G | G | G | G | G | F | P | N | N | N | N | N | N | N | G | F | N | N | G | F |
| 2,4-D + Banvel | 4/4 | 2 | G | G | G | G | G | G | G | G | G | G | G | F | P | N | N | N | N | N | N | N | G | F | N | N | G | F |
| Cimarron Plus | 2/2 | 3 | E | - | E | E | E | E | E | - | E | E | - | E | E | N | N | N | N | N | N | N | - | G | N | N | E | E |
| Crossbow | 4/4 | 3 | E | - | E | E | E | E | G | - | E | - | - | E | E | N | N | N | N | N | N | N | - | G | N | N | E | E |
| GrazonNext HL | 4/4 | 3 | G | F | G | G | G | E | E | G | G | - | G | F | F | N | N | N | N | N | N | N | F | E | N | N | F | E |
| Milestone | 4 | 3 | G | - | G | - | G | E | E | - | P | - | P | F | F | N | N | N | N | N | N | N | - | E | N | N | P | E |
| Stinger | 4 | 2 | E | G | P | P | P | G | F | P | P | P | P | P | P | N | N | N | N | N | N | N | P | G | N | N | F | P |

Herbicide Site of Action: The site of action key is located on pages 14-15.

Herbicide Effectiveness: P = Poor; F = Fair; **G** = Good; **E** = Excellent; N = None; - = Not enough information to rank

* The above ratings are a relative comparison of herbicide effectiveness. Weather conditions greatly influence the herbicide's effectiveness, and weed control may be better under favorable conditions or poorer under unfavorable conditions.

** Crop Tolerance: 1=Minimal risk of crop injury; 2=Crop injury can occur under certain conditions (cold, wet); 3=Severe crop injury can occur. Follow precautions under Remarks and Limitations and on the label; 4=Risk of severe crop injury is high.

TABLE 4C – Forage Legume Herbicides – Remarks and Limitations

| Herbicide | Common Name | Site of Action Number | Application Timing | Rate/A | Trait |
|--|-------------|-----------------------|--------------------|--------|-------|
| Buctril/Moxy 2L, others | bromoxynil | 6 | POST | 1 pt | N |
| <ul style="list-style-type: none"> • Refer to Table 4A for weed control and crop tolerance ratings. • Apply postemergence to seedling or established alfalfa when the majority of the field has 4 trifoliates. • DO NOT apply to birdsfoot trefoil or clover. • Can be applied to alfalfa companion seeded with small grains. • Temporary crop leaf burn occurs after application – burn is enhanced under warm, humid conditions. • DO NOT spray when temperatures are expected to exceed 70°F within 3 days of application – can result in unacceptable crop injury. • DO NOT apply more than 2 pt/A per season. • Refer to Table 4E for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |
| Butyrac 200 2L, others | 2,4-DB | 4 | POST | 2 qt | N |
| <ul style="list-style-type: none"> • Refer to Table 4A for weed control and crop tolerance ratings. • Apply to seedling and established alfalfa, or seedling birdsfoot trefoil. • DO NOT apply to clover. • Apply postemergence when legume seedlings are at or beyond the 1 to 2 trifoliolate stage. • To control hoary alyssum 2,4-DB should be applied to seedlings in the 2 to 4 leaf stage. • DO NOT apply when crop is under stress. • DO NOT spray when temperatures are expected to exceed 90°F within 3 days of application or if temperatures are expected to be below 40°F. • Refer to Table 4E for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |
| Chateau SW 51WG, Chateau EZ 41.4SC | flumioxazin | 14 | POST | 4 oz | N |
| <ul style="list-style-type: none"> • Refer to Table 4A for weed control and crop tolerance ratings. • Chateau SW/EZ provides residual control of annual broadleaf weeds in established alfalfa. Does not control emerged weeds. • Applications can be made to dormant alfalfa or anytime in the spring prior to 6 inches of alfalfa regrowth or between cuttings (<6 inches regrowth). • DO NOT use on mixed alfalfa-grass stands. • DO NOT apply with adjuvants or mix with products formulated as emulsifiable concentrates, unless applying after the last alfalfa cutting for the year. • Refer to Table 4E for harvest restrictions. • Seed corn, oats, barley, rye, dry beans, sugar beets, potatoes, cucumbers, and tomatoes may be planted after 6 months if ground is tilled prior to planting or 12 months if no tillage is performed. Successful soil bioassay must be performed prior to planting these crops. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |
| Eptam 7EC | EPTC | 15 | PPI | 3.5 pt | N |
| <ul style="list-style-type: none"> • Refer to Table 4A for weed control and crop tolerance ratings. • Apply prior to planting alfalfa, birdsfoot trefoil, or clover not seeded with a grass or small grain companion crop. • Work into soil immediately after application. • Seed may be planted immediately after application. • Refer to Table 4E for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |

TABLE 4C – Forage Legume Herbicides – Remarks and Limitations

| Herbicide | Common Name | Site of Action Number | Application Timing | Rate/A | Trait |
|---|--------------------------|-----------------------|--------------------|--|-------|
| Extreme 2.17L | glyphosate + imazethapyr | 9 2 | POST | 3 pt + NIS 0.25% v/v + AMS 17 lb/100 gal | RR |
| <ul style="list-style-type: none"> • APPLY TO ROUNDUP READY ALFALFA ONLY. • Refer to Table 4A for weed control and crop tolerance ratings. • Extreme at 3 pt/A contains 1.5 pt of glyphosate 3L and 4 oz/A of Pursuit. • Apply to alfalfa at the second trifoliolate stage or larger and when weeds are 1-3 inches tall. • Extreme can be applied at rates ranging from 2.2-4.4 pts/A. • Establishment: Apply 3 pt/A to alfalfa before the 4 trifoliolate growth stage to eliminate seedlings not containing the glyphosate-resistant gene. • Established alfalfa: Extreme can be applied in the fall, in the spring to dormant or semi-dormant alfalfa, or between cuttings before alfalfa regrowth interferes with spray coverage. • DO NOT apply more than 3 pt/A of Extreme during the last year of the stand. • DO NOT feed, graze, or harvest Roundup Ready alfalfa for 30 days following application. Refer to Table 4E. • DO NOT replant alfalfa for 4 months following an Extreme application. • Refer to Table 4E for harvest restrictions. • Extreme is very persistent and can limit rotational crops. Refer to label and Table 12 for crop rotation restrictions. | | | | | |
| glyphosate | glyphosate | 9 | POST | See Table 10 (0.75 a.e.) + AMS 17 lb/100 gal | RR |
| <ul style="list-style-type: none"> • APPLY TO ROUNDUP READY ALFALFA ONLY. • Refer to Table 4A for weed control and crop tolerance ratings. • Many glyphosate products are registered for application to Roundup Ready alfalfa. Read the label and see Table 10 to determine application rates and additives needed for different products. • Establishment: Apply 0.75 lb a.e. to alfalfa before the 4 trifoliolate stage of growth to eliminate seedlings not containing the glyphosate-resistant gene. • Most effective before first cutting to eliminate weeds and allow establishment of a pure alfalfa stand. Second applications in the establishment year are generally not needed. • Established alfalfa: Glyphosate applications are generally not needed in established alfalfa. However, if needed glyphosate can be applied after cutting to newly emerged weeds but before alfalfa regrowth interferes with spray coverage. • Apply 1.5 lb a.e./A of glyphosate for henbit control. • DO NOT exceed 1.5 lb a.e./A in a single application or 4.5 lb a.e./A per season. • Refer to Table 4E for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |
| Kerb 50WG | pronamide | 3 | DORMANT | 1.5 lb | N |
| <ul style="list-style-type: none"> • Refer to Table 4A for weed control and crop tolerance ratings. • Apply in the fall or winter to seedling or established alfalfa, birdsfoot trefoil, or clover not seeded with a grass or small grain companion crop. • Apply after soil temperatures drop below 55°F, but before soil freeze-up. • Apply 3 lb/A for quackgrass control. • DO NOT apply more than 4 lb/A per season. • Refer to Table 4E for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |
| Metribuzin 75DF | metribuzin | 5 | DORMANT | 0.67 lb | N |
| <ul style="list-style-type: none"> • Refer to Table 4A for weed control and crop tolerance. • Apply to established alfalfa only (one year or more). • Can be used on mixed alfalfa-grass stands. • Apply to dormant alfalfa in late fall or early spring. • Increase the rate to 1.3 lb/A for control of dandelion. • Refer to Table 4E for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |

TABLE 4C – Forage Legume Herbicides – Remarks and Limitations

| Herbicide | Common Name | Site of Action Number | Application Timing | Rate/A | Trait |
|---|---------------|-----------------------|--------------------|--|-------|
| Poast 1.5SC | sethoxydim | 1 | POST | 1 pt + COC 1 qt | N |
| <ul style="list-style-type: none"> • Refer to Table 4A for weed control and crop tolerance. • Apply to seedling or established alfalfa, birdsfoot trefoil, or clover not seeded with a grass or small grain companion crop. • Apply to grasses up to 8 inches tall (crabgrass up to 6 inches). • Poast at 0.75 pt/A will control 1 to 4 inch tall barnyardgrass, green and giant foxtails, and fall panicum. • Volunteer cereals need to be treated before tillering (up to 4 inches tall). • Apply Poast at 1.5 pt/A for perennial grass weed control. • The addition of AMS (2.5 lb/A) has been shown to improve control of difficult weeds – e .g ., crabgrass and quackgrass. • DO NOT apply more than 6.5 pt/A per season of Poast. • Refer to Table 4E for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |
| Prowl H₂O 3.8SC | pendimethalin | 3 | POST | 2 pt | N |
| <ul style="list-style-type: none"> • Refer to Table 4A for weed control and crop tolerance ratings. • Apply to seedling or established alfalfa not seeded with a grass or small grain companion crop. • Apply to seedling alfalfa at 2 pt/A once alfalfa has reached the second trifoliolate. • Apply to established alfalfa at 3 pt/A after cutting or mowing in the fall or spring. • All applications need to be made prior to weed emergence – Prowl H₂O will not control emerged weeds. • Applications may cause some stunting and chlorosis. • DO NOT apply more than 4.2 qt/A per season. • Refer to Table 4E for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |
| Pursuit 2L | imazethapyr | 2 | POST | 4 fl oz + NIS 0.25% v/v + AMS 2.5 lb | N |
| <ul style="list-style-type: none"> • Refer to Table 4A for weed control and crop tolerance ratings. • Apply postemergence to seedling or established alfalfa, birdsfoot trefoil, or clover not seeded with a grass or small grain companion crop. • Apply postemergence when legume seedlings are at or beyond the 2 trifoliolate stage and weeds are 1 to 3 inches. • Apply to established alfalfa or clover after cutting or mowing in the fall or spring. • Applications can cause a temporary reduction in growth. • Refer to Table 4E for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |
| Select Max 0.97EC | clethodim | 1 | POST | 9 fl oz + COC 1% v/v | N |
| <ul style="list-style-type: none"> • Refer to Table 4A for weed control and crop tolerance ratings. • Apply to seedling or established alfalfa, birdsfoot trefoil, or clover not seeded with a grass or small grain companion crop. • Apply to grasses up to 8 inches tall (crabgrass up to 6 inches). • Select Max at 6 fl oz/A will control 1 to 4 inch tall barnyardgrass, green and giant foxtails, and fall panicum. • Volunteer cereals need to be treated between 2 to 6 inches tall. • Apply Select Max from 12 to 32 fl oz/A for perennial grass weed control. • The addition of AMS (2.5 to 4 lb/A) has been shown to improve control of difficult weeds – e .g ., quackgrass, johnsongrass, and volunteer cereals. • There is more adjuvant flexibility with Select Max tank-mixtures. Consult label. • DO NOT apply more than 64 fl oz/A per season of Select Max. • Refer to Table 4E for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |
| Sinbar 80WG | terbacil | 5 | DORMANT | 1.25 lb | N |
| <ul style="list-style-type: none"> • Refer to Table 4A for weed control and crop tolerance ratings. • Apply to established alfalfa only (one year or more). • Apply to dormant alfalfa in late fall or early spring. • DO NOT use on mixed alfalfa-grass stands. • Refer to Table 4E for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |

TABLE 4C – Forage Legume Herbicides – Remarks and Limitations

| Herbicide | Common Name | Site of Action Number | Application Timing | Rate/A | Trait |
|---|-------------|-----------------------|--------------------|---|-------|
| Raptor 1L | imazamox | 2 | POST | 4 fl oz + COC 1% v/v + AMS 2.5 lb | N |
| <ul style="list-style-type: none"> • Refer to Table 4A for weed control and crop tolerance ratings. • Apply postemergence to seedling or established alfalfa not seeded with a grass or small grain companion crop. • DO NOT apply to birdsfoot trefoil. • Apply postemergence when legume seedlings are at or beyond the 2 trifoliate stage and weeds are 1 to 3 inches. • Apply to established alfalfa or clover after cutting or mowing in the fall or spring. • Increase the rate to 6 fl oz/A for more effective control of giant foxtail, Pennsylvania smartweed, henbit, and common purslane. • Applications can cause a temporary reduction in growth. • Refer to Table 4E for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |
| Velpar 75DF | hexazinone | 5 | DORMANT | 0.67 lb | N |
| <ul style="list-style-type: none"> • Refer to Table 4A for weed control and crop tolerance ratings. • Apply to established alfalfa only (one year or more). • Apply to dormant alfalfa in late fall or early spring for greatest crop safety. • Can be applied in the spring before new growth exceeds 2 inches in height or to alfalfa stubble after cutting and before regrowth exceeds 2 inches – severe injury can occur if alfalfa regrowth is more than 2 inches. • DO NOT use on mixed alfalfa-grass stands. • Increase the rate to 1.3 lb/A for control of dandelion. • Refer to Table 4E for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |
| Warrant 3L | acetochlor | 15 | POST | 2 qt | N |
| <ul style="list-style-type: none"> • Refer to Table 4A for weed control and crop tolerance ratings. • Apply to seedling or established alfalfa. • Warrant provides residual control of annual weeds in seedling and established alfalfa. Does not control emerged weeds. • Warrant use rates are based on soil texture and organic matter. Use rates range from 1.25 to 2 qt/A. • Apply to seedling alfalfa planted in the fall or spring up to or at the fourth trifoliate. After either the first or second cutting in the seeding year, but no later than 7 days after the cutting, a sequential application may be made at 1.25 to 2 qt/a. • Apply to established alfalfa after spring green-up. Applications of this product may be made between cuttings, and no later than 7 days after a cutting. • DO NOT apply acetochlor within 50 feet of any well where the depth to groundwater is 30 feet or less: sands with less than 3% organic matter, loamy sands with less than 2% organic matter, or sandy loams with less than 1% organic matter. • Refer to Table 4E for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |

TABLE 4D – Forage Grass Pasture Herbicides – Remarks and Limitations

| Herbicide | Common Name | Site of Action Number | Application Timing | Rate/A | Trait |
|--|--------------------------------|-----------------------|--------------------|-----------------------------|-------|
| 2,4-D ester 4L | 2,4-D ester | 4 | POST | 1 qt | N |
| <ul style="list-style-type: none"> • Refer to Table 4B for weed control and crop tolerance ratings. • Use only on established stands of perennial grasses. • Can be applied up to 2 qt/A for moderately susceptible biennial and perennial broadleaf weeds. • Caution should be taken to avoid off-target movement. • DO NOT make more than 2 applications per year. • Refer to Table 4F for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |
| Banvel/Clarity 4L | dicamba | 4 | POST | 1 pt | N |
| <ul style="list-style-type: none"> • Refer to Table 4B for weed control and crop tolerance ratings. • Use on established stands of perennial grasses. • Can be applied up to 1 qt/A for moderately susceptible biennial and perennial broadleaf weeds. • Treat biennials weeds in the rosette stage. • Caution should be taken to avoid off-target movement. • DO NOT exceed 1 qt/A per year. • Refer to Table 4F for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |
| Banvel/Clarity 4L + 2,4-D ester 4L | dicamba 2,4-D ester | 4 4 | POST | 0.5 pt + 1.5 pt | N |
| <ul style="list-style-type: none"> • Refer to Table 4B for weed control and crop tolerance ratings. • Use on established stands of perennial grasses. • Caution should be taken to avoid off-target movement. • Refer to Table 4F for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |
| Cimarron Plus 63WG | metsulfuron + chlorsulfuron | 2 2 | POST | 0.25 oz + NIS 0.125% v/v | N |
| <ul style="list-style-type: none"> • Refer to Table 4B for weed control and crop tolerance ratings. • Use on established stands of perennial grasses. • DO NOT use on timothy pastures. • Cimarron Plus may temporarily stunt fescue and cause it to turn yellow. • Make applications in the spring after new growth is 5 to 6 inches tall, or in the fall. • DO NOT exceed 0.5 oz/A per year. • Refer to Table 4F for harvest restrictions. • Cimarron Plus has extensive residual activity consult label for pasture renovation and recropping restrictions. | | | | | |
| Crossbow 3L | 2,4-D ester + triclopyr | 4 4 | POST | 2 qt | N |
| <ul style="list-style-type: none"> • Refer to Table 4B for weed control and crop tolerance ratings. • Use on established stands of perennial grasses. • Make applications when brush and broadleaf weeds are actively growing. • Caution should be taken to avoid off-target movement. • DO NOT make more than one application per year. • Refer to Table 4F for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |

TABLE 4D – Forage Grass Pasture Herbicides – Remarks and Limitations

| Herbicide | Common Name | Site of Action Number | Application Timing | Rate/A | Trait |
|--|----------------------|-----------------------|--------------------|----------------------------|-------|
| GrazonNext HL 3.74L | aminopyralid + 2,4-D | 4 4 | POST | 1.5 pt + NIS 0.25% v/v | N |
| <ul style="list-style-type: none"> • Refer to Table 4B for weed control and crop tolerance ratings. • Can be applied after perennial grasses are well established. • Make applications when broadleaf weeds are actively growing. • Caution should be taken to avoid off-target movement. • DO NOT use aminopyralid-treated plant residues or manure from animals that have grazed aminopyralid-treated areas for compost or mulch for sensitive broadleaf plants – conduct a bioassay and see label. • DO NOT apply more than 2.1 pt/A per year. • Refer to Table 4F for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |
| Milestone 2L | aminopyralid | 4 | POST | 5 fl oz + NIS 0.25% v/v | N |
| <ul style="list-style-type: none"> • Refer to Table 4B for weed control and crop tolerance ratings. • Can be applied after perennial grasses are well established. • Make applications when broadleaf weeds are actively growing. • Caution should be taken to avoid off-target movement. • DO NOT use aminopyralid-treated plant residues or manure from animals that have grazed aminopyralid-treated areas for compost or mulch for sensitive broadleaf plants – conduct a bioassay and see label. • DO NOT apply more than 7 fl oz/A per year. • Refer to Table 4F for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |
| Stinger 3SL | clopyralid | 4 | POST | 0.5 pt | N |
| <ul style="list-style-type: none"> • Refer to Table 4B for weed control and crop tolerance ratings. • Can be applied after perennial grasses are well established. • Make applications when broadleaf weeds are actively growing. • Caution should be taken to avoid off-target movement. • DO NOT use clopyralid-treated plant residues or manure from animals that have grazed clopyralid-treated areas for compost or mulch for sensitive broadleaf plants – conduct a bioassay and see label. • Refer to Table 4F for harvest restrictions. • Refer to label and Table 12 for crop rotation restrictions. | | | | | |

TABLE 4E – Harvest Restrictions for Forage Legume Herbicides

| Herbicide | Restrictions |
|-------------------------------------|---|
| 2,4-DB | Do not graze established alfalfa or feed straw or hay from treated crops to livestock within 30 days after application. Do not graze or feed seedling alfalfa, clover or birdsfoot trefoil within 60 days after application. |
| Buctril, Moxy | Do not cut for feed or graze spring-treated alfalfa within 30 days following treatment. Do not cut for feed or graze fall or winter treated alfalfa until spring, at least 60 days after treatment. |
| Chateau SW/EZ | Do not graze or harvest within 25 days after application. |
| Eptam | None for preplant application. |
| Kerb | Do not graze or harvest for forage or dehydration within 120 days of application. |
| Metribuzin | Do not graze or harvest within 28 days after application. |
| Poast | Do not apply within 7 days of feeding, grazing or harvesting for (undried) forage, or within 14 days of feeding or harvesting for (dry) hay. |
| Prowl H ₂ O | Do not apply within 28 days of harvesting alfalfa forage. |
| Pursuit | Do not feed, graze or harvest alfalfa for 30 days following application. |
| Raptor | There should be an interval of at least 20 days between application and cutting or feeding alfalfa forage or hay. |
| Select | Do not apply within 15 days of grazing, feeding or harvesting (cutting) alfalfa for hay or forage. |
| Sinbar | None. |
| Velpar | Do not graze or feed forage or hay to livestock within 30 days after application. |
| Warrant | Do not graze or harvest within 20 days after application. |
| Glyphosate-Resistant Alfalfa | |
| Extreme | Do not feed, graze, or harvest Roundup Ready alfalfa for 30 days following application. |
| Glyphosate | Do not harvest or graze alfalfa for a minimum of 5 days following application. |

TABLE 4F – Harvest Restrictions for Forage Grass Herbicides

| Herbicide | Restrictions |
|----------------|--|
| 2,4-D | Do not graze animals on treated areas within 7 days after treatment. Do not permit dairy animals or meat animals being finished for slaughter to forage treated fields within 3 days of slaughter. Do not cut grass for hay within 30 days after application. |
| Banvel/Clarity | Animals cannot be removed from treated area for slaughter prior to 30 days after last application. There is no waiting period between treatment and grazing for non-lactating animals. Timing restriction for lactating dairy animals following treatment: up to 1 pt/A—7 days before grazing, 37 days before hay harvest; up to 1 qt/A—21 days before grazing, 51 days before hay harvest. See label for details. |
| Cimarron Plus | None. |
| Crossbow | Do not apply within 14 days of harvesting hay. |
| GrazonNext HL | Do not graze or harvest hay within 7 days of application. See remarks and limitations section on residue and manure management. |
| Milestone | None. See remarks and limitations section on residue and manure management. |
| Stinger | None. See remarks and limitations section on residue and manure management. |