

**Table 5.81 -Relative Effectiveness of Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

Species	2,4-D <sup>1</sup> 2-3 pt	2,4-D + dicamba <sup>1</sup> 1 qt + 1 pt	Aim 1-2 oz	Chaparral <sup>1</sup> 2-3 oz (PA, VA, WV)	dicamba <sup>1</sup> 1 pt	Crossbow <sup>1</sup> 2-4 qt	DuraCor (12 to 20 fl oz/a) (PA, VA, WV)	GrazonNext HL <sup>1</sup> 1.5-2.6 pt (PA, VA, WV)	Grazon P+D <sup>1</sup> 3-4 pt (VA, WV)	Metsulfuron 60DF 0.1-0.3oz	Milestone 5-7 oz (PA, VA, WV)	Pasture-Gard HL <sup>1</sup> 1-1.5 pt	Remedy Ultra 2-4 pt	Roundup/glyphosate 1-2 qt (spot treatment)	Stinger 0.66-1.33 pt	Surmount <sup>1</sup> 1.5-3 pt (VA, WV)
Aster spp.	9	10	N	9	8+	9	L	7	8	7	-	-	-	9	9+	-
Bedstraw, Smooth	7	7	6	9	N	8	L	9	7	N	9	L	-	9	7	L
Bindweed, Field	8	8+	6	-	8+	8	-	7	6	N	-	7	7	8	N	8
Bindweed, Hedge	9	10	N	-	9	9	-	8	8+	N	-	7+	8	8	N	8+
Brackenfern	7	7	N	7	N	7+	-	7	-	7	-	-	-	6	-	-
Buttercup spp.	8+	9	7	8+	8	10	10	9	10	9	8+	8	8	9	8	8+
Catsear, Common	7	9	N	9	7+	-	-	9	-	-	9	-	-	8+	-	-
Chickweed, Mouseear	6	8	6	10	7+	8+	9	7	9	10	8	8	8+	9	6	9
Chicory	9	10	7	9	8	9	9	9	9+	7+	9	9	8+	9	9	8+
Clover spp.	7	8+	N	10	8+	8+	9	9+	10	8+	9+	8+	9	10	9	10
Cockle, White	7	9	6	8	8+	9	-	N	-	8	-	L	-	9+	9	L
Daisy spp.	9	10	N	9	8+	9+	L	9	8	6	9	-	-	8+	8+	-
Dandelion	9+	10	6	8+	7	9+	L	9	9	7+	9	8	7+	7	7	9
Dock spp.	8	10	7	9	8	9	9	9	9	8+	9	8	8	9	7+	9
Dogbane, Hemp	6	7	N	N	7	8	-	6	7	N	N	7	7	8	6	8+
Dogfennel	7	7+	N	N	7	7	-	7	7+	6	N	9	8	8	6	9
Garlic or Onion, Wild	8	8+	N	9	7	8	-	6	N	9+	N	N	N	9	N	N
Goldenrod spp.	8	8+	N	8	7	8	-	8	9	8	6	7	7+	9	6	9
Groundcherry spp.	7	7+	7	9	7	8+	-	7	-	-	9	-	-	8	N	-
Hawkweed spp.	8	9	6	L	7+	9	L	8	6	7	L	-	-	9	8	-
Horsenettle	6	7+	N	9	7	8	9	8+	9	7	9	6	6	8	N	8+
Ironweed, Tall	8	9	N	8+	8+	9	L	9	9+	N	8	7	6	9	6	8+
Knapweed, Spotted	7	8	N	8+	7	7	L	9	9	6	8+	6	6	9	9	8+
Knotweed, Japanese	7	7+	6	7+	7+	7	-	7	N	-	7+	N	-	8	8	L
Lespedeza, Sericea	N	N	N	6	N	7+	-	N	6	6	N	8	8	7	N	7

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Species	2,4-D <sup>1</sup> 2-3 pt	2,4-D + dicamba <sup>1</sup> 1 qt + 1 pt	Aim 1-2 oz	Chaparral <sup>1</sup> 2-3 oz (PA, VA, WV)	dicamba <sup>1</sup> 1 pt	Crossbow <sup>1</sup> 2-4 qt	DuraCor (12 to 20 fl oz/a) (PA, VA, WV)	GrazonNext HL <sup>1</sup> 1.5-2.6 pt (PA, VA, WV)	Grazon P+D <sup>1</sup> 3-4 pt (VA, WV)	Metsulfuron 60DF 0.1-0.3oz	Milestone 5-7 oz (PA, VA, WV)	Pasture-Gard HL <sup>1</sup> 1-1.5 pt	Remedy Ultra 2-4 pt	Roundup/glyphosate 1-2 qt (spot treatment)	Stinger 0.66-1.33 pt	Surmount <sup>1</sup> 1.5-3 pt (VA, WV)
Milkweed, Common	6	7	N	N	6	7	-	6	7	N	N	6	6+	7+	N	8+
Mugwort	6	7	6	8	7	8	L	8	7	7	8	-	-	7	8+	-
Nettle, Stinging	8	9	6	8	8	9	-	9	9	6	9	9	9	9	7	9
Nightshade, Bitter	7	8+	6	-	7	-	-	7	7	-	-	-	-	9	8	-
Plantain spp.	8	10	7	9	8	9	10	7+	9	9	N	9	8	9	N	8+
Pokeweed, Common	7	7	N	6	7	9	L	8	7+	N	7+	N	N	8	N	8+
Snakeroot, White	8	9	7	-	9	9	-	8	8	N	-	-	-	8	N	-
Sorrel, Red	6	10	8+	8	8+	-	-	-	9	8+	-	6	-	9	8	-
Sowthistle, Perennial	7	9	N	8+	8	8	L	9	9+	7	9	8	8	9	8	-
Star-of- Bethlehem	N	N	8+	-	N	-	-	-	-	-	-	-	-	8	-	-
Thistle, Canada	7	7+	N	9+	7	8	9	9	9	7	9	8	6	8	9	7
Toadflax, Yellow	7	8	8+	-	7+	-	-	7	-	-	-	-	-	8	N	-
Waterhemlock, Spotted	7+	9	N	-	8	9	-	7	-	N	-	-	-	9	N	-
Wingstem	8+	8+	N	9	6	7+	L	9	9	N	9	6	7+	-	6	8+
Woodsorrel, Yellow	7	7+	7	L	7	8	-	8+	-	9	-	-	-	9	8	-
Yarrow, Common	7	9	N	L	9	8+	L	7	-	8	L	L	L	9	7	L
<b>Woody Perennials<sup>1</sup></b>																
Blackberry spp.	6	6+	N	L	6	8	-	N	7+	7	N	L	7+	8	7	8
Dewberry spp.	6	7	N	L	6	7+	-	N	-	8+	-	-	-	7	7	7
Grape, Wild	8	9	N	-	8	9	-	8	-	-	-	L	-	8	N	L
Honeysuckle spp.	7	7+	N	L	N	8+	-	7	8	10	-	L	-	8	N	L
Kudzu	N	6	N	8	6	6	L	8	9	N	8	7	7	-	-	-
Locust, Black	7	8+	N	L	8	8	-	L	-	7	L	L	L	8	N	9+
Olive, Autumn	7	8	N	-	7+	8	-	7	-	-	-	-	9	8	N	-
Poison-ivy, Oak	7	8+	N	6	7+	8+	-	7	8+	6	-	L	L	8	N	7
Rose, Multiflora	6	7+	N	8	6	8+	-	-	8+	8+	-	6	8+	8	N	7

**Table 5.81 -Relative Effectiveness of Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

Species	2,4-D <sup>1</sup> 2-3 pt	2,4-D + dicamba <sup>1</sup> 1 qt + 1 pt	Aim 1-2 oz	Chaparral <sup>1</sup> 2-3 oz (PA, VA, WV)	dicamba <sup>1</sup> 1 pt	Crossbow <sup>1</sup> 2-4 qt	DuraCor (12 to 20 fl oz/a) (PA, VA, WV)	GrazonNext HL <sup>1</sup> 1.5-2.6 pt (PA, VA, WV)	Grazon P+D <sup>1</sup> 3-4 pt (VA, WV)	Metsulfuron 60DF 0.1-0.3oz	Milestone 5-7 oz (PA, VA, WV)	Pasture-Gard HL <sup>1</sup> 1-1.5 pt	Remedy Ultra 2-4 pt	Roundup/glyphosate 1-2 qt (spot treatment)	Stinger 0.66-1.33 pt	Surmount <sup>1</sup> 1.5-3 pt (VA, WV)
Sumac spp.	6	7+	N	-	7	8+	-	L	7	N	-	L	L	8	7	8
Trumpet Creeper	6	7+	N	-	6	8	-	-	7	N	-	-	L	7+	N	7
Virginia Creeper	7	9	N	-	8	8+	-	7	-	-	-	L	L	8	N	-

<sup>1</sup> Herbicide contains multiple active ingredients. See Table 5.80 for prepackaged mixture or co-packs and their constituents.

**Table 5.82 - Comments on Herbicides Used in Grass Pasture, Hay, and CRP Grassland**

The following comments apply to all herbicides, unless otherwise noted below:

- Apply postemergence to actively growing broadleaf weeds. Treat biennials in the rosette stage of growth.
- Higher rates or repeat treatments may be required for less susceptible species, perennial weeds, and woody plants.
- For maximum efficacy, do not mow, graze, hay, or disturb the treated area for 7 days after application. Make applications at least 7 days before a killing frost.
- These herbicides will severely injure alfalfa, clover, and other legumes. Do not use if loss of desirable legume species cannot be tolerated.
- Follow label recommendations to reduce the potential for spray drift or volatility to sensitive plants.

Trade Name	Common Name	Application Timing	Product/A	lb ai/A	Apply in Liquid Fertilizer as a Carrier
2,4-D LVE 3.8L or 2,4-D amine 3.8L	2,4-D	Established-POST	1.5-3 qt or 1-2 qt	1.4-2.8 ae or 0.95-1.9 ae	yes

- 2,4-D is marketed by various companies with various trade names. Refer to the label provided with the product for specific recommendations and restrictions.
- Make application when grasses are well established, usually 4-5 inches tall with a good root system and tiller development.
- Make applications by ground in a minimum of 10 gal/A or by air in a minimum of 2 gal/A of water or liquid fertilizer.
- Do not make applications when the temperature is expected to exceed 80 degrees that day as drift is more likely to occur.
- Treat susceptible woody perennials in the spring after leaves are fully expanded.
- Ester formulations are slightly more effective (more leaf-absorbed) than amine formulations, but also slightly more volatile.
- 2,4-D labels vary concerning overseeding or rotational crop restrictions. Unless specified on the label, most crops can be safely planted 3 months after application under normal environmental conditions.
- *Water Quality Advisory.*

5-252 *Weed Control in Field Crops: Forages*

**Table 5.82 - Comments on Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

Trade Name	Common Name	Application Timing	Product/A	lb ai/A	Apply in Liquid Fertilizer as a Carrier (yes/no)
Aim 2EC	carfentrazone	Seedling-POST Established-POST	1-2 fl oz	0.016-0.032	yes

- For new seedlings apply to grasses that have at least 3-4 leaves.
- Aim is safe to legumes and clovers, but temporary injury may occur.
- Significant crop response may occur, but is temporary.
- Apply in a minimum of 10 gal/A of water or liquid fertilizer. Applying Aim in liquid fertilizer may increase the level of crop response.
- Applications made within 8 hours of rainfall or irrigation or when heavy dew is present may cause significant crop response.
- Aim has a relatively narrow spectrum of weed control and is primarily used for control of winter or summer annual broadleaf weeds up to 4 inches tall (emerged weeds only).
- Aim has activity on Star-of-Bethlehem, dayflower species, and speedwell species. Star-of-Bethlehem may require additional application at least 10 days after the first.
- Three applications per season are allowed, but do not make applications less than 7 days apart.
- There are no rotational crop or overseeding restrictions for labeled crops; see label.

Arsenal 2AS	imazapyr	Grazed fencerows	1-3 pt or 0.4-1.2 fl oz/ gal	0.25-0.75 or 0.3%-0.9% v/v solution	no
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- Arsenal is labeled for spot treatment in grass pasture. However, due to its length of residual activity on cool-season grass species, bare spots in the pasture could persist for several months. Therefore, it is only recommended for use along permanent or long-term fencerows.
- This use falls under the spot treatment part of the label, so grazed fencerows can be treated so long as the total area to be treated is no more than 10% of the total pasture and fencerow areas combined.
- Arsenal provides postemergence and 3 to 6 months of soil residual control of many annual, biennial, and perennial grass and broadleaf weeds as well as several vine and brush species.
- Make applications with hand-held equipment.
- Refer to weed rate tables of the herbicide label and apply the recommended concentration on a spray-to-wet basis (1 gal/1,000 ft<sup>2</sup>) to provide thorough coverage. Do not spray to the point of runoff.
- Rotational crops can be planted 12 months after application and completion of a successful field bioassay.

**Table 5.82 - Comments on Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

Trade Name	Common Name	Application Timing	Product/A	lb ai/A	Apply in Liquid Fertilizer as a Carrier (yes/no)
		Established-POST	2-3.3 oz	0.078-0.128 + 0.012-0.019	
		Seed head suppression	2-2.5 oz	0.078-0.098 + 0.012-0.015	
Chaparral 71.6WG PA, VA, WV only	aminopyralid + metsulfuron	Spot treatment	0.025-0.033 oz/gal	0.02%-0.026% w/v solution	yes

- Chaparral provides postemergence control and 2 to 3 months of soil residual control of on many annual, biennial, and perennial weed species and suppression of blackberry and multiflora rose in permanent grass pasture.
- Apply by ground in a minimum of 10 gal/A or by air in a minimum of 2 gal/A of water or liquid fertilizer.
- High-volume foliar applications for brush control (volume not specified) are allowed; consult herbicide label for details.
- In general, Chaparral may be applied in the spring or early summer, depending on the target weed species, as a broadcast application over grass that was planted at least 4 months prior to the application and growing under favorable conditions for establishment. Grasses should have well-established root systems and be tillering.
- Smooth brome grass may be more sensitive to applications of Chaparral than other perennial grasses, and temporary growth suppression may occur.
- Special precautions are provided on the label for applications to tall fescue to minimize injury and stunting. Make application later in spring after new growth is 5-6 inches tall or in the fall. Do not use more than 2 oz/A of Chaparral and tank-mix with 2,4-D. Use only a non-ionic surfactant (0.5-1 pt/100 gal) when mixing with water; do not use any adjuvant when mixing with liquid fertilizer. Adhere strictly to these precautions, or severe injury may occur. Even when these precautions are followed, some stunting, yellowing, or seed head suppression of fescue may occur.
- Do not use Chaparral on timothy, annual (Italian) ryegrass, or perennial ryegrass, or severe injury will occur.
- With fall applications, do not plant grasses the following spring; do not overseed ryegrass for 4 months after application.
- Do not rotate to any crop within 1 year following treatment, or to any broadleaf crop until an adequately sensitive field bioassay shows that the aminopyralid level in soil will not adversely affect that broadleaf crop. Cereals and corn can be planted 1 year after treatment; most broadleaf crops require at least a 2-year wait until planting.
- The Chaparral label has restrictions concerning the use and management of plant residues (hay, straw, mulch, compost) and manure that may contain aminopyralid residues. These include important restrictions concerning the movement and sale of hay products treated with aminopyralid. Be certain you understand and are able to follow these label restrictions before using this product.
- For tall fescue seed head suppression and broadleaf weed control: Chaparral may be used to reduce the number of seed heads of tall fescue when applied prior to flower emergence. For best results apply 2-2.5 oz/A after initial green-up when grass height is approximately 6 inches. Later applications may still be effective; however, the seed head suppression will be less effective and the number of seed heads could be noticeably higher. Many weed species can be controlled with this application timing in addition to the suppression of seed head development.
- Make spot applications with hand-held equipment. Refer to weed rate tables of the herbicide label and apply the recommended concentration on a spray-to-wet basis (1 gal/1,000 ft<sup>2</sup>) to provide thorough coverage. Do not spray to the point of runoff.
- Spot treatments may be applied at equivalent broadcast rates of up to 6.6 oz/A (0.066 oz/gal), but no more than 50% of the acreage may be treated, and the total amount of Chaparral applied from all applications must not exceed 3.3 oz per acre per year.
- A non-ionic surfactant should be added.
- Repeat treatments may be made, but the total amount of Chaparral applied from all applications must not exceed 3.3 oz per acre per year.
- *Water quality advisory.*

**Table 5.82 - Comments on Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

Trade Name	Common Name	Application Timing	Product/A	lb ai/A	Apply in Liquid Fertilizer as a Carrier (yes/no)
Clarity 4S	dicamba	Seedling-POST	0.5–1 pt	0.25–0.5 ae	yes
		Established-POST	0.5–2 pt	0.25–1.0 ae	
		Spot treatment	0.2–1.6 fl oz/ gal	0.16%–1.25% v/v solution	

- Application to seedling grasses should not exceed 1 pt/A, and grasses should be actively growing, unstressed, and have attained the 3- to 4-leaf stage and 6 inches tall. For higher rates delay application until grasses are well established, usually 4–5 inches tall with a good root system and tiller development.
- Apply in a minimum of 10 gal/A of water or liquid fertilizer, or by air in 2 to 40 gal/A of water.
- High-volume foliar applications for brush control (up to 600 gal/A) are allowed; consult herbicide label for details.
- Do not make applications when the temperature is expected to exceed 80 degrees that day as drift is more likely to occur.
- Forage grasses or small grains can be overseeded after 30 days per pint of dicamba applied.
- Legumes and other broadleaf crops may be planted 4 months after application.
- Make spot applications with hand-held equipment. Do not treat more than one-tenth of the total area at any one time.
- Refer to weed rate tables of the herbicide label and apply the recommended concentration on a spray-to-wet basis (1 gal/1,000 ft<sup>2</sup>) to provide thorough coverage. Do not spray to the point of runoff.
- Clarity is also labeled for wiper applications. Consult the herbicide label for specific recommendations.
- *Water quality advisory.*

Crossbow 3E	triclopyr + 2,4-D	Established-POST	1–6 qt	0.25–1.5 ae + 0.5–3.0 ae	yes
		Spot treatment	1.5–2 fl oz/gal	1.2%–1.6% v/v solution	

- The label states “This product may not be applied to forage that is to be cut and sold for commercial purposes”.
- Crossbow provides postemergence control and 1 to 2 months of soil residual control of many annual, biennial, and perennial weeds as well as many woody plants.
- Apply only to grasses with well-established root systems that are tillering.
- Apply to actively growing weeds or brush by ground or air (helicopter only) in 10 to 30 gal/A of water or liquid fertilizer.
- Some hard-to-control perennial weeds and woody species may require retreatment. Use higher rates for less susceptible species.
- High-volume foliar applications for brush control (100–200 gal/A) are allowed; consult herbicide label for details.
- Forage grasses may be overseeded 21 days after application. Other crops can be planted the next growing season.
- Make spot applications with hand-held equipment. Refer to weed rate tables of the herbicide label and apply the recommended concentration on a spray-to-wet basis (1 gal/1,000 ft<sup>2</sup>) to provide thorough coverage. Do not spray to the point of runoff
- *Water quality advisory.*

**Table 5.82 - Comments on Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

Trade Name	Common Name	Application Timing	Product/A	lb ai/A	Apply in Liquid Fertilizer as a Carrier (yes/no)
<b>DuraCor SC</b>	aminopyralid + florpyrauxifen- benzyi	seedling: POST established: POST	12–20 fl oz	0.063–0.104 ae + 0.006–0.0105 ae	
		spot treatment	40 fl oz	1.46 v/v solution	yes
<ul style="list-style-type: none"> <li>• Spot treatments may be applied at an equivalent broadcast rate of up to 40 fl oz of DuraCor (0.208 lbs aminopyralid and 0.0209 lbs florpyrauxifen-benzyi) per acre per annual growing season; however, not more than 50% of an acre may be treated at this rate.</li> <li>• Repeat treatments may be made, but the total amount of DuraCor applied must not exceed 20 fl oz per acre per year.</li> <li>• DuraCor can be applied at 12 fl oz of product per acre in early to mid-spring when weeds are less than 2 inches tall. Applications in this range are most effective when conditions are favorable to plant growth.</li> <li>• For longer residual control of susceptible late spring and early summer weed emergence, apply up to 20 fl oz of product per acre. Increasing application rate to the high end of the rate range specified will extend the period of residual control.</li> </ul>					
<b>Facet L 1.5SL</b>	quinclorac	Established-POST	12–64 fl oz 0.55–1.6 fl oz/	0.14–0.75 ae 0.4%–1.25%	
		Spot treatment	gal	v/v solution	no
<ul style="list-style-type: none"> <li>• Facet L (formerly Paramount 75WDG) provides postemergence control and 1 to 2 months of soil residual control or suppression of several annual grass weeds, a few annual broadleaf weeds, and field or hedge bindweed.</li> <li>• Facet L is the only herbicide labeled for postemergence control of grass weeds in grass forage crops. Labeled grass weeds are barnyardgrass, large crabgrass, giant, green, and yellow foxtails, junglerice, and broadleaf signalgrass.</li> <li>• Rates greater than 32 fl oz/A and less than 22 fl oz/A are for leafy spurge control and bindweed maintenance, respectively. For broadleaf control apply 22–32 fl oz/A. For grass control apply at 32 fl oz/A with MSO at 1 % v/v.</li> <li>• Use only on labeled established grasses (timothy and reed canarygrass not included) that have developed a good root system and are tillering.</li> <li>• Local experience indicates that Facet may cause more injury to orchardgrass than to the other labeled cool-season grasses.</li> <li>• Apply to actively growing plants by ground in a minimum of 5 gal/A of water. Aerial applications are not allowed in the Northeast region.</li> <li>• For best results apply to labeled grass and broadleaf weeds up to 2 inches tall and prior to grass tiller development.</li> <li>• Do not apply Facet when air temperature is more than 90°F.</li> <li>• Forage grasses can be overseeded 10 months after application.</li> <li>• Legume crops can be planted 24 months after application and completion of a successful field bioassay.</li> <li>• For spot applications, do not exceed the maximum per-area rates for broadcast application. Refer to weed rate tables of the herbicide label and apply the recommended concentration on a spray-to-wet basis (1 gal/1,000 ft<sup>2</sup>) to provide thorough coverage. Do not spray to the point of runoff.</li> <li>• <i>Water quality advisory.</i></li> </ul>					

**Table 5.82 - Comments on Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

Trade Name	Common Name	Application Timing	Product/A	lb ai/A	Apply in Liquid Fertilizer as a Carrier (yes/no)
		Established-POST	1.2–2.1 pt	0.062–0.108 +	
GrazonNext HL 3.74E (PA, VA, WV only)	aminopyralid + 2,4-D	Spot treatment	0.5–0.9 fl oz/gal	0.5–0.9 0.4%–0.7% v/v solution	yes

- GrazonNext provides postemergence control and 2 to 3 months of soil residual control of many annual, biennial, and perennial weed species in **permanent grass pasture**.
- In general, it is best to wait 45–60 days after grass planting before applying GrazonNext.
- Smooth brome grass may be more sensitive to applications of GrazonNext than other perennial grasses, and temporary growth suppression may occur.
- Apply by ground in a minimum of 10 gal/A or by air in a minimum of 2 gal/A of water or liquid fertilizer.
- High-volume foliar applications for brush control (volume not specified) are allowed; consult herbicide label for details.
- Grass can be overseeded in the fall after a spring or early summer application.
- Do not rotate to any crop within 1 year following treatment or to any broadleaf crop until an adequately sensitive field bioassay shows that the aminopyralid level in soil will not adversely affect that broadleaf crop. Cereals and corn can be planted 1 year after treatment; most broadleaf crops require at least a 2-year wait until planting.
- The GrazonNext label has restrictions concerning the use and management of plant residues (hay, straw, mulch, compost) and manure that may contain aminopyralid residues. These include important restrictions concerning the movement and sale of hay products treated with aminopyralid. Be certain you understand and are able to follow these label restrictions before using this product.
- Make spot applications with hand-held equipment. Refer to weed rate tables of the herbicide label and apply the recommended concentration on a spray-to-wet basis (1 gal/1,000 ft<sup>2</sup>) to provide thorough coverage. Do not spray to the point of runoff.
- Spot treatments may be applied at equivalent broadcast rates of up to 4.2 pt/A (1.7 fl oz/gal), but no more than 50% of the acreage may be treated, and the total amount of GrazonNext applied from all applications must not exceed 2.1 pints per acre per year.
- A non-ionic surfactant should be added.
- Repeat treatments may be made, but the total amount of GrazonNext applied from all applications must not exceed 2.1 pints per acre per year.
- *Water quality advisory.*



**Table 5.82 - Comments on Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

Trade Name	Common Name	Application Timing	Product/A	lb ai/A	Apply in Liquid Fertilizer as a Carrier (yes/no)
Grazon P+D 2.54SL (VA, WV only)	picloram + 2,4-D	Established-POST	2-8 pt	0.14-0.54 + 0.5-2.0	yes

- Grazon P+D provides postemergence control and 2 to 3 months of soil residual control of many annual, biennial, and perennial weed species **in permanent grass pasture**.
- The distribution of Grazon P+D may be further restricted within Virginia and West Virginia due to the picloram content of the product and sensitivity of certain broadleaf crops.
- Apply to grasses that are well established as indicated by tillering, development of secondary root system, and vigorous growth.
- Smooth brome grass may be more sensitive to applications of Grazon P+D than other perennial grasses, and temporary growth suppression may occur.
- Apply by ground in 10-40 gal/A or by air in a minimum of 2 gal/A of water, an oil-water emulsion, or liquid fertilizer.
- High-volume foliar applications for brush control (100 gal/A) are allowed; consult herbicide label for details.
- Cool season grasses can be seeded a minimum of 21 days after application (60 days for smooth brome grass).
- Do not rotate to food or feed crops on treated land if they are not registered for use with picloram until an adequately sensitive field bioassay or chemical test shows that no detectable picloram is present in soil.
- The Grazon P+D label has restrictions concerning the use and management of plant residues (hay, straw, mulch, compost) and manure that may contain picloram residues. Be certain you understand and are able to follow these label restrictions before using this product.
- *Water quality advisory.*
- *Restricted-use pesticide.*

**Table 5.82 - Comments on Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

Trade Name	Common Name	Application Timing	Product/A	lb ai/A	Apply in Liquid Fertilizer as a Carrier (yes/no)
Metsulfuron 60DF	metsulfuron	Established-POST	0.1–0.4 oz	0.004–0.015	yes
		Seed head	0.3–0.4 oz	0.011–0.015	
		suppression		0.008% w/v	
		Spot treatment	0.01 oz/gal	solution	

- Metsulfuron provides both postemergence control and 2 to 3 months of soil residual control of many annual, biennial, and perennial weed species, and suppression of blackberry and multiflora rose in **permanent grass pasture**.
- Apply by ground in a minimum of 10 gal/A or by air in 2 to 5 gal/A of water or liquid fertilizer.
- Postemergence applications are rainfast in 4 hours, after which rainfall or overhead irrigation is required to activate the herbicide in the soil.
- Applications up to 0.4 oz/A may be made to grasses that have been established for a minimum amount of time as follows: bermudagrass (2 months); bluegrass, bromegrass, and orchardgrass (6 months); timothy (12 months); and fescue (24 months).
- Special precautions are provided on the label for applications to fescue or timothy. Apply to fescue in late spring or fall or to timothy in late summer or fall. Either species should be at least 6 inches tall and actively growing. Use the lowest recommended rate of metsulfuron (up to 0.4 oz/A) for the target weeds and tank-mix with 2,4-D for added safety. Use only a non-ionic surfactant at 0.5 pt/100 gal when mixing with water; do not use any adjuvant when mixing with liquid fertilizer. Adhere strictly to these precautions, or severe injury may occur. Even when these precautions are followed, some stunting or yellowing of timothy or fescue may occur.
- Do not use metsulfuron on annual (Italian) or perennial ryegrass, or severe injury will occur.
- Overseeding intervals for grasses are specific to region, soil pH, metsulfuron rate, and grass species. In our region with soils of pH 7.5 or less, the interval range is from 6 to 34 months (see label).
- Metsulfuron is persistent in soil; rotation to most broadleaf crops is 34 months or completion of a successful field bioassay.
- Cimarron Max is a co-pack that contains the active ingredients of metsulfuron and 2,4-D plus dicamba.
- Cimarron Plus is a premix with the active ingredients metsulfuron and chlorsulfuron (Glean or Telar).
- For tall fescue seed head suppression and broadleaf weed control: Metsulfuron may be used to reduce the number of seed heads of tall fescue when applied prior to flower emergence. For best results apply 0.3–0.4 oz/A after initial green-up when grass height is approximately 6 inches. Later applications may still be effective; however, the seed head suppression will be less effective and the number of seed heads could be noticeably higher.
- Spot treatment with metsulfuron is effective for suppression or control of multiflora rose, blackberry, and Canada thistle. Make applications with hand-held equipment. Apply 1 oz/100 gal (0.28 gr/gal) on a spray-to-wet basis (1 gal/1,000 ft<sup>2</sup>) to provide thorough coverage. Do not spray to the point of runoff, but dense stands of brush may need to be treated from both sides to achieve adequate coverage.
- A non-ionic surfactant at 2–4 pt/100 gal should be added.
- Make applications after plants are fully leafed in the spring up through late summer.

**Table 5.82 - Comments on Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

Trade Name	Common Name	Application Timing	Product/A	lb ai/A	Apply in Liquid Fertilizer as a Carrier (yes/no)
Milestone 2E (PA, VA, WV only)	aminopyralid	Established-POST	3–7 fl oz	0.047–0.109 ae	
		Spot treatment	0.13–0.36 fl oz/ gal	0.1%–0.3% v/v solution	yes

- Milestone provides postemergence control and 2 to 3 months of soil residual control of on many annual, biennial, and perennial weed species in **permanent grass pasture**.
- In general, it is best to wait 45–60 days after grass planting before applying Milestone.
- Smooth brome grass may be more sensitive to applications of Milestone than other perennial grasses, and temporary growth suppression may occur.
- Apply by ground in a minimum of 10 gal/A or by air in a minimum of 2 gal/A of water or liquid fertilizer.
- High-volume foliar applications for brush control (volume not specified) are allowed; consult herbicide label for details.
- Grass can be overseeded the fall after a spring treatment.
- Do not rotate to any crop within 1 year following treatment or to any broadleaf crop until an adequately sensitive field bioassay shows that the aminopyralid level in soil will not adversely affect that broadleaf crop. Cereals and corn can be planted 1 year after treatment; most broadleaf crops require at least a 2-year wait until planting.
- The Milestone label has restrictions concerning the use and management of plant residues (hay, straw, mulch, compost) and manure that may contain aminopyralid residues. Follow the label restrictions carefully.
- Make spot applications with hand-held equipment. Refer to weed rate tables of the herbicide label and apply the recommended concentration on a spray-to-wet basis (1 gal/1,000 ft<sup>2</sup>) to provide thorough coverage. Do not spray to the point of runoff.
- Spot treatments may be applied at equivalent broadcast rates of up to 14 fl oz/A (0.32 fl oz/gal), but no more than 50% of the acreage may be treated, and the total amount of Milestone applied from all applications must not exceed 7 fl oz per acre per year.
- A non-ionic surfactant should be added.
- Repeat treatments may be made, but the total amount of Milestone applied from all applications must not exceed 7 fl oz per acre per year.
- *Water quality advisory.*

5-260 *Weed Control in Field Crops: Forages*

**Table 5.82 - Comments on Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

Trade Name	Common Name	Application Timing	Product/A	lb ai/A	Apply in Liquid Fertilizer as a Carrier (yes/no)
PastureGard HL 4L	triclopyr + fluroxypyr	Established-POST Spot treatment	0.75–4 pt 0.2–1.5 fl oz/ gal	0.28–1.5 ae + 0.094–0.5 ae 0.16%–1.2% v/v solution	not recommended
<ul style="list-style-type: none"> <li>• PastureGard provides postemergence control and 1 to 2 months of soil residual control of many annual, biennial, and perennial weeds as well as many woody plants.</li> <li>• Apply to actively growing weeds or brush by ground in a minimum of 5 gal/A or by air in a minimum of 3 gal/A (non-woody broadleaf weeds) or 4 gal/A (woody plants) of water.</li> <li>• For brush control, high-volume foliar applications (50–100 gal/A), basal methods, and cut stump methods are allowed; consult herbicide label for details.</li> <li>• For best results treat blackberry either before first flower or after fruit drop.</li> <li>• Some hard-to-control woody species may require retreatment.</li> <li>• Apply only to grasses with well-established root systems that are tillering.</li> <li>• Forage grasses or small grains can be overseeded 21 days after application.</li> <li>• Other crops can be planted 4 months after application.</li> <li>• For spot treatments apply at rates equivalent to broadcast application rates. Refer to weed rate tables of the herbicide label and apply the recommended per gallon concentration above on a spray-to-wet basis (1 gal/1,000 ft<sup>2</sup>) to provide thorough coverage. Do not spray to the point of runoff.</li> <li>• <i>Water quality advisory.</i></li> </ul>					
Permit/Sandea 75WDG	halosulfuron	established: POST spot treatment	0.67–1.3 oz 0.019 oz/gal	0.031–0.063 0.016% w/v solution	no
<ul style="list-style-type: none"> <li>• Sandea provides excellent postemergence control of yellow nutsedge and has both preemergence (3 to 4 weeks soil residual) and/or postemergence activity on several annual broadleaf weeds.</li> <li>• Apply by ground in a minimum of 10 gal/A water or by air in 3–15 gal/A water.</li> <li>• For best results, spray actively growing nutsedge plants at the 3- to 5-leaf stage and susceptible broadleaf plants that are 1 to 3 inches tall.</li> <li>• Heavy nutsedge infestations may require additional applications.</li> <li>• Wait at least 48 hours after application before irrigation.</li> <li>• Yukon is a premix of Sandea and dicamba.</li> <li>• Forage grasses, small grains, sorghum, and corn can be overseeded 2 months after application.</li> <li>• Legume forages can be planted 9 months after application; see label for other broadleaf crops.</li> <li>• Apply Sandea as a postemergence spot treatment only to those areas of emerged nutsedge. Do not exceed a rate of 0.75 oz/A (0.019 oz/gal). Apply on a spray-to-wet basis (1 gal/1,000 sq ft) to provide thorough coverage. Do not spray to the point of runoff. A second postemergence spot application at 0.75 oz/A is allowed where nutsedge has emerged or regrown. Follow the same procedures as first application. The potential for injury to desirable broadleaf and grass plants is increased with a second application.</li> <li>• <i>Water quality advisory.</i></li> </ul>					

**Table 5.82 - Comments on Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

Trade Name	Common Name	Application Timing	Product/A	lb ai/A	Apply in Liquid Fertilizer as a Carrier (yes/no)
Prowl H2O 3.8AS	pendimethalin	established POST (fall, winter, spring) between cuttings	1.1–4.2 qt	1-4	yes

- Prowl H2O will not control any weeds that have already emerged at the time of application.
- Provides 1 to 2 months of residual control of most annual grass weeds and a few broadleaf weeds as they germinate (refer to label for weeds controlled).
- An early April application may be required to control annual grasses such as foxtails (annual species only), jointhead arthraxon, crabgrass, and others as well as suppression of Japanese stiltgrass
- Applications may be made in fall after last cutting/grazing, in winter, spring, or between cuttings (but before weed emergence).
- Apply to solid (established) stands of perennial forage grasses with a minimum of 6 tillers.
- Apply by ground in a minimum of 10 gal/A or by air in a minimum of 5 gal/A of water or liquid fertilizer.
- Adequate rainfall or overhead irrigation is required to activate Prowl H2O.
- Multiple applications are allowed, however maximum use rate of Prowl H2O is 4.2 qt/A/year with 30 days between sequential applications.
- Adverse environmental conditions or weak stands of grass may cause temporarily injury.
- Do not apply to mixed stands with forage legumes other than alfalfa.
- Rotational restrictions are based on Prowl rate used, precipitation, and application timing; see label.

Remedy Ultra 4L	triclopyr	Established-POST	0.5-4 pt	0.25–2.0 ae	yes
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- Remedy Ultra provides postemergence control and 1 to 2 months of soil residual control of many annual, biennial, and perennial weeds as well as many woody plants.
- Apply to actively growing weeds or brush by ground in a minimum of 10 gal/A or by air in a minimum of 2 gal/A (non-woody broadleaf weeds) or 4 gal/A (woody plants) of water or liquid fertilizer.
- Do not use liquid fertilizer as the carrier when treating woody plants (brush).
- For brush control, high-volume foliar applications (100–200 gal/A), basal methods, and cut stump methods are allowed; consult herbicide label for details.
- Biennial or winter annual weeds are most susceptible while in the rosette stage.
- For best results treat blackberry during or after bloom.
- Some hard-to-control woody species may require retreatment.
- Apply only to grasses with well-established root systems that are tillering.
- Forage grasses can be overseeded 21 days after application.
- Other crops can be planted the next season after application.
- *Water Quality Advisory.*

**Table 5.82 - Comments on Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

Trade Name	Common Name	Application Timing	Product/A	lb ai/A	Apply in Liquid Fertilizer as a Carrier (yes/no)
Roundup 3S or Roundup WeatherMax 4.5S	glyphosate	Spot treatment	2.5 fl oz/gal	2% v/v solution	no
<ul style="list-style-type: none"> <li>• Glyphosate controls emerged weeds only (no residual activity).</li> <li>• Make applications with hand-held equipment or wiper applicators. Avoid contact with desirable vegetation. Consult the herbicide label for specific wiper applicator recommendations.</li> <li>• At rates up to 2 qt/A, any portion up to the entire field may be treated. For rates above 2 qt/A, apply only to weed-infested areas of the field, and do not treat more than one-tenth of the total area at any one time.</li> <li>• Subsequent applications to the same areas can be made at 30-day intervals.</li> <li>• Refer to weed rate tables of the herbicide label for the recommended herbicide concentration.</li> <li>• For spot treatment, apply on a spray-to-wet basis (1 gal/1,000 ft<sup>2</sup>) to provide thorough coverage. Do not spray to the point of runoff.</li> <li>• There are no overseeding restrictions for spot treatment with glyphosate.</li> </ul>					
Sharpen 2.85SC	saflufenacil	Established-dormant Established-POST	1–2 fl oz	0.022–0.044	yes
<ul style="list-style-type: none"> <li>• Sharpen has a relatively narrow spectrum of weed control and is primarily used for control of winter or summer annual broadleaf weeds up to 6 inches tall. It primarily controls emerged weeds but has some very short (1-2 weeks at the labeled rates) residual activity.</li> <li>• Apply by ground in a minimum of 5 gal/A water or 20 gal/A liquid fertilizer, or by air in a minimum of 3 gal/A water.</li> <li>• Make dormant applications in the fall, during the winter, or in early spring before green-up.</li> <li>• Make in-season applications before weeds reach the maximum size (usually 3-6 inches) listed on the weed table of the label.</li> <li>• Sharpen may cause transitory injury to forage grasses.</li> <li>• There are no replant restrictions for forage grasses, small grains, or sorghum at the 2 fl oz/A rate.</li> <li>• For other crops, rotation restrictions are up to 5 months at the 2 fl oz/A rate; see label.</li> <li>• <i>Water Quality Advisory</i></li> </ul>					

**Table 5.82 - Comments on Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

Trade Name	Common Name	Application Timing	Product/A	lb ai/A	Apply in Liquid Fertilizer as a Carrier (yes/no)
		Established-POST	10–20 lb	2–4	
<b>Spike 20P</b>	<b>tebuthiuron</b>	Individual plant	0.4–0.7 oz/100 sq ft	2–4	n/a

- Spike 20P is a pelleted formulation for control of woody plants (trees, shrubs, etc) and vines.
- Apply by hand evenly over the area occupied by individual plants, multistem clumps, or small stands of woody vegetation.
- For multiflora rose control, apply Spike in early spring after ground thaw and before multiflora rose growth.
- Requires rainfall to move herbicide to root zone.
- Make only one application per year.
- Desirable grasses or legumes in the treated area may be injured or killed. Dormant season application is recommended to minimize herbicidal activity on forage grasses.
- For best results, do not disturb treated plants by wood cutting or removal for 2 years after application.
- Poor or erratic results are likely to occur in soils containing more than 5% organic matter or more than 30% clay, and in areas where woody plants are rooted directly in a shallow water table.
- Spike can persist in the soil for several years, and should therefore only be used on land dedicated to long-term grass forage production unless severe herbicide injury to legumes, row crops, shrubs, or trees can be tolerated in treated areas for several years. A field bioassay is required before planting sensitive crops.
- Do not apply Spike 20P in the vicinity of desirable plants. Exposure of even a small part of a plant root system to Spike may cause severe plant injury or death. Treatment setback distance from desirable plants should be one to two times the height or width of adjacent non-target vegetation, whichever is greater. Avoid applications on slopes where surface or ground water flow toward desirable vegetation.
- Do not apply more than 10 lb/A on "vulnerable sites" as described on the herbicide label under "Use Restrictions for Groundwater Protection." Do not apply in areas where the water table is predominately shallow (5 feet or less), to interior ditch banks, or to ditches used to transport irrigation water or potable water. Do not apply within areas identified by state or local authorities as protected groundwater recharge zones.
- *Water quality advisory.*

		Established-POST	0.66–1.3 pt	0.25–0.50 ae	
<b>Stinger 3S</b>	<b>clopyralid</b>	Spot treatment	0.13–0.5 fl oz/ gal	0.1%–0.4% v/v solution	no

- Stinger provides postemergence control and 1 to 3 months of soil residual control of some annual, biennial, and perennial broadleaf weeds, but is primarily used for Canada thistle control.
- Apply to actively growing weeds by ground in a minimum of 10 gal/A of water. Do not apply by aircraft.
- For Canada thistle, apply in rosette stage or after thistle is at least 4 inches tall, but before the bud stage.
- Multiple treatments are allowed as long as all treatments do not exceed 1.33 pt/A during a growing season.
- Apply only to actively growing well-established grasses that are tillering and have developed secondary roots.
- The Stinger label has restrictions concerning the use and management of plant residues (hay, straw, mulch, compost) and manure that may contain herbicide residues. Follow the label recommendations carefully.
- There are no overseeding restrictions for forage grasses, small grains, or field corn.
- Most broadleaf crops can be planted 10.5–18 months after application; see label.
- Spot treatment with Stinger is primarily for Canada thistle control. Refer to weed rate table of the herbicide label and apply the recommended concentration on a spray-to-wet basis (1 gal/1,000 ft<sup>2</sup>) to provide thorough coverage. Do not spray to the point of runoff.
- *Water quality advisory.*

**Table 5.82 - Comments on Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

Trade Name	Common Name	Application Timing	Product/A	lb ai/A	Apply in Liquid Fertilizer as a Carrier (yes/no)
Surmount 1.33L (VA, WV only)	picloram + fluroxypyr		3-6 pt		
		Established-POST		0.25-0.5 +	
		Spot treatment	0.6-1.1 fl oz/ gal	0.25-0.5 0.5%-0.85% v/v solution	yes

- Surmount provides postemergence control and 2 to 3 months of soil residual control of many annual, biennial, and perennial weed species **in permanent grass pasture**. It may provide improved control of hemp dogbane, milkweed, dewberry, or sumac species over Grazon P+D.
- The distribution of Surmount may be further restricted within Virginia and West Virginia due to the picloram content of the product and sensitivity of certain broadleaf crops.
- Apply to grasses that are well established as indicated by tillering, development of secondary root system, and vigorous growth.
- Apply by ground in a minimum of 10 gal/A or by air in a minimum of 5 gal/A of water, an oil-water emulsion, or liquid fertilizer.
- High-volume foliar applications for brush control (100 gal/A) are allowed; consult herbicide label for details.
- Cool-season grasses can be seeded a minimum of 21 days after application.
- Do not rotate to any crop within 1 year following treatment other than range or pasture grasses, grasses for hay or silage, barley, oats, rye, or grain sorghum. Thereafter, other crops may be planted after an adequately sensitive field bioassay shows that the risk of crop injury is within acceptable limits.
- The Surmount label has restrictions concerning the use and management of plant residues (hay, straw, mulch, compost) and manure that may contain picloram residues. Be certain you understand and are able to follow these label restrictions before using this product.
- Spot treatment with hand-held sprayers should be applied at a rate equivalent to a broadcast application. Refer to weed rate table of the herbicide label and apply the recommended concentration on a spray-to-wet basis (1 gal/1,000 ft<sup>2</sup>) to provide thorough coverage. Do not spray to the point of runoff.
- Make applications at least 7 days before a killing frost.
- *Water quality advisory.*
- *Restricted-use pesticide.*



**Table 5.82 - Comments on Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

Trade Name	Common Name	Application Timing	Product/A	lb ai/A	Apply in Liquid Fertilizer as a Carrier (yes/no)
		Seedling-POST	0.5–2 pt	0.06–0.25 +	
		Established-POST	1–4 pt	0.18–0.72	
				0.125–0.5 +	
		Spot treatment	0.4–1.6 fl oz/ gal	0.36–1.4	
<b>Weedmaster 3.87L</b>	<b>dicamba + 2,4-D</b>			<b>0.3%–1.25% v/v solution</b>	<b>yes</b>

- For broadcast applications, apply by ground in 5–40 gal/A of water or liquid fertilizer or by air in 3–10 gal/A of water.
- For brush control, foliar and basal applications in oil and water emulsions and cut surface applications are allowed; consult herbicide label for details.
- Applications to newly seeded areas should not exceed 2 pt/A and should only be applied to actively growing unstressed grasses that have attained the 3- to 4-leaf stage and have reached a minimum height of 6 inches.
- Multiple applications are allowed on established grasses as long as all treatments do not exceed 8 pt/A during a growing season.
- Do not make applications when the temperature is expected to exceed 80°F that day, as drift is more likely to occur.
- Forage grasses and small grains can be overseeded after 10 days per pint of Weedmaster applied.
- Legumes and other broadleaf crops may be planted 4 months after application.
- Make spot applications with hand-held equipment. Refer to weed rate tables of the herbicide label and apply the recommended concentration on a spray-to-wet basis (1 gal/1,000 ft<sup>2</sup>) to provide thorough coverage. Do not spray to the point of runoff. Do not make spot treatments in addition to broadcast treatments.
- Weedmaster is effective on many woody species as a spot spray at the higher rates.
- Add a surfactant at 0.5% v/v for improved control.
- *Water quality advisory.*

**Table 5.83 - Adjuvants and Rainfastness for Postemergence Herbicides Used in Grass Pasture, Hay, and CRP Grassland**

Adjuvants are products included in the spray tank to improve the performance of herbicides. These include non-ionic surfactant (NIS), crop oil concentrate (COC), methylated seed oil (MSO), or nitrogen solutions. In general, NIS should contain at least 80% active ingredient, and COC should contain at least 15% emulsifier. Nitrogen solutions can be 28, 30, or 32% ammonium-based fertilizer solutions; ammonium sulfate should be spray-grade dry ammonium sulfate (21-0-0). Crop injury can occur with the use of adjuvants. Adding additional adjuvants than what is labeled can increase the chance or severity of crop injury. Following are recommended adjuvants for broadcast postemergence applications; refer to herbicide labels for adjuvant recommendations with other application types.

Rainfastness is number of hours needed between time of application and rainfall or irrigation to ensure sufficient absorption in the plant.

Trade Name	Adjuvant(s)	Rate	Apply in Liquid Fertilizer as a Carrier	Rainfastness (hours)		
2,4-D amine 3.8L	none recommended <sup>2</sup> or nonionic surfactant <sup>3</sup> or crop oil concentrate <sup>3</sup>	1 qt/100 gal 1-2 qt/A	yes	1		
	none recommended <sup>2</sup> or nonionic surfactant <sup>3</sup> or crop oil concentrate <sup>3</sup>	1 qt/100 gal 1-2 qt/A	yes	1		
Aim 2EC	nonionic surfactant or crop oil concentrate or methylated seed oil	1 qt/100 gal 1 gal/100 gal 1 gal/100 gal	yes	not specified		
	plus nitrogen solution or ammonium sulfate (optional)	2-4 gal/100 gal 2-4 lb/A				
	nonionic surfactant or methylated seed oil	1 qt/100 gal 1.5-2 pt/A			N/A	1
	crop oil concentrate or methylated seed oil or nonionic surfactant	1 gal/100 gal 0.5-1 gal/100 gal 1 qt/100 gal			yes	not specified
Chaparral 71.6WG <sup>1</sup>	plus nitrogen solution or ammonium sulfate (optional)	2 qt/A 2 lb/A	yes	not specified		
	nonionic surfactant or crop oil concentrate	1-2 pt/100 gal 1 qt/A			yes	4
	plus nitrogen solution or ammonium sulfate (optional)	2-4 qt/A 2.5 lb/A				
Crossbow 3L	none recommended		yes	not specified		
DuraCor SC	methylated seed oil	1 % v/v	yes	2		
	non-ionic surfactant	0.25-0.5 v/v				

**Table 5.83 - Adjuvants and Rainfastness for Postemergence Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

Trade Name	Adjuvant(s)	Rate	Apply in Liquid Fertilizer as a Carrier	Rainfastness (hours)
Facet 1.5L	crop oil concentrate or	2 pt/A	no	6
	methylated seed oil	1–2 pt/A		
	plus nitrogen solution or ammonium sulfate (optional)	2–4 qt/A 8.5 lb/100 gal		
Glyphosate preplant or spot treatment	varies by product, check label	see label	no	1-6
	ammonium sulfate (optional)	8.5–17 lb/100gal		
Gramoxone 2SL	nonionic surfactant or	1 qt/100 gal	no	0.5
	crop oil concentrate	1 gal/100 gal		
GrazonNext HL 3.74E	nonionic surfactant	1–2 qt/100 gal	yes	not specified
Grazon P+D 2.54SL	nonionic surfactant <sup>2</sup>	1 qt/100 gal	yes	not specified
MCPA 3.7L	none recommended		yes	not specified
Metsulfuron 60DF	nonionic surfactant or	1–2 qt/100 gal	yes	4
	nonionic surfactant (on fescue)	0.5-1 pt/100 gal		
	nonionic surfactant (on timothy)	0.5 pt/100 gal		
Milestone 2L	nonionic surfactant	1–2 qt/100 gal	yes	not specified
	nonionic surfactant <sup>4</sup> or nitrogen solution <sup>4</sup>	1–2 qt/100 gal 1–2 qt/100 gal	not recommended	not specified
Permit/Sandea 75DF	non-ionic surfactant	1–2 qt/100 gal	no	4
Prowl H2O 3.8AS	none recommended		yes	not applicable
Remedy Ultra 4L	nonionic surfactant <sup>2</sup>	1 qt/100 gal	yes	not specified
Sharpen 2.85SC	methylated seed oil	1 gal/100 gal	yes	1
	plus ammonium sulfate (dormant only)	8.5–17 lb/100 gal		
Stinger 3S	not recommended <sup>5</sup>		no	6
Surmount 1.33L	nonionic surfactant <sup>3</sup> or	1–2 qt/100 gal	yes	not specified
	nitrogen solution <sup>3</sup>	1–2 qt/100 gal		
Weedmaster 3.87L	nonionic surfactant	2–4 pt/100 gal	yes	4
	plus nitrogen solution (optional)	2–4 qt/A		

<sup>1</sup> See fescue precautions on herbicide label for specific adjuvant recommendations.

<sup>2</sup> An adjuvant is allowed in water dilutions to provide improved wetting of the foliage, but not required.

<sup>3</sup> An adjuvant is recommended for control of woody plants only.

<sup>4</sup> An adjuvant is allowed for improved weed or woody plant control, especially when plants are drought-stressed.

<sup>5</sup> The label states that the addition of adjuvants is not usually necessary and that "adding a surfactant to the spray mixture may increase effectiveness on weeds but may reduce selectivity to the crop, particularly under situations of plant stress."

**Table 5.84 - Grazing, Harvest, Haying, and Slaughter Restrictions for Herbicides Used in Grass Pasture, Hay, and CRP Grassland**

A – (dash) means interval not specified on the label.

Trade Name	Type of Animal	Interval between Application and Grazing	Interval between Application and Green Harvest <sup>1</sup>	Interval between Application and Haying	Comments
2,4-D amine or 2,4-D LVE	Lactating dairy Other livestock	7 days 0	– <sup>2</sup> –	7 days 7 days	Remove meat animals from treated area 3 days before slaughter. 2,4-D labels vary. See specific label of product used.
Aim (carfentrazone)	All	0	0	0	Slaughter restrictions are not mentioned on label.
Chaparral (aminopyralid + metsulfuron)	All	0	–	0	No slaughter restrictions.
Cimarron Plus (metsulfuron + chlorsulfuron)	All	0	0	0	Be cautious of crop rotation restrictions. See label for details.
Clarity	Lactating dairy	7 days if < 1 pt	–	37 days if < 1 pt	Remove meat animals from treated areas 30 days prior to slaughter.
		21 days if 1-2 pt	–	51 days if 1-2 pt	
	Other livestock	40 days if 2-4 pt 0	–	70 days if 2-4 pt 7	
Crossbow (2,4-D + triclopyr)	Lactating dairy	14 days (< 2 gal)	14 days	Next season (dried hay)	Remove meat animals from treated areas or dried hay 3 days prior to slaughter.
	Other livestock	0	0	7 days	
DuraCor SC (aminopyralid + florpyrauxifen- benzyl)	All	0 days (allow 14 days for optimal herbicide efficacy)	18 months	14 days	Do not move hay or silage made from grass treated with DuraCor within the preceding 18 months off farm unless allowed by supplemental labeling.
Facet L (quinclorac)	All	0	–	7 days	No slaughter restrictions on the label
GrazonNext HL (aminopyralid + 2,4-D)	All	0	–	7	Do not transfer grazing animals for 3 days from treated areas to areas with Milestone sensitive-species. Do not spread manure to areas where sensitive-species are or will be grown.

**Table 5.84 - Grazing, Harvest, Haying, and Slaughter Restrictions for Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

A – (dash) means interval not specified on the label.

Trade Name	Type of Animal	Interval between Application and Grazing	Interval between Application and Green Harvest <sup>1</sup>	Interval between Application and Haying	Comments
Grazon P+D (picloram + 2,4-D)	Lactating dairy	7 days	–	30 days	Remove meat animals from treated area 3 days before slaughter.
	Other livestock	0	–	30 days	
Metsulfuron	All	0	0	0	Do not seed to other crops for 1 or more years. See label for restrictions.
Milestone (aminopyralid)	All	0	0	0	Do not transfer grazing animals for 3 days from treated areas to areas with Milestone-sensitive species. Do not spread manure to areas where sensitive-species are or will be grown.
PastureGard HL (triclopyr + fluroxypyr)	Lactating dairy <sup>3</sup>	0	0	14 days	Remove meat animals from treated areas at least 3 days before slaughter.
	Other livestock	0	0		
Permit/Sandea (halosulfuron)	All	0	37	37	0-day preslaughter interval
Prowl H2O (pendimethalin)	All	0	0	0	Mixed stand alfalfa/cool-season forage grasses may be grazed or harvested for forage or hay 14 or more days after applying Prowl H2O.
Remedy Ultra (triclopyr)	Lactating dairy	next season	next season	14 days	Remove meat animals from treated areas at least 3 days before slaughter.
	Other livestock	0	0		
Roundup/ glyphosate	All	Spot-7 days	Spot-7 days	Spot-7 days	Use as spot treatment. Do not treat more than one-tenth of any acre. Leaves no soil residue.
		Renovate-56 days	Renovate-56 days	Renovate-56 days	
Sharpen (saflufenacil)	All	0	0	28	No slaughter restrictions on the label.
Spike (tebuthiuron)	All	< 20 lb/A	–	One year	Leaves soil residue up to 2 years.
Stinger (clopyralid)	All	0	0	0	Do not use hay or straw from treated areas for compost or mulch on susceptible broadleaved crops.
Surmount (picloram + fluroxypyr)	Lactating dairy	14	14	14	Remove meat animals from treated areas at least 3 days before slaughter.
	Other livestock	0	0	0	

**Table 5.84 - Grazing, Harvest, Haying, and Slaughter Restrictions for Herbicides Used in Grass Pasture, Hay, and CRP Grassland (cont.)**

A – (dash) means interval not specified on the label.

Trade Name	Type of Animal	Interval between Application and Grazing	Interval between Application and Green Harvest <sup>1</sup>	Interval between Application and Haying	Comments
Weedmaster	Lactating Dairy	7	37	37	Remove meat animals from treated areas 30 days prior to slaughter.
(dicamba + 2,4-D)	Other livestock	0	37	37	

<sup>1</sup> Green harvest includes harvest for silage, green-chop, or haylage.<sup>2</sup> — = interval not specified on the label.<sup>3</sup> Consult product supplemental label for restrictions on lactating dairy animals.**Table 5.85 - Herbicides Labeled for Use in Conservation Reserve Program (CRP) acres**

This table contains a list of herbicides that are available for use on Conservation Reserve Program (CRP) acres seeded to grasses or legumes. Many products labeled for use on grass forage have the same label requirements for CRP grasses. These uses are listed in the first column of the table, and the grass forage section of this guide also applies to use on CRP acres. Some products labeled for use on grass or legume forage can be used on CRP acres but have specific label recommendations or supplemental labels for CRP acres (columns 2 & 4). Other products are not labeled for use on forages grown in Delaware, but allow their use on CRP acres (columns 3 & 5). When choosing products for CRP acres, it is very important to consult the herbicide labels to determine non-target plant, environmental, and human risks, grass or legume species tolerance, weed species susceptibility, use rates, rotational crop or overseeding restrictions, and adjuvant requirements.

Trade Name	CRP Grass Same as Forage (use guide)	Specific CRP Grass Section (see label)	Labeled for CRP Grass, not Forage (see label)	Specific CRP Legume Section (see label)	Labeled for CRP Legume, not Forage (see label)	Native Warm-Season Grasses
2,4-D amine/ester	POST					POST
2,4-DB / Butyrac 200			POST	POST		
Aim	POST					POST
Chaparral <sup>3</sup>	POST					
Cimarron Max		POST				POST
Cimarron Plus		POST				
Clarity/dicamba		POST				POST
Crossbow	POST					POST
DuraCor	POST					POST
Escort	POST	POST				POST
Facet	POST					PRE or POST

**Table 5.85 - Herbicides Labeled for Use in Conservation Reserve Program (CRP) acres (cont.)**

Herbicide	CRP Grass Same as Forage (use guide)	Specific CRP Grass Section (see label)	Labeled for CRP Grass, not Forage (see label)	Specific CRP Legume Section (see label)	Labeled for CRP Legume, not Forage (see label)	Native Warm-Season Grasses
Glyphosate		preplant, renovation, or dormant POST		preplant or renovation		Renovation or spot application
Gramoxone SL		preplant		preplant		
GrazonNext HL <sup>3</sup>	POST					POST
Grazon P+D <sup>4</sup>	POST					POST
Huskie	POST					
Journey			preplant <sup>1</sup>		preplant	
Kerb			POST			
MCPA		POST		POST		
Metsulfuron	POST <sup>2</sup>					
Milestone <sup>3</sup>	POST					
Outrider						PRE or POST
PastureGard		POST				
Plateau			PRE <sup>1</sup> or POST <sup>1</sup>		PRE or POST	PRE or POST
Permit/Sandea	POST					
Poast				POST		
Prowl EC / pendimethalin					PPI or PRE	
Pursuit			POST	POST		
Remedy Ultra	POST					POST
Starane Ultra			POST			POST
Stinger		POST				
Telar XP			POST			
Weedmaster		POST				

<sup>1</sup> Primarily for use on warm-season grasses.

<sup>2</sup> Not on all metsulfuron labels.

<sup>3</sup> For Pennsylvania, Virginia, and West Virginia only.

<sup>4</sup> For Virginia and West Virginia only.

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**Table 5.86 - Herbicides Labeled for Summer Annual Grass Crops**

Weed management in summer annual grasses begins with a clean seedbed obtained by either tillage close to planting or preplant herbicides such as glyphosate. Use fields with fewer perennial and annual grass weeds. Successful establishment begins with properly amended soils (pH and fertility) and appropriate seeding rate, depth, and equipment. When moisture is adequate, annual forage grasses emerge and grow quickly and compete well with weeds. There is often no need for additional weed control. Chemical weed control may be warranted when establishment is slow, weed populations are high, potentially toxic weeds are present, or high-quality (weed-free) hay or forage is desired. Herbicide options are limited. 2,4-D and dicamba herbicides are labeled for use in annual grass forages. However, **2,4-D and dicamba herbicides are not recommended in many areas during the hot summer months** due to potential injury to sensitive plants with physical or vapor drift. Pay particular attention to rotational crop restrictions; consult labels for crops not listed. Check labels for weeds controlled. The listed postemergence herbicides typically control only small annual broadleaf weeds, so check labels for maximum weed size or growth stage.

Herbicide	Labeled Annual Grasses	Timing/ <sup>1/</sup> Weed Type	Use Rate per Acre	Crop Stage	Season Maximum Rate	Grazing/ Harvest Interval	Rotation to Grasses (months)	Rotation to Small Grains (months)	Rotation to Alfalfa/ Clover (months)
2,4-D	forage sorghum, sorghum-sudan hybrid	POST/ broadleaf	0.5–2.1 pt	At least 6 leaves and 5 to 10 inches tall	2.1 pt (1 appl.)	30 days	1	After harvest	After harvest
Aim <sup>2</sup>	teff, crabgrass	POST / broadleaf	0.5–2.0 fl oz	any	5.9 fl oz (3 appls.)	0	0	0	12/12
Aim <sup>2</sup>	millet	POST / broadleaf	0.5–2.0 fl oz	up to jointing	2.0 fl oz	7 days	0	0	12/12
Aim <sup>2</sup>	forage sorghum	POST / broadleaf	0.5–1.0 fl oz	up to 6 leaf	1 fl oz	after 6 leaf	0	0	12/12
Atrazine <sup>2</sup> 4L	forage sorghum, sor-sudan hybrid	PPI, Pre, POST / broadleaf	3.2–4.0 pt (see label for details)	up to 12 inches	5 pt	PPI/Pre =60 day POST = 45 days	second year	next year to second year <sup>2</sup>	second year
Basagran <sup>2</sup>	forage sorghum	POST / broadleaf	1.0–2.0 pt	before heading	2 pt	12 days	0	0	0
Callisto <sup>2</sup>	pearl millet	Pre / broadleaf	up to 6.0 fl oz	n/a	6.0 fl oz (1 appl.)	n/a	18	4	10/18
dicamba	forage sorghum, sudan-grass	POST/ broadleaf	8–32 fl oz	At least 3 leaves	64 fl oz	7 days	1	0.5-1.5 (see label)	4
Dual II Magnum <sup>4,5</sup>	forage sorghum	Pre / grass	1.0 to 1.67 pt <sup>5</sup>	n/a	1 applic.	n/a	next spring	4.5	4/9



**Table 5.87 - Optimum Time of Year for Foliar Application of Systemic Herbicides to Selected Weeds**

These timings are based on adequate soil moisture and climate of the Eastern Shore area. Across the Mid-Atlantic region (north to south or east to west) these timings could vary by 1 to 3 weeks either way. Consult this table for general guidelines but herbicide labels for specific application information.

Winter annual weeds should be treated in late fall to spring. Summer annual weeds should be treated in early to late summer soon after emergence. Biennial weeds should be treated in the fall or early-spring while in the seedling or rosette stages or in the early spring prior to bolting. Herbaceous and woody perennial weeds can vary significantly by species for when best to apply herbicides. In general, apply systemic herbicides to perennials is when the source/sink movement of sugars is towards the underground structures, typically optimized when the perennial is in early bloom stage or in the fall when temperature begin to cool. Applications of these herbicides made in earlier growth stages, when movement is upward from underground structures to shoots and foliage, provides only control of top growth, with essentially no effect on the perennial structures. The addition of mechanical weed control techniques can substantially improve herbicide efficacy on perennials. Mowing or clipping the weed one or more times causes significant reductions in underground food reserves because the plant is forced to produce new top growth. When the weed reaches the early bloom stage following clipping, relatively less of the systemic herbicide is required to produce a lethal concentration in the depleted perennial structure.

	Do not apply									
	Less than optimal but potentially effective depending on your specific geography and weather									
	Optimal timing of application									
Weeds	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
Winter annual weeds (chickweed, henbit, horseweed, etc.)	■	■	■							■
Summer annual weeds (fleabane, pigweed, ragweed, perilla mint, etc.)			■	■	■	■	■	■		
Spiny pigweed			■	■	■	■	■	■		■
Biennial weeds (burdock, wild carrot, poison hemlock, bull thistle, spotted knapweed, etc.)	■	■	■							■
Musk thistle	■	■	■							■
<b>Herbaceous Perennials</b>										
Buttercup, ssp., plantains		■	■	■				■	■	■
Dandelion	■	■	■	■					■	■
Dock spp.	■	■	■	■					■	■
Dogfennel			■	■	■	■	■	■		
Garlic, Wild	■	■	■	■						■
Horsenettle, Carolina					■	■	■	■	■	
Dogbane, Hemp					■	■	■	■	■	
Milkweed, common					■	■	■	■	■	
Pokeweed	■	■			■	■	■	■	■	
Star-of-Bethlehem	■	■			■	■	■	■	■	
Thistle, Canada			■	■	■				■	■
<b>Woody Perennials</b>										
Barberry, Japanese			■	■	■			■	■	■
Brambles ( <i>Rubus</i> spp.)			■	■	■			■	■	■
Olive, Autumn			■	■	■			■	■	■
Rose, Multiflora			■	■	■	■	■	■	■	■
Sumac			■	■	■	■	■	■	■	■

Table 5.86 - Herbicides Labeled for Summer Annual Grass Crops (cont.)

Herbicide	Labeled Annual Grasses	Timing <sup>1/</sup> Weed Type	Use Rate per Acre	Crop Stage	Season Maximum Rate	Grazing/ Harvest Interval	Rotation to Grasses (months)	Rotation to Small Grains (months)	Rotation to Alfalfa/ Clover (months)
Huskie <sup>2</sup>	forage sorghum	POST / broadleaf	12.8–16 fl oz	3-lf but prior to flag leaf or 30 inches.	32 fl oz	7/7	1 (9 for timothy)	1 week	4/bioassay
Maestro 2EC (Buctril) (for 4EC formulation reduce rates by half) <sup>4</sup>	forage sorghum, sudan-grass, sor-sudan hybrid	POST / broadleaf	1 pt/ 1.5 pt	3-lf but prior to pre-boot/ 4-lf but prior to pre-boot	2 pt	45 days	1	1	1
Permit/ Sandea <sup>2</sup>	pearl millet	POST / broadleaf & nutsedge	0.5–0.67 oz	2 lf but prior to head	0.67 oz	0/ forage 37 hay	2	2	9
Permit/ Sandea <sup>2</sup>	sorghum	POST / broadleaf & nutsedge	0.67–1.0 oz	2 lf but prior to head	1.0 oz	30/30	2	2	9
Yukon	sorghum, proso millet	POST/ broadleaf and nutsedge	3–6 oz	3- to 5-leaf	6 oz (1 appl.)	0/0; 30/30	2	2	9

<sup>1</sup> Abbreviations: appl, application; POST, postemergence; PPI, preplant incorporated, PRE, preemergence.

<sup>2</sup> Check label for adjuvant recommendations.

<sup>3</sup> Next year if applied before June 10; second year if applied after June 10.

<sup>4</sup> No adjuvant recommended.

<sup>5</sup> Requires the use of Concep-treated seed.

<sup>6</sup> Coarse soils 1.0 to 1.33 pt; medium soils 1.33 to 1.5 pt; fine soils 1.33 to 1.67 pt.

**Table 5.88 - Accurate Herbicide Volume and Weight Measurements for Small Volume Applications**

Common conversion factors							
Liquid Products	Quart (qt)	Pint (pt)	Cup	Fluid Ounces (fl oz)	Tablespoon (Tbspn)	Teaspoon (tsp)	Milliliter (ml)
1 gallon	4	8	16	128	256	768	3785
1 quart	—	2	4	32	64	192	946
1 pint	—	—	2	16	32	96	473
1 cup	—	—	—	8	16	48	237
1 fl oz	—	—	—	—	2	6	29.57
1 tbsp	—	—	—	—	—	3	14.8
1 tsp	—	—	—	—	—	—	4.9
Dry Products:							
1 pound (lb) = 16 oz-wt = 453.6 grams (gr)							
1 oz wt = 28.35 grams (gr)							

Spot-spray, wiper bar, or other small-area applications often require preparation of a small volume of spray solution. Backpack sprayers usually have a 1- to 3-gallon capacity. Spray concentrations for liquid herbicide formulations can be as low as 0.05 fl oz (1.5 ml) per gallon, and concentrations for dry herbicide formulations as low as 0.01 oz wt (0.28 gr) per gallon. Inaccurate measurement of these very small concentrations can cause large deviations above or below the intended application rate, resulting in possible crop damage, carryover, or poor weed control. For example, when measuring a pint of liquid herbicide, a deviation of 0.5 ml, which is equivalent to 6 drops from a dropper, would result in a negligible increase or decrease of 0.1% from the intended rate. However, the same 6 drop deviation when measuring 1.5 ml of a liquid herbicide would result in an unacceptable rate increase or decrease of 33%.

Most liquid measuring devices intended for use with agricultural products are good for measuring large volumes (pints, quarts, gallons), but they are usually not accurate below a volume of 10 fl oz (296 ml). Two types of measuring devices are available for low volumes that are accurate and easy to use. Graduated cylinders are tall, narrow cylinders with milliliter graduations along the outside of the tube. They are available in durable polypropylene material that can be washed and reused. They are available in sizes ranging from 10 ml (0.34 fl oz) with 0.2-ml increments to 4,000 ml (1.06 gal) with 50-ml increments. Pouring liquid herbicides into small graduated cylinders from large containers can be difficult. Disposable syringes are probably the cleanest and most accurate way to measure small volumes of liquid herbicide. Although they are termed disposable, they can be easily dismantled, washed, and reused several times. Buy syringes without the needles if possible, or remove and dispose of needles before use to avoid possible injury or exposure to the herbicide through a skin puncture. A syringe is essential for measuring volumes of less than 0.17 fl oz (5 ml) and can be purchased in sizes ranging from 3 ml with 0.1-ml increments up to 60 ml with 1-ml increments. A good arrangement of measuring devices to have for medium- to small-volume measurements includes a 250-ml graduated cylinder with 2-ml graduations, and 3-ml, 10-ml, and 60-ml syringes.

For dry products, postal scales measuring to 0.1 oz wt are adequate for weights above 1 oz wt (28.4 gr). A gram scale accurate to 1/100 of a gram (0.01 gr) should be used for measuring weights of less than 1 oz wt. Converting products measured by mass (oz wt or grams) into volume (teaspoons, tablespoons, or milliliters) is not practical because of the variability in the density (weight per given volume) of individual products. If sufficiently accurate weighing devices are not available, dry products requiring low concentrations should not be used for small-volume applications.

**Table 5.89 - Herbicides Labeled for Farmstead Use**

This table lists several herbicides available for use in farmstead areas. Farmstead areas may include areas around buildings (storage buildings, poultry houses, greenhouses, etc.), non-grazed fencerows, non-irrigation ditch banks, unpaved lanes, or other non-cropped agricultural areas where selective weed control or bare ground is desired. Some herbicide labels allow grazing or haying of treated areas within or around these sites, others do not. Many of these herbicides are toxic to desirable plants when spray particles contact either above-ground plant parts, bare roots, and/or the soil where plant roots have penetrated. Most of these products should not be used on impervious surfaces such as paved or highly compacted areas. Runoff from treated impervious surfaces or transport of treated soils by erosion can severely injure or kill susceptible non-target plants. Do not apply these products directly to water, and exercise caution when using these products near irrigation or domestic water supplies. Many of these products are not recommended for use on highly permeable soils and/or soils with groundwater near the soil surface. Read herbicide labels carefully to determine allowed uses, environmental risks, human risks, desirable plant species tolerance, weed species susceptibility, application types, use rates, adjuvant requirements, and specific grazing or haying restrictions.

Trade Name	Components (ai or ae/gal or lb)	Soil Residual <sup>1</sup> (yes/no)	Grass Control	Broadleaf Control	Woody Plant and Vine Control	Grazing Restriction (days)	Haying Restriction (days)
2,4-D (various formulations)	(varies) 2,4-D	no	no	yes	few	0-7	7
Arsenal 2AS	2 lb imazapyr	yes	yes	yes	yes	0	7
Cimarron Max CoPack	Part A (dry) 0.6 lb metsulfuron Part B (liquid) 1 lb dicamba 2.87 lb 2,4-D	yes	no	yes	several	0-7	37
Cimarron Plus 63WG	0.48 lb metsulfuron 0.15 lb chlorsulfuron	yes	no	yes	several	0	0
Crossbow 3L	2 lb 2,4-D 1 lb triclopyr	limited	no	yes	several	0-NS <sup>2</sup>	14
dicamba	4 lb dicamba	no	no	yes	several	0-40	0-70
Escort / Metsulfuron <sup>3</sup> 60WG	0.6 lb metsulfuron	yes	no	yes	few	0	0
EsplAnade 200SC	1.67 lb indaziflam	yes	yes	yes	no	do not	do not
Glyphosate (various formulations)	(varies) glyphosate	no	yes	yes	several	0-56	0-56
Karmex80DF / Direx 4L	0.8 lb diuron	yes	yes	yes	no	not specified	not specified
PastureGard HL 4L	3 lb triclopyr 1 lb fluroxypyr	limited	no	yes	several	0-NS <sup>2</sup>	14
Payload 51WG	0.51 lb flumioxazin	yes	yes	yes	no	do not	do not
Pramitol 25E	2 lb prometon	yes	yes	yes	no	not specified	not specified
Prowl3.3EC	3.3 lb pendimethalin	yes	yes	yes	no	do not	do not
Prowl H2O	3.87 lb pendimethalin	yes	yes	yes	no	see label	see label

**Table 5.89 - Herbicides Labeled for Farmstead Use (cont.)**

Trade Name	Components (ai or ae/gal or lb)	Soil Residual <sup>1</sup> (yes/no)	Grass Control	Broadleaf Control	Woody Plant and Vine Control	Grazing Restriction (days)	Haying Restriction (days)
Sahara 70DG	0.078 lb imazapyr 0.62 lb diuron	yes	yes	yes	many	not specified	not specified
Solicam 78.6DF	0.79 lb norflurazon	yes	yes	yes	no	do not	do not
Spike 20P	0.2 lb tebuthiuron	yes	no	yes	many	0	365
Starane Ultra / Vista 2.8L	2.8 lb fluroxypyr	limited	no	yes	no	7	14
Stinger 3L	3 lb clopyralid	limited	no	yes	no	0	0
Velpar 2L or 75DF	2 lb hexazinone	yes	yes	yes	several	60-365	60-365
Weedmaster 3.87L	2.87 lb 2,4-D 1 lb dicamba	no	no	yes	several	0-7	37

<sup>1</sup> Herbicides listed as having limited soil residual activity may, for a short time, provide residual control or suppression of some species, and can injure or kill susceptible desirable plants through soil activity.

<sup>2</sup> NS=next season after application

<sup>3</sup> Not on all metsulfuron labels.

4/B

Generic Roundup (glyphosate): *Accord XRT II, Credit 5.4 Extra, Durango DMA/Duramax*. There are many generic glyphosate products; the three listed are closest in use-rate to Roundup and also contain all the required adjuvants (fully-loaded)

Dicamba and/or 2,4-D: These have been off-patent for many years, so many generics are available. Usually the trade name simply reflects the active ingredient of 2,4-D, dicamba, or, in some cases, a premix of the two. Be aware of whether you are purchasing amine or ethyl formulations if that is important to you.

Remedy Ultra (triclopyr): There are many generic options available, many state "triclopyr" in the trade name. *Boulder 6.3* is a "named" option you may see out there. Again, be aware that amine and ester formulations exist.

Cimarron Plus (metsulfuron+chlorsulfuron): Only one exact match comes to mind, which is called *Chisum*. However, there are multiple options for metsulfuron by itself, including *Ally XP, MSM 60, Patriot, Plotter/Remestol, and Purestand*.

PastureGard (triclopyr + fluroxypyr): This brush product has only one alternative that I've come across, named *Cleargraze*.

Crossbow (2,4-D + triclopyr): Here are 3 that I know of: *Candor, Chaser 2 Amine, and Crossroad*. There may be others. You can also make your own Crossbow by tankmixing the separate ingredients.

Chaparral (aminopyralid + metsulfuron): I only know one generic, called *Oversight*.

Grazon P+D (picloram + 2,4-D): This is the "old" *Grazon P+D* that was around before *GrazonNext HL*. *Gunslinger P+D* is the generic equivalent, and it provides great extended control of broadleaf weeds in pasture. It does require a vegetative buffer be left in place when spraying around surface waters.

Milestone (aminopyralid): Milestone is essentially *GrazonNext HL* without the 2,4-D. *Whetstone* is the only generic I know of.

