

Weed Management in Small Grains, Forage Legumes, and Pastures—Overview

Small Grains

Winter annuals and early-maturing summer annuals are the primary weeds found in Iowa small-grain fields. These weeds have life cycles similar to wheat and oats and are able to compete effectively with these crops. Including small grains in a rotation can help reduce weed problems in corn and beans by reducing the pressures of weeds such as the foxtails, velvetleaf, and pigweed.

The foundation of a weed control program in small grains is proper planting of an adapted variety at recommended populations. Due to narrow row spacing and aggressive early season growth, small grains are very competitive with most weed species. Since the crop is able to compete effectively with most weeds, small grain fields normally do not require the use of a herbicide.

Occasionally, herbicide treatments may be beneficial for controlling heavy populations of weeds that threaten small-grain yield or quality. Early application while weeds are small is the key to successful control. Apply herbicides only at recommended stages of crop growth to avoid crop injury. Herbicides labeled for use on small grains may injure or kill underseeded legumes. Read labels to determine restrictions for this type of use.

Forage Legumes

Establishing and maintaining thick stands, providing adequate fertility, controlling insects, and adopting an appropriate cutting schedule are the keys to a successful weed management program in forage legumes. Once established, properly managed alfalfa and other legumes should compete effectively with most weeds.

In certain instances, the use of a herbicide can return a profit due to improvement in forage quality. Weeds present in forages are harvested along with the forage; thus controlling weeds may reduce forage yields. Growers who test forages for quality and balance rations or who receive a premium price when selling quality forage may benefit from the application of a herbicide to established forages.

Herbicides may play a more important role during the establishment of forages. Traditionally, legume seedings have been established by using a small-grain companion crop to reduce weed pressure. Direct seeding without a companion crop may be useful in situations where obtaining good legume stands has been difficult due to small-grain competition or lodging. Where a companion crop is not used, preemergence or postemergence herbicides may be used to control weeds. Stand failures may occur when weeds are not effectively controlled during the establishment of legumes.

Pastures

Most weed problems in pastures are related to overgrazing or failure to maintain proper soil fertility. Fall or spring fertilization with nitrogen encourages tillering and thickening of permanent pasture grasses, thus reducing weed competition. If a permanent pasture is weedy and the stand of desirable perennial grasses is poor, reseeding or overseeding may be the best weed management alternative.

Several herbicide options are available for weed management in pastures. Normally, spring or early fall applications provide the best control. Base the timing of application on the stage of

development of weeds in the pasture. Determine any restrictions on grazing or harvesting placed on the pasture prior to using a herbicide.

Conservation Reserve Program

An effective weed management program is an important aspect in maintaining set-aside or CRP acres. Failure to control weeds in these areas will result in the buildup of weed populations and make weed control difficult when the areas are brought back into production. Uncontrolled weeds in these areas also act as a reservoir for weed seed that may infest adjacent fields.

Several strategies can be used in managing these areas. Establishment of a perennial cover crop usually is best for areas that will remain idle for more than one year. For areas out of production for a single year, an annual cover crop may be less expensive to establish. If forage sorghum or a sorghum-sudangrass hybrid is planted, growers should manage the crop to prevent seed formation. Many acres in Iowa have developed infestations of shattercane following the use of sorghum as a cover crop.

A combination of plant competition from a cover crop, occasional mowing, and the appropriate use of herbicides should provide acceptable control of weeds in most situations. Most herbicides labeled for use in pastures may be used on set-aside acres planted to a perennial sod. Herbicides labeled for specific uses on conservation reserve acres are listed in the tables that follow.

Weed Control in Small Grains

| Herbicide | Product/A | Crop Stage | Remarks |
|--|------------------------|---|--|
| Banvel 4S Oracle Sterling (dicamba) | 0.25 pt | Full tiller to jointing (growth stages 3 to 6) | Apply prior to jointing on fall seeded wheat. On spring seeded oats, apply before 5-leaf stage. May be tank mixed with Buctril or 2,4-D in order to broaden spectrum of control. Do not use if legumes are underseeded. |
| Bison Bison Advanced (bromoxynil + MCPA) | 1-1.5 pt | After 3-leaf stage but prior to boot | For use on wheat, barley, rye, and oats. Apply to weeds up to 4-leaf stage or 2 inches tall, whichever comes first on susceptible weeds; 8-leaf stage or 4 inches for weeds that are extremely sensitive. Refer to the label. |
| Buctril 2E/Moxy 2E (bromoxynil) | 1.5-2 pt | Emergence to boot (growth stages 1 to 9) | For use on wheat, barley, rye, and oats. Apply before weeds have more than 3 to 4 leaves or rosettes are 1.5 inches in diameter. Use flat fan nozzles and a minimum of 10 gal/A for best results. Weak on chickweed and henbit. May be tank mixed with MCPA, 2,4-D, or Banvel/Oracle/Sterling. |
| Clarity | 2-4 oz | Before fifth leaf (oats) Before sixth leaf (spring wheat) | Apply prior to jointing on fall-seeded oats and before the fifth leaf in spring-seeded oats. Do not apply with 2,4-D for oats. |
| MCPA | 0.5-1.0 pt 4 lb/gal | Full tiller to early boot (growth stages 3 to 9) | For use on wheat, barley, rye, and oats. Safer on oats than 2,4-D. For best results, apply while weeds are small. Use low rate if small grain is underseeded with legume. Use 5 to 6 gal water/A on underseeded grain to minimize injury. |
| Glyphosate (various) | 1-2 pt | Pre-harvest or post-harvest | May be applied as a preharvest treatment in wheat. Apply after the hard dough stage but at least 7 days prior to harvest. May be applied as a post-harvest treatment in oat or wheat stubble. |
| Stinger (clopyralid) | 0.25–0.33 pt | 3 leaf to early boot | Use high rate for Canada thistle. Stinger is primarily active on weeds in the composite (sunflower) family. |

| Herbicide | Product/A | Crop Stage | Remarks |
|----------------|-------------------------|--|--|
| 2,4-D amine | 0.5-2 pt 4 lb/gal | Full tiller until jointing (growth stages 3 to 6) | May be used on wheat, barley, rye, and oats. Use lower rates for small annual weeds. Spraying small grain too young or after jointing can result in reduced yields or uneven ripening. Oats are more sensitive to 2,4-D than other small grains. May be tank mixed with Banvel or Buctril. |
| 2,4-D amine | 0.25-0.5 pt 4 lb/gal | 8 inches to boot (growth stages 3 to 9) | Use low rate if grain is underseeded with legumes. Do not spray alfalfa or sweet clover unless weed infestation is severe and injury to these legumes can be tolerated. |
| 2,4-D LV ester | 0.5-2 pt 4 lb/gal | Full tiller to jointing (growth stages 3 to 6) | For use on wheat, barley, and rye. Use lower rates for annual weeds. For wild garlic or onion control, apply 1.5-2.0 pt. Avoid use if temperatures are expected to exceed 75°F. |

Weed Control in Legume Forages

(Herbicides for use in new legume seedings or stands less than one year old)

| **Herbicide | Product/A | Remarks | Weeds Controlled |
|-----------------------------|-----------|--|--|
| Balan 1.5EC (benefin) | 3-4 qt | Incorporate to a depth of 2 to 3 inches within 8 hours of application. Do not use on grass-legume mixtures. May be used on alfalfa, birdsfoot trefoil, and alsike, ladino, and red clover. | Annual grasses and certain broadleaf weeds |
| Buctril 2EC (bromoxynil) | 1-1.5 pt | Apply to seedling alfalfa in the 4 trifoliolate stage or larger. Weeds should not exceed the 4-leaf stage or 2 inches in height, or before rosettes are 1.5 inches in diameter. Applications made when temperatures exceed 70°F may result in unacceptable crop injury. Do not cut or graze alfalfa for 30 days after application. | Annual broadleaf weeds |
| Butyrac 200 (2,4-DB) | 2-6 pt | Apply when weeds are actively growing and no more than 3 inches in height, or rosettes are less than 3 inches across. Apply when seedling legumes have 2 to 4 trifoliolate leaves. May be used on alfalfa, birdsfoot trefoil, and alsike, ladino, and red clover. Do not graze or feed seedling forages for 60 days after application. | Common lambsquarters, pigweed, field pennycress, common ragweed, yellow rocket |

| Herbicide | Product/A | Crop Stage | Remarks |
|--|------------------------|---|---|
| Eptam 7E (EPTC) | 3.5-4.5 pt | Incorporate to a depth of 2 to 3 inches immediately after application. Follow label recommendations for proper incorporation procedures. Do not use if atrazine was applied within 12 months of planting. May be used on alfalfa, birdsfoot trefoil, and clovers. | Annual grasses, quack-grass, yellow nutsedge, and certain broadleaf weeds |
| Poast Plus 1EC (sethoxydim) | 1.5-2.5 pt | Apply to actively growing grasses at the size recommended on herbicide label. Always add crop oil concentrate to the spray solution. A second application may be needed for complete control of perennial species. For use only on alfalfa. Do not harvest for 14 days after application. | Annual grasses |
| Pursuit 70DG Pursuit 2AS (imazethapyr) | 1.08-2.16 oz 3-6 oz | Apply postemergence to second trifoliolate or larger alfalfa and when the majority of leaves are 1 to 3 inches. Include adjuvants as recommended on label. Injury may occur if applied when temperatures are under 40°F. Do not graze or harvest alfalfa for 30 days following application. | Annual grasses and broadleaves |
| Raptor | 4-6 oz/A | Do not cut forage or feed within 20 days of application. Apply when the seedling alfalfa is in the second trifoliolate. Apply when weeds are actively growing and before they are taller than 3 inches in height. | Annual grasses and broadleaves |
| Select 2EC (clethodim) | 6-8 oz | Apply to seedling alfalfa when annual grasses are actively growing and at the recommended growth stage. Do not apply Select within 15 days of grazing, feeding, or harvesting alfalfa for forage or hay. May be tank mixed with 2,4-DB. Observe restrictions on the 2,4-DB label. | Annual grasses |
| Treflan 4EC Trust 4EC (trifluralin) | | Apply 1 to 1.5 pt/A (based on soil type) and incorporate prior to alfalfa establishment. Crop injury and stand reduction is possible. | Annual grasses and broadleaves |

Herbicides for Use in Established Legumes

| Herbicide | Product/A | Remarks | Weeds Controlled |
|--|------------------------|--|--|
| Butyrac 200 (2,4-DB) | 1-3 qt | Apply when weeds are actively growing and no more than 3 inches in height or rosettes no more than 3 inches in diameter. Do not apply if temperatures above 90°F or below 40°F are expected during or shortly after application. May be used on alfalfa, birdsfoot trefoil, and clovers. Do not graze or feed established forages for 30 days after application. | Common lambsquarters, pigweed, field pennycress, common ragweed, and yellow rocket |
| Gramoxone Max (paraquat) | 1.5 -2.0 pt | Apply to dormant alfalfa in the fall or in spring before 2 inches of new growth. May also be applied within 5 days after cutting. Do not harvest or graze for 30 days after cutting treatment, or within 60 days following a dormant season application. | Annual grasses and broadleaves |
| Karmex 80W (diuron) | 1.5-2.0 lb | Apply to dormant alfalfa that has been established for one year or more. Do not use on alfalfa/grass mixtures. Do not replant to any crop within two years of application. For use only on alfalfa. | Annual broadleaf weeds |
| Poast Plus 1EC (sethoxydim) | 1.1-3.0 pt | Apply to actively growing grasses at the size recommended on herbicide label. Always add crop oil concentrate to the spray solution. A second application may be needed for complete control of perennial species. For use only on alfalfa. Do not harvest for 14 days after application. | Annual and perennial grasses |
| Pursuit 70DG Pursuit 2AS (imazethapyr) | 1.08-2.16 oz 3-6 oz | Can be applied in the fall, in the spring to dormant or semi-dormant alfalfa (3 inches or regrowth), or between cuttings. Include adjuvants as recommended on label. Do not graze or harvest alfalfa for 30 days following application. | Annual grasses and broadleaves |
| Raptor | 4-6 oz/A | Do not cut for forage or feed within 20 days of application. Apply when the seedling alfalfa is in the second trifoliolate. Apply when weeds are actively growing and before they are taller than 3 inches in height. | Annual grasses and broadleaves |

| Herbicide | Product/A | Remarks | Weeds Controlled |
|---|----------------------|---|--|
| Select 2EC (clethodim) | 8 oz | Apply to seedling alfalfa when annual grasses are actively growing and at the recommended growth stage. Do not apply Select within 15 days of grazing, feeding, or harvesting alfalfa for forage or hay. May be tank mixed with 2,4-DB. Observe restrictions on the 2,4-DB label. | Annual grasses |
| Sencor 75DF (metribuzin) | 0.5-1.3 lb | Apply in fall after alfalfa goes dormant or in the spring before new growth starts. Alfalfa may be severely injured if new growth is present at spring application. May be applied after dormancy is broken but prior to 3 inches of new growth, if impregnated on dry fertilizer. May be used on alfalfa-grass mixtures; higher rates may injure grasses. For use only on alfalfa. Do not harvest for 28 days after application. | Dandelion, white cockle, annual broadleaves, suppression of dock |
| Sinbar 80W (terbacil) | 0.5-1.5 lb | Apply in fall after plants become dormant or in spring before new growth begins. Apply before weeds germinate or before they exceed 2 inches in height or width. Do not use on grass-alfalfa mixes. Do not replant to any crop within 2 years after last application. For use only on alfalfa. | Chickweed, henbit, and other annual broadleaves |
| Treflan HFP | 1.5 to 2 pt | Apply with ground or aerial equipment and mechanically incorporate. Insure thorough soil mixing with minimal damage to crop stand. Treflan HFP may be activated by ½ inch or more of rain. If rain does not occur within three days of application, incorporate mechanically. Applications may be made to dormant alfalfa or immediately after cutting. Treflan does not control established weeds. | Barnyardgrass, bromegrass, crabgrass, foxtail, sandbur |
| Velpar 90SP Velpar L (hexazinone) | 0.5-1.5 lb 2-6 pt | Apply to dormant alfalfa that has been established for one year or more. May be applied between cuttings prior to 2 inches of new growth. Do not use on alfalfa/grass mixtures. Do not replant to any crop other than corn (if rate was less than ¾ lb/A) within two years of application. For use only on alfalfa. | Dandelion, winter and summer annual broadleaf weeds |

Weed Control in Permanent Grass Pastures

| Herbicide | Product/A | Remarks | Weeds Controlled |
|---|------------------------------------|--|---|
| Banvel Sterling (dicamba) | 1-2 pt | Use as directed under 2,4-D. May be applied in combination with 2,4-D. Do not graze lactating dairy animals for 7 to 21 days, depending on rate. | Many broadleaf weeds |
| Cimmarron (metsulfuron methyl) | $\frac{1}{10}$ - $\frac{3}{10}$ oz | Apply in spring or summer to actively growing weeds. Use surfactant at $\frac{1}{8}$ to $\frac{1}{4}$ percent v/v. See label for appropriate stage of weed growth for application. Cimmarron may reduce fescue growth and cause loss of a cutting. May be applied as a spot treatment for multiflora rose and other. | Annual broadleaf weeds, musk thistle, Canada thistle, and multiflora rose |
| Cimmarron Max (metsulfuron + dicamba + 2,4-D) | 1-4 pts B | Cimmarron Max is a co-pack consisting of Cimmarron (Part A) and Banvel plus 2,4-D (Part B). Apply postemergence to actively growing weeds less than 4" tall. Cimmarron Max may suppress growth of fescue, see label for precautions. | Many broadleaf weeds |
| Clarity (dicamba) | 1-2 pt | Newly seeded stands may be injured if more than 16 oz/A is applied. Use as directed under 2,4-D. May be applied in combination with 2,4-D. Do not graze lactating dairy animals for 7 to 21 days, depending on rate. | Many broadleaf weeds |
| Crossbow (triclopyr + 2,4-D) | 1-6 qt | Apply when brush and weeds are actively growing. Use higher rate for deep-rooted perennial weeds. Withdraw livestock from treated forage at least 3 days before slaughter. Do not graze lactating dairy animals on treated areas for 1 year following treatment. Do not harvest grass for 1 year following treatment. | Annual and perennial broadleaf weeds, most woody species, including multiflora rose |
| Grazon P+D (picloram + 2,4-D) | 2-4 pt | Apply to actively growing weeds. Use at appropriate rate for weed species and growth stage. Follow all precautions on label. There are no grazing restrictions after application for non-lactating dairy animals and other livestock. Do not graze lactating dairy animals on treated areas within 7 days after treatment. Remove meat animals from treated areas 3 days before slaughter. | Annual and perennial weeds |

| Herbicide | Product/A | Remarks | Weeds Controlled |
|--|------------------|---|--|
| PastureGard (triclopyr + fluroxypyr) | 2-8 pt | Apply when brush and weeds are actively growing. Use higher rates on brush. Follow all precautions on label. There are no grazing restrictions after application for non-lactating dairy animals and other livestock. Do not graze lactating dairy animals on treated areas for the same growing season following application. Remove meat animals from treated areas 3 days before slaughter. | Annual and perennial weeds and brush |
| Pathfinder II (triclopyr) | See label | Apply to individual brush plants as low volume basal bark or cut stump treatments. Follow all precautions on label. Grazing and haying restrictions are based on type of livestock and amount of Pathfinder II applied. Remove meat animals from treated areas 3 days before slaughter. | Brush |
| Roundup (glyphosate) | 1-2% v/v | Apply as a directed nonselective spot treatment to actively growing weeds. Consult label for susceptible stage of perennials. Do not treat more than one-tenth of any acre at one time. May be used in rope-wick applicator for musk thistle and Canada thistle. Do not graze livestock for 14 days after application. | Multiflora rose and other difficult-to-control species |
| Stinger (clopypalid) | 0.66–1.33 pt | Apply when weeds are young and actively growing. For Canada thistle, apply when thistles are at least 4 inches tall but before thistles reach the bud stage. Stinger has no grazing restrictions. | Annual broadleaf weeds, Canada thistle |
| Surmont (picloram + fluroxypyr) | 1.5-6 pt | Apply when brush and weeds are actively growing. Use higher rates for brush. Follow all precautions on label. Use appropriate rate for weed and brush species. There are no grazing restrictions after application for non-lactating dairy animals and other non-dairy livestock. Do not graze lactating dairy animals on treated areas within 14 days after treatment. Remove meat animals from treated areas 3 days before slaughter. | Annual and perennial weeds and brush |

| | | | |
|---|-----------|---|---|
| Tordon 22K (picloram) | 0.25–2 pt | Apply to actively growing weeds. May be applied in combination with 2,4-D. Follow all precautions on label. Do not graze lactating dairy animals on treated areas within 2 weeks after treatment. Remove meat animals from treated areas three days prior to slaughter. | Annual and perennial broadleaf weeds, biennial thistles |
| Touchdown IQ Touchdown Total Touchdown HiTech | See label | Apply as spot treatment. Use appropriate rate for weeds found in pasture. Remove livestock from pasture prior to application and wait 14 days before grazing or harvesting. | Annual and perennial weeds |
| 2,4-D | 2 - 4 pt | Apply in spring or fall to actively growing weeds. Apply to biennial thistles during the rosette stage. See specific 2,4-D label for grazing restrictions. Do not graze dairy animals within 7 days of application. | Annual, biennial, and certain perennial broadleaf weeds |

Grazing and Haying Restrictions for Pasture Herbicides

| Herbicide | Rate | Lactating Dairy | | Beef and Nonlactating Dairy | | |
|--------------------|--------------------------------|---------------------|---------------------|-----------------------------|-------------|------------------------|
| | | Grazing | Hay Harvest | Grazing | Hay Harvest | Slaughter ¹ |
| Banvel/Sterling | 1 pt | 7 days | 37 days | 0 | 0 | 30 days |
| Banvel/Sterling | 1-2 pt | 21 days | 51 days | 0 | 0 | 30 days |
| Cimarron | 0.1-.3 oz | 0 | 0 | 0 | 0 | 0 |
| Clarity | 1-2 pt | 21 days | 51 days | 0 | 0 | 0 |
| Crossbow | 1-8 qt | 1 year | 1 year | 0 | 14 days | 3 days |
| Grazon P&D | 2-4 pt | 7 days | 30 days | 0 | 30 days | 3 days |
| PastureGard | 2-8 pt | next growing season | next growing season | 0 | 14 days | 3 days |
| Pathfinder II | 2.5 gal/A or less | 14 days | next growing season | 0 | 7 days | 3 days |
| | more than 2.5 gal/A to 5 gal/A | next growing season | next growing season | 14 days | 14 days | 3 days |
| Redeem R&P | 1.5-4 pt | 14 days | next growing season | 0 | 7 days | 3 days |
| Remedy | 1-4 pt | 14 days | next growing season | 0 | 7 days | 3 days |
| Spike 20P | 3.75-20 lb/A | 0 | 1 year | 0 | 1 year | 0 |
| Stinger | 0.6-1.3 pt | 0 | 0 | 0 | 0 | 0 |
| Surmont | 1.5-6 pt | 14 days | 7 days | 0 | 7 days | 3 days |
| Tordon 22K | <2 pt | 14 days | 14 days | 0 | 0 | 3 days |
| Tordon 22K | >2 pt | 14 days | 14 days | 0 | 14 days | 3 days |
| 2,4-D ² | 1-2 qt | 7-14 days | 30 days | 0-7 days | 0-30 days | 3 days |

¹Interval animals must be removed from treated area prior to slaughter.

²Restrictions vary on 2,4-D labels. Check label of product used for specific restrictions.

File: Pest Management 9 and
Pest Management 1-Field Crops

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And justice for all

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