

Managing Creeping Perennial Weeds in Fields Enrolled in the Conservation Reserve Program

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Creeping perennial weeds are non-woody plants that live longer than two years. They reproduce from seed as well as vegetatively. Vegetative reproduction occurs as underground roots, underground stems (rhizomes), or aboveground stems that grow along the soil surface (stolons) away from the parent plant. All of these organs produce new shoots that, if severed from the parent plant, can survive independently. Shoots of creeping perennial weeds die back in the winter and resprout from the long-lived plant tissue each year.

Biology: Creeping perennial weeds can establish from seeds or perennial vegetative organs. Depending on the species, seedlings can germinate under a range of conditions but, once germinated, quickly become perennials. Often, seedlings initially devote resources to developing a root system and perennial organs; therefore, plants may not flower during the establishment year. Plants initiated from perennial organs typically grow much quicker than seedlings. Many perennial weeds will exhibit slow growth by late summer after they flower, but often resprout in the fall and remain green until winter. During the winter, aboveground stems and leaves die back; however, unlike annual weeds, the perennial organs persist and shoots resprout from them the following spring. Creeping perennial weeds have organs, including rhizomes, tubers, stolons, bulbs, corms, or creeping roots, that enable plants to expand by growing or “creeping” away from the parent plant, producing additional shoots along the way. This growth is often visible as discrete circular patches within fields. These structures can last for several years and often increase in size and stored resources, making management more difficult.

Method of spread: Creeping perennial weeds spread throughout fields by seed movement and by creeping stems or roots. They must be managed carefully, as inappropriate methods can lead to further spread. Long-term management plans should be developed for these species, focusing on preventing seed spread, controlling plants while they are seedlings, and managing the resprouts of older plants without spreading perennial organs to uninfested areas.

Conservation Reserve Program (CRP) Management

Restrictions: The ideal time to manage weeds is prior to establishment of the desired cover. Once conservation cover is established, weed management becomes more difficult because of management restrictions designed to minimize impact to nesting birds. When developing weed management plans in CRP fields, there are specific restrictions one must be aware of, including the following:

Listed CREEPING PERENNIAL WEEDS on CRP grasslands BY NRCS WISCONSIN JOB SHEET 397

Cat 1: No tolerance, must attempt to eliminate:

- Crown vetch
- Japanese knotweed
- Chinese lespedeza

Cat 2: Cannot go to seed, keep < 10% coverage, no patch > 1 acre, individual species or in combination:

- Common tansy
- Field bindweed
- Hawkweeds
- Purple loosestrife
- Reed canary grass
- Common reed grass
- Leafy & Cypress spurge
- Canada thistle

Cat 3: Species of concern, keep < 30% coverage, no patch > 1 acre, individual species or in combination:

- Canada goldenrod
- During the seeding year, mowing can be conducted to suppress weed competition and allow for the establishment of desirable cover. All other maintenance and management must occur outside of the primary nesting season, unless approved by the local Farm Service Agency (FSA) County Committee. These dates have varied over time and are specified in the CRP contract. The current primary nesting season for new CRP contracts is May 15 to August 1.
- CRP participants are required to control invasive and weedy plant species before they produce viable seed. Unfortunately, the optimum timing for control typically conflicts with the primary nesting season. Participants can either contact their local FSA to ask for approval to manage during the primary nesting season, or conduct management before or after the nesting season.

- Management techniques that disrupt CRP cover on a recurring schedule (e.g. broadcast herbicide applications) require prior approval from the local FSA County Committee.
- If mowed plant material is removed from the site, as with haying or grazing, a reduction in the annual CRP payment will occur. Haying and grazing are only allowed once every three years and also require prior approval from FSA.

Management Methods

Prevention

Preventing the introduction and establishment of any weed is the most cost-effective management strategy. This is particularly true of creeping perennial weeds. This category of weeds, once established, is extremely difficult to eradicate. Prevention can be achieved by maintaining a healthy stand of desirable vegetation which can resist weed invasion, and by monitoring sites to detect and remove new weed invaders. Pay particular attention to roadsides, storage areas, dump sites, and other areas subjected to repeated disturbances, as invasions typically begin here. If equipment is to be used within the field, remove all dirt and debris which may contain seeds or other vegetative tissue that could lead to new invasions.

Physical/Mechanical

Hand pulling can be effective for some species if the entire root or underground perennial organ is removed from the soil. This is usually only possible when the soil is sandy and moist so that the perennial organ does not break. Other mechanical or physical methods that sever roots below the soil surface can be effective in suppressing creeping perennial weeds¹. Once cut, the storage organ will resprout. Therefore, it is recommended that the procedure be repeated several weeks after regrowth has emerged. While this method can eliminate seed production, plants will require multiple treatments per growing season. Due to the restricted period for management in CRP fields in Wisconsin, it is difficult to follow this method exclusively.

Deep plowing can effectively suppress creeping perennial plants if done correctly. However deep plowing is only an option if carried out prior to the establishment of the CRP cover crop. After establishment of a CRP cover crop, most physical weed control methods such as tillage or cultivation are not feasible, as they will cause extensive damage to desirable plants. In some cases, however, hand tools can be used on a small scale to control weed patches. As these methods can result in the transportation of perennial organs to previously uninfested areas, it is vital that all equipment used be cleaned to prevent the spread of these plants.

Mowing

The mowing of most species of creeping perennial weeds is not recommended, as cut stems can readily resprout.

¹ Perennial organs should be removed from the site and carefully disposed of to prevent them from resprouting in other areas.

However, mowing repeatedly over the course of consecutive growing seasons can be done to suppress growth. CRP contracts in Wisconsin, however, typically do not allow mowing during the nesting season (see CRP Management Restrictions section), in order to protect ground nesting birds and young wildlife. This is often when many creeping perennial weeds flower or resprout and flower after early season mowing. Because of this, mowing alone is not a good perennial weed control option on CRP land. Mowing can prevent the production of seeds if it occurs prior to the opening of flower buds. This method will not kill the plant and may need to be repeated more than once per season to eliminate seed production. Mowing can be made more effective if it is followed by the application of an herbicide to plant regrowth. If listed weeds are present, FSA may grant permission to conduct mowing during restricted times. Mowed material must be uniformly distributed over the site to avoid smothering of existing desirable vegetation.

Burning²

Burning can be useful in suppressing creeping perennial weeds if there is ample fuel to carry the fire and if repeated spring burns are possible (DiTomaso and Johnson, 2006). While burning can kill very young plants (seedlings), it is similar to mowing in that older plants with established perennial organs will regrow. If the fire is hot enough, weed seeds can be killed near the soil surface, but those that survive are stimulated to germinate. Burning is effective in removing thatch and improving conditions for some species, but it may also damage desirable vegetation if the fire is too hot and/or timed incorrectly. Like mowing, the timing of a burn may be governed by CRP restrictions designed to protect nesting birds and young wildlife. Control may be improved on creeping perennial weeds if followed with herbicide applications. In general, burning is a long-term management approach and is often combined with other control methods (DiTomaso and Johnson, 2006).

Flaming of individual plants or small patches of weeds using a propane torch is very effective on creeping perennial weed seedlings, provided plants have not yet perennialized. This method is recommended for small areas at the appropriate timing when risk of fire ignition and escape is low (Tu et al., 2001).

Biological control

Natural or introduced insects or diseases can also be used to manage invasive weeds. If agents are released and established, they can help suppress weed populations for years. However, success of agents is typically specific to the weed, and results may not be visible for several years. Biological control is not appropriate for Category 1 listed

² Often, the NRCS, local resource managers, and fire authorities have the means to assist landowners in developing burn plans and safe burn implementation. Burning should be conducted using a burn plan based on Wisconsin's Conservation Practice Standard 338 (Prescribed Burning) and in compliance with all local, state, and federal authorities, including the local air quality control board.

weeds. If you are interested in using biological control agents, consult local agencies for more detailed information.

Grazing

The grazing of animals, such as cattle, sheep, and/or goats, can effectively suppress some weed species. Success of grazing as a management method can vary depending on the species of weed and grazing animal, timing of implementation, density of weed species, and number of animals used. Fencing animals within infested areas can enhance suppression. Like mowing, grazing damages the aboveground vegetation but does not damage the underground perennial organ system; therefore, it is not likely that this method would kill creeping perennial weeds. Avoid overgrazing sites, as this can increase populations of some weed species. Generally, it is recommended to use goats and sheep, rather than cattle on these weeds. Some livestock avoid grazing many of these weeds as they have spines or are poisonous.

Herbicides

Several herbicides are effective at suppressing these weedy species, but results are species- and timing-specific. Caution should be exercised when using herbicides, as desirable plants (e.g. wildflowers, legumes) can also be injured. This can be avoided through the use of selective herbicides and/or selective application techniques. While a wide range of selective herbicides are available that will not harm specific plant groups (e.g. grasses, broadleaf plants), in CRP fields it is difficult to select an herbicide that will control the target weed species and not harm all desirable plants. **If broadcast treatments to a large area are being considered, consult the local FSA County Committee prior to any application, as legumes are highly susceptible to most herbicides.** Another approach is to use non-selective herbicides such as glyphosate with a selective application technique (e.g. spot applications using a backpack sprayer). One may also choose to combine both selective herbicides and selective application techniques for maximum protection of non-target species.

The timing of herbicide application is also very important, as it can affect the level of control. Due to restrictions in

management of CRP fields, applications are permitted only during periods outside of the primary nesting season without prior approval (see CRP Management Restrictions section). Results are best when herbicides are applied in the fall or just prior to flowering (bud stage), when they can move into and kill perennial organs. By the fall, many desirable plants have already produced seed and senesced/died back, limiting herbicide impact to these non-target plants. Applications just prior to flowering often fall within the restricted management timing for CRP fields, limiting their usefulness. Plant growth can be suppressed with spring applications, but little herbicide moves into perennial organs and often plants resprout later in the year. Fall-applied herbicides should be applied prior to a killing frost, when air temperatures are above 50 F for best results.

It is important to read the herbicide label BEFORE making any application, as different herbicides have different requirements and restrictions.

See **Table 1** on the following page for a list of herbicides and their effectiveness on listed creeping perennial weeds.



References

- Dexter, A.G. 1993. Herbicide Spray Drift. North Dakota State University and the University of Minnesota. A-657. Retrieved December 27, 2007 from <http://www.ag.ndsu.edu/pubs/plantsci/weeds/a657w.htm>
- DiTomaso, J.M. and D.W. Johnson (eds.). 2006. The Use of Fire as a Tool for Controlling Invasive Plants. Cal-IPC Publication 2006-01. California Invasive Plant Council: Berkeley, CA. 56 pp.
- Tu, M., Hurd, C., & J.M. Randall, 2001. Weed Control Methods Handbook, The Nature Conservancy. Retrieved December 27, 2007 from <http://tncweeds.ucdavis.edu/handbook.html>

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Table 1. Effectiveness of herbicides registered in CRP for managing listed creeping perennial weeds.

Active Ingredient	Example Products	Canada goldenrod	Canada thistle	Chinese lespedeza	Common tansy	Crown vetch	Field bindweed	Hawkweeds	Japanese knotweed	Purple loosestrife	Reed canary grass	Reed grass, common	Spurge: leafy & cypress
2,4-D	Many	F/G	F	P/F	G	F/G	F	F/G	F/G	P/F	N	N	P/F
2,4-D + Aminopyralid	Forefront	F/G	G/E	P	F/G	G/E	-	E	-	G/E	N	N	P
2,4-D + Clopyralid	Curtail	F	G	-	F	-	-	F/G	-	-	N	N	P
2,4-D + Dicamba	Weedmaster	G	F/G	P/F	G/E	G/E	F/G	-	-	-	N	N	P/F
2,4-D + Glyphosate	Campaign	-	G	-	-	-	F/G	-	-	-	-	-	F/G
2,4-D + Picloram *	Grazon P+D	G	G	P/F	F	-	G	G	-	-	N	N	G/E
2,4-D + Triclopyr	Crossbow	F/G	F	G	F/G	-	F/G	-	-	-	N	N	F
Aminopyralid	Milestone	P/F	E	P/F	P	G/E	-	E	-	G/E	N	N	P
Chlorsulfuron	Telar	G	F/G	-	G/E	-	-	-	-	-	N	-	-
Clopyralid	Stinger	P	G/E	P	F	G/E	P	F/G	-	-	N	N	P
Clopyralid + Triclopyr	Redeem	G	F/G	P	F/G	-	G/E	G	-	-	N	N	P
Dicamba	Banvel	F/G	F	P/F	-	-	F/G	F/G	F/G	-	N	N	P/F
Dicamba + Diflufenzopyr	Overdrive	F/G	G	P/F	P	-	G/E	-	F	-	-	-	-
Fluazifop	Fusilade	N	N	N	N	N	N	N	N	-	G/E	F/G	N
Fluroxypyr	Starane	-	-	G/E	-	-	F/G	-	-	-	-	-	P
Fluroxypyr + Triclopyr	Pastureguard	G/E	-	G/E	-	-	-	-	-	-	-	-	-
Fosamine	Krenite	-	-	-	-	-	F	-	-	F	-	-	F/G
Glyphosate	Roundup	G	G/E	G	F/G	F/G	F/G	-	F/G	G/E	G/E	G/E	F/G
Imazethapyr	Pursuit	-	P	-	-	N	N/P	-	-	-	F	-	-
Imazapic	Plateau	N	P	N	P	N	F/G	-	P	-	G/E	P	G/E
Imazapic + Glyphosate	Journey	P	P	P	P	P	F/G	-	F	-	G/E	F	G/E
Imazapyr	Habitat	-	F	P	E	P-	G/E	-	G/E	E	G/E	G/E	G
MCPA	Many	N	-	-	-	-	P/F	F/G	-	-	N	N	-
Metsulfuron	Escort	G/E	F/G	F/G	G/E	G	P/F	-	-	G/E	N	N	-
Metsulfuron + 2,4-D + Dicamba	Cimarron max	G/E	F/G	G	G	G/E	F/G	-	-	-	N	N	F/G
Metsulfuron + Chlorsulfuron	Cimarron plus	G	G	-	-	G	-	-	-	-	N	-	-
Paraquat *	Gramoxone	P	P	P	P	P	P	P	P	-	P	P	P
Picloram *	Tordon	G/E	G	F	E	-	F/G	F/G	G	-	N	N	G/E
Quinclorac	Drive	-	-	-	-	-	F/G	-	-	-	-	P/N	F
Sethoxydim	Poast	N	N	N	N	N	N	N	N	-	G/E	P/N	N
Sulfometuron	Oust	G	G	-	-	G/E	-	-	-	-	G/E	-	P/F
Triclopyr	Garlon	F/G	F	G/E	-	G/E	F	-	F/G	F/G	N	N	P/F
Trifluralin	Treflan	-	-	-	-	-	F	-	-	-	N	N	-

E = excellent (90-100%) control; G = good (80-90%) control; F = fair (60-80%) control; P = poor (<60%) control; N = no (0%) control: - no information.

*= Herbicides with these active ingredients are restricted-use products in Wisconsin.