

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

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Simple perennial weeds are non-woody plants that live longer than two years. These plants develop perennial taproots which help plants compete for limiting resources, tolerate management, and allow shoots to resprout. Although these plants can resprout from the root, plants do not produce vegetative organs that laterally spread or creep into uninfested areas.

Biology: Simple perennial weeds typically establish from seeds that can germinate anytime during good growing conditions. After germination, plants quickly develop a tap root and a group of leaves, called a rosette, clustered around the base of the root at the soil surface. Plants can be found as rosettes in the fall and spring, but will produce stems and flowers in the late spring to summer. After flowering, shoots die back, but lower leaves often resprout in the fall and remain green until winter. During the winter, aboveground stems and leaves die back; however, unlike annual weeds, the underground taproot persists. The following spring, shoots resprout from perennial roots. Root tissue can last for several years and often increases both in size and its ability to tolerate management.

Method of spread: Simple perennials spread throughout fields by seed. While plants can resprout from perennial taproots, this rarely results in spread unless equipment spreads roots into uninfested areas. Therefore, management should focus on identifying plants and eliminating seed production as well as nearby sources of seed.

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:

- During the seeding year, mowing can be conducted to suppress weed competition and allow for the establishment of desirable cover. All other

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

Cat 1: No tolerance, must attempt to eliminate:

- Chinese lespedeza
- Giant hogweed
- Hill mustard
- Wild chervil

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

- Knapweed species

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

- Dames rocket
- Curly dock

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 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 if the entire taproot is removed from the soil. This is usually only possible when the soil is sandy and/or moist, as it allows for removal of the entire root. Other mechanical or physical methods that sever roots below the soil surface can be effective in suppressing simple perennial weeds¹. Once cut, the roots will resprout. Therefore, it is recommended that the procedure be repeated several weeks after new regrowth has emerged. While this method can eliminate seed production, plants will require multiple treatments per growing season for several years to kill the plant. Due to the restricted timings for management in CRP fields in Wisconsin, it is difficult to use this method exclusively for management.

While, if done correctly, deep plowing can effectively kill simple perennial plants, it is only an option 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.

Mowing

Mowing simple perennial weeds repeatedly over the growing season and over multiple years can suppress simple perennial weed growth. However, CRP contracts in Wisconsin do not allow mowing during the nesting season (see CRP Management Restrictions section) when many simple perennial weeds flower or resprout and flower after early season mowing. Because of this, mowing alone is not a good simple

perennial weed control option on CRP land. Mowing can prevent the production of seeds if it is carried out prior to the opening of flower buds. This method will not kill the plant and repeating it more than once per season may be required to eliminate seed production. Mowing can be made more effective if it is followed by an herbicide application 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 controlling simple perennial weeds if there is a heavy fuel load and if it is performed at the proper time. Although it can kill very young plants (seedlings), it is similar to mowing in that older plants with established root systems often 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 at removing thatch and improving conditions for some species, but may also damage desirable vegetation if the fire is too hot and/or timed incorrectly. Like mowing, the timing for a burn may be governed by CRP restrictions designed to protect nesting birds and young wildlife. Control may be improved on simple 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 simple perennial weed seedlings as long as 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 biological control 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

¹ Plants pulled or dug after flowers appear should be removed from the site and carefully disposed of to destroy viable seed contained in the flowers.

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.

control is not appropriate for Category 1 listed 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 may 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 may need to be done more than once to be effective, and the ideal timing, although somewhat species-dependent, is just prior to flower and seed development. Avoid overgrazing sites, as this can increase populations of some weed species. Some livestock avoid grazing many of these weeds as they have spines or are poisonous.

Herbicides

Several herbicides are effective at controlling these weedy species, but results are species- and timing-specific. Caution should be used 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 restricted to 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 when they can move into and kill perennial roots. By the fall, many desirable plants have already produced seed and senesced/died back, limiting herbicide impact to these non target plants. Plant growth can be suppressed with spring applications, but 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** for a description of herbicides and their effectiveness on listed simple perennial weeds.



References:

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 simple perennial weed species.

Active Ingredients	Example Products	Chinese lespedeza	Curly dock	Dames rocket	Giant hogweed	Hill mustard	Knapweed spp.	Wild chervil
2,4-D	Many	P/F	F/G	-	P/F	G	F	P/F
2,4-D + Aminopyralid	Forefront	P	G/E	-	-	-	E	-
2,4-D + Clopyralid	Curtail	-	F	-	-	-	G/E	-
2,4-D + Dicamba	Weedmaster	P/F	G/E	-	-	F/G	G/E	-
2,4-D + Picloram *	Grazon P+D	P/F	E	-	-	-	F/G	-
2,4-D + Triclopyr	Crossbow	G	G/E	-	-	G	G	-
2,4-DB	Butyrac	-	F	N	-	-	-	-
Aminopyralid	Milestone	P/F	G	-	-	-	E	-
Chlorsulfuron	Telar	-	F/G	-	-	-	-	G/E
Clopyralid	Stinger	P	G	-	F/G	-	G/E	G/E
Clopyralid + Triclopyr	Redeem	P	G	-	-	-	G/E	-
Dicamba	Banvel	P/F	F/G	-	P/F	-	G	G/E
Dicamba + Diflufenzopyr	Overdrive	P/F	-	-	-	-	G/E	-
Fluroxypyr	Starane	G/E	G	-	-	-	-	-
Fluroxypyr + Triclopyr	Pastureguard	G/E	G/E	-	-	-	-	-
Glyphosate	Roundup	G	G/E	G	G/E	G/E	G/E	G/E
Imazethapyr	Pursuit	-	F/G	-	-	-	-	-
Imazapic	Plateau	N	F/G	G	G	-	F	-
Imazapic + Glyphosate	Journey	P	F/G	-	-	-	F	-
Imazapyr	Habitat	P	G/E	-	-	-	F	G/E
MCPA	Many	-	F/G	-	P/F	-	-	-
Metsulfuron	Escort	F/G	G/E	-	-	G	F	-
Metsulfuron + 2,4-D + Dicamba	Cimarron max	G	G/E	-	-	G/E	F/G	G/E
Paraquat *	Gramoxone	P	P	P	P	P	P	P
Picloram *	Tordon	F	G/E	-	-	-	G/E	-
Sulfometuron	Oust	-	F/G	-	-	-	F/G	-
Triclopyr	Garlon	G/E	F/G	G	G	-	P/F	-

E = excellent (90-100%) control; G = good (80-100%) 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.