

PERENNIAL WEED CONTROL

Weed Facts WF-1



Controlling perennial weeds presents a unique challenge to growers. Because of their extensive, and often very deep, underground root and shoot systems, a single herbicide application seldom provides complete control. The best strategy for perennial weed control requires a multi-year program approach that may include specific crop rotations. Perennial weeds are often difficult to control in some crops due to lack of available herbicides (i.e. vegetables), so most programs augment in-crop management with fall (postharvest or harvest-aid) herbicide applications and crop rotations. Postemergence applications are necessary for perennial weed control, further complicating management strategies. A general outline of management programs for perennial weed control follows. The ideal approach and herbicide use rates may vary with the weed spectrum and environmental conditions. Always read and follow product labels to ensure proper use and safety. Consult your county agent to discuss your individual weed management program.

No-tillage Production in the Spring

Pre-tillage or preplant burndown applications in the spring usually burn back the topgrowth of perennial weeds. Because of the weeds' biology at the time of application, these applications do not have long-term impacts on perennial weed populations. Spring glyphosate applications are made prior to the time when most perennial weeds are transporting sugars to the roots, rhizomes, or tubers, and will therefore have little effect on these underground plant parts, allowing regrowth to occur. Pre-tillage glyphosate applications

should be made at least seven days prior to tillage or mowing. The addition of 2,4-D may improve effectiveness on some perennial species. The rate of 2,4-D is dependent on the crop (due to crop safety) and the timing of application relative to planting date. Refer to product labels for rates, timing to crop, and rotational crop restrictions.

Control in Small Grains

Perennial weeds are best controlled in small grains with spring in-crop herbicide applications. Harmony Extra or Stinger can be used as spring postemergence treatments in wheat, barley or oats. Performance on many species is improved by tank-mixing with 2,4-D or dicamba (Banvel or Clarity). Stinger and 2,4-D have the potential to injure rotational crops such as soybeans, sorghum, and vegetables. Refer to product labels for rates, timing to crop, and rotational crop restrictions. Glyphosate products may be used for harvest-aid in winter wheat and feed barley. Applications should be made after the hard dough stage of grain. Do not apply to wheat grown for seed.



Control in Corn

Postemergence applications of Accent, Beacon, Distinct, Northstar, Hornet WDG, Callisto, Status, or Stinger can be very effective against perennial broadleaf weeds in corn.

Glyphosate applied postemergence to glyphosate-resistant corn will provide good control of many perennial broadleaf and grass weeds. Single or sequential over-the-top applications can be made from emergence to 30 inches or the V8 stage of corn. Drop nozzle applications can be made in Roundup-Ready Corn-2 until the corn is 48 inches tall.

Quackgrass and seedling and rhizome johnsongrass¹ can be controlled in corn with postemergence applications of Accent, Beacon, Equip, Northstar, Option, Steadfast, Steadfast ATZ, or Stout.

Control in Soybeans

There is little opportunity for in-crop perennial broadleaf weed control in soybeans without glyphosate-resistant soybeans. Glyphosate applied postemergence to glyphosate-resistant soybeans will provide good to excellent control of most perennial broadleaf and grass weeds. Single or sequential applications can be made from the cracking stage through full flowering.

Bermudagrass, quackgrass, wirestem muhley, and seedling and rhizome johnsongrass can be controlled with postemergence applications of Assure II, Fusilade DX, Poast, Poast Plus, Select, Select Max or Targa herbicides.

Since soybean harvest typically removes most of the vegetative part of the weed, a harvest-aid approach to perennial weed control in soybeans is more effective than post-harvest

applications. Most glyphosate formulations are labeled for harvest-aid after pods have set and lost all of their green color. Clarity is labeled for harvest-aid after pods have reached mature brown color and at least 75% leaf drop has occurred. A dense crop or annual weed canopy that covers the targeted perennial weeds may prevent effective spray penetration and weed control. If a dense soybean canopy exists, delay herbicide applications until the canopy opens. If impending frost prohibits a delay, choose a spray tip and pressure combination that maximizes spray penetration. If the canopy effect cannot be overcome, a harvest aid approach is not feasible.

Control in Alfalfa

Perennial broadleaf weeds are difficult to control in alfalfa. Glyphosate can be applied postemergence in glyphosate-resistant alfalfa varieties. Pursuit (dormant, postemergence, or between cutting) or Raptor (dormant or between cutting) will provide suppression of Canada thistle² in non-resistant varieties.

Postemergence applications of Poast, Poast Plus, Select, or Select Max will control bermudagrass, quackgrass, and seedling and rhizome johnsongrass in alfalfa. Select or Select Max will also control wirestem muhley.



¹For more detailed information on johnsongrass control, refer to Weed Facts (WF-5) entitled "Johnsongrass Control in Cropland" by the University of Delaware, Cooperative Extension.

²For more detailed information on Canada thistle control, refer to Weed Facts (WF-3) entitled "Canada Thistle Control in Cropland" by the University of Delaware, Cooperative Extension.

Control in Permanent Grass Pasture

Managing cultural, mechanical, and chemical factors to promote a healthy and competitive forage crop is extremely important in managing perennial weeds. These factors include forage species selection and establishment, fertility management, grazing management, mowing, dragging to spread manure, insect and disease management, and chemical weed control.

Dicamba, 2,4-D, Crossbow, Metsulfuron, Overdrive, or Remedy Ultra will control or suppress several perennial broadleaf weeds in permanent grass pasture. Combining dicamba and 2,4-D will improve control of some species over either product alone. Cimarron Max is a combination of Metsulfuron plus 2,4-D plus dicamba.

Perennial broadleaf weed control in mixed grass-legume pastures is very difficult without reducing or killing legume stands. Fall applications of dicamba, 2,4-D, Overdrive, Crossbow, or Remedy Ultra can be followed by legume reestablishment with a late winter frost-seeding or spring no-till seeding. Delay reestablishment of legumes until perennial weed infestations are under control.

Spot Treatment

Spot treatment can be made in corn, soybeans, wheat, barley, oats, sorghum, forage, pasture, and non-crop areas. Several herbicides are labeled for spot spray treatments including glyphosate, 2,4-D, Crossbow, Overdrive, Poast, Fusilade DX, Select, Stinger, and Targa. For small or localized areas, refer to the spot treatment section of the herbicide label and apply the recommended concentration on a spray-to-wet basis (1 gal/1000 ft²) to provide thorough coverage. For larger areas, refer to the herbicide label for rates to apply on a per-acre basis. Apply all herbicides at least seven days before crop harvest, or harvest around weed patches, leaving them standing to be treated later. Apply all herbicides at least seven days before a killing frost. Spot treatment may kill

desirable vegetation. Herbicide selection should be based on its effectiveness on the target weed, safety to existing desirable vegetation, and replant or recrop intervals.

Postharvest Control

An opportune time to treat perennial weeds is in the fall after the weeds have flowered. During this period of growth, the plant is translocating sugars to the overwintering organs (rhizomes, stolons, tubers) from which new plants will originate the following spring.

Herbicides are absorbed into the plant through its leaves and are translocated with the sugars to the storage organs, where they can prevent new spring growth from occurring. After corn or vegetable harvest, apply herbicides to actively growing weeds that have recovered from any harvest damage or drought stress. Planting early-maturing varieties will allow earlier crop harvest and more time for weeds to recover. In corn, harvesting the crop as high as possible will help reduce the harvest damage to weeds. The herbicides used in this program must be translocated within the plant to be effective. Therefore, a minimum of 7 to 10 days following application must be allowed before a killing frost or any tillage or mowing operations occur.

Postharvest glyphosate applications will control perennial grasses and many perennial broadleaf weeds. Most glyphosate products have specific recommendations for several of the perennial weed species. There are no re-cropping restrictions when applying glyphosate alone in the fall. Dicamba will also control many perennial broadleaf weeds. Tank-mixing dicamba plus 2,4-D will improve control on some species. A surfactant or crop oil concentrate should always be added to dicamba in non-crop perennial weed control situations. Dicamba and 2,4-D have the potential to injure rotational crops. Refer to product labels for rates, timing to crop, and rotational crop restrictions.

Mowing

Mowing may be integrated with or used as an alternative to chemical weed control, particularly in pastures and non-crop areas. Regular mowing promotes even grazing in pastures, removes topgrowth of weeds, lowers root reserves, and prevents seed production in many weeds. Mowing should occur after animals are rotated out of a paddock or pasture, or prior to seed production (approximately every three weeks) in non-crop areas.

Control of Perennials as Seedlings

While control of most perennial species can be very difficult when plants are well established, good control of perennial species arising from seed is often possible with standard preemergence herbicide programs. Follow-up with postemergence herbicides as previously described may be necessary in many cases for complete control.

In corn, programs based on preemergence applications of atrazine will provide the best control of most seedling perennial broadleaf species. Premix products such as Bicep II Magnum, Bullet, Harness Xtra and others are available. Preplant incorporated applications of Eradicane Extra are very effective on seedling johnsongrass, will suppress bermudagrass, and with the addition of atrazine will suppress quackgrass. Preemergence programs containing Dual, Micro-Tech, or Harness may also provide control or suppression of many seedling perennial grass species.

In soybeans, Scepter preemergence may provide control of Canada thistle, common pokeweed, and horsenettle, and will also provide suppression of perennial grass species. Command is effective on hemp dogbane and Canada thistle. Dual, Prowl, Prowl H₂O, and Command are effective on seedling bermudagrass, and Command is effective on seedling johnsongrass.

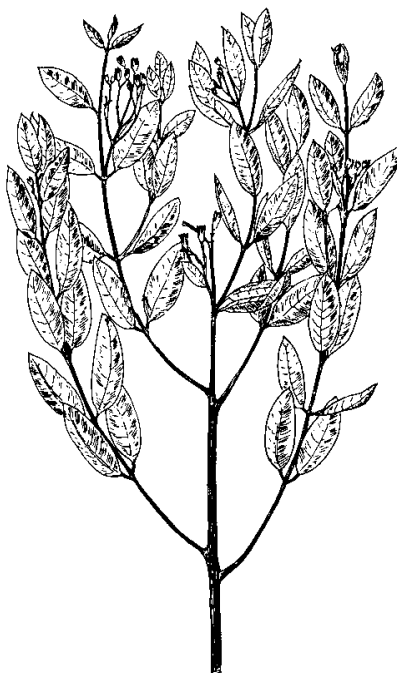


Table 1: Relative Effectiveness of Postemergence Herbicides for Perennial Broadleaf Weeds

Legend - based on adequate moisture, good growing conditions, and proper herbicide application

Effectiveness Ratings

E = Excellent (>90% control)
G = Good (80-90% control)
F = Fair (60-80% control)
P = Poor (20-60% control)
G-E = Good to Excellent
F-G = Fair to Good
P-F = Poor to Fair
N = None (<20% control)

Crop Applications:

A = Alfalfa **S** = Soybean
C = Corn **G** = Small Grains
P = Pasture
F = Fall (Post-harvest)

an “-“ indicates that insufficient data or experience available.

Single active ingredient products			Canada thistle	Dandelion	Dewberry species	Dock species	Field bindweed	Groundcherry	Hemp dogbane	Honeyvine milkweed	Horsenettle	Common milkweed	Mugwort	Pokeweed	Trumpet creeper	Wild garlic	Yellow nutsedge
Product	Crop(s)	Rate/A															
2,4-D	C,P,G	1 pt	P	G	P	F	P-F	P-F	P	P-F	P	P	P	P	P	F	N
2,4-D	P,F	1-1.5 qt ^d	F	G	P	F	F	F	P	F	P	P	P-F	P	P	F-G	N
Accent	C	2/3 oz	P-F	P	F-G	P	P-F*	-	P*	P*^	P*	P-F	P*	P	-	-	P
Atrazine	C	1-2 qt	P-F	P	P	F	P-F	-	P	-	P	N	P	P	-	-	P-F
Banvel / Clarity	C,P,G	8 oz	P	P	N	P-F	P-F	P-F	P-F	P-F	P-F	P-F	P-F	N	P	P	N
Banvel / Clarity	P,F	1-2 pt ^d	P-F	F-G	P	F	F-G	F	F	F	F	F	F	P	P-F	F-G	N
Basagran	C,S	1 qt	P-F	N	N	P-F	-	-	N	-	P	N	-	N	-	-	F
Beacon	C	3/4 oz	F*	P	N	-	P-F*^	-	F*^	P*^	F*^	F*	P*	F*	-	-	P
Callisto	C	3 oz	G	F-G	-	-	-	-	-	-	G	-	-	F-G	-	-	F
Glyphosate products	C ^b ,S ^b ,F	consult label	G	F	F-G	G	F-G	F-G	F-G	F	F	F-G	F	F	F	G-E	P-F
Ignite 280	C,S ^a	28-34 oz	F	F-G	-	F-G	-	-	-	-	P-F	-	-	-	-	-	P
Metsulfuron	P	0.1-0.4 oz	F	F-G	G	F-G	N	-	P-F	-	F-G	N	F	P	N	G	-
Option	C	1.5 oz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P
Pursuit	A,S	1.44 oz	P	P-F	P	P-F	N	-	N	-	N	N	-	P	N	-	P
Remedy	P	2-4 pt	F	F-G	P	G	F	-	F-G	-	F	F	-	P-F	F-G	-	-
Sandea	C	2/3-1 oz	P-F*	P	P	P	P-F*^	-	P*	P*^	P*	F*	-	F	-	-	E
Stinger	C,P,G	1/2-2/3 pt	E	G-E	P	F-G	P	-	P-F	-	N-P	N-P	F-G	-	-	N	N

*control ratings will be higher if either Banvel or Clarity is included as a tank-mix.

^control ratings will be higher if 2,4-D is included as a tank-mix.

^aFor use only with Liberty-Link hybrids or varieties.

^bFor use only with glyphosate-resistant hybrids or varieties.

^dHigher rates are labeled for some uses.

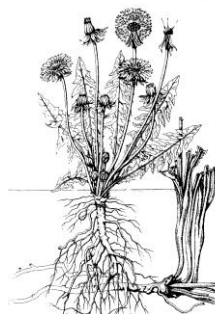


Table 1: Relative Effectiveness of Postemergence Herbicides for Perennial Broadleaf Weeds (cont.)

Legend - based on adequate moisture, good growing conditions, and proper herbicide application

Effectiveness Ratings

E = Excellent (>90% control)
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F = Fair (60-80% control)
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G-E = Good to Excellent
F-G = Fair to Good
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Crop Applications:

A = Alfalfa **S** = Soybean
C = Corn **G** = Small Grains
P = Pasture
F = Fall (Post-harvest)

an “-” indicates that insufficient data or experience available.

Premix products			Canada thistle	Dandelion	Dewberry species	Dock species	Field bindweed	Groundcherry	Hemp dogbane	Honeyvine milkweed	Horsenettle	Common milkweed	Mugwort	Pokeweed	Trumpet creeper	Wild garlic	Yellow nutsedge
Product	Crop(s)	Rate/A															
Cimarron Max	P	Rate I or Rate II ^d	F	F-G	G-E	G-E	P-F	P-F	F-G	P-F	E	P-F	F	P	-	G-E	-
Crossbow	P	3-4 qt	F-G	G	F	F-G	F	F-G	F-G	-	F	F	F-G	F-G	F	F-G	-
Distinct / Status	C	4-6 oz	F	F-G	P	F	F	F-G	P-F	P-F	P-F	F	F	P	P	-	N
Equip	C	1.5 oz	P-F*	F	-	-	-	-	-	-	-	-	-	P-F	-	-	P
Extreme	S ^b	3 pt	F-G	P-F	P-F	F-G	P-F	F	F	P-F	P-F	F	-	P-F	P-F	G	P-F
Harmony Extra	G	0.3 – 0.6 oz	F	P-F	-	G	-	-	-	-	-	-	-	-	-	G-E	-
Hornet WDG	C	2-5 oz	G-E	G	N	G	-	-	-	-	-	-	G	-	-	-	-
Lightning	C ^c	1.28 oz	-	-	-	-	F-G*	-	-	F-G	-	-	-	-	-	-	F-G
Marksman	C	2-3.5 pt	F	F-G	P	G	F-G	F-G	P-F	P-F	P-F	F	F-G	P	P-F	-	P
NorthStar	C	5 oz	F-G	F-G	P	F-G	F-G	F-G	F-G	P-F	F-G	F-G	F-G	F-G	P-F	-	P
Overdrive	P	4-8 oz	F	F-G	P	F	F	F-G	F	P-F	F	F	F	P-F	P-F	-	N
Spirit	C	1 oz	F*	P	P	P	P-F [^]	-	F [^] *	P	F [^] *	F*	P*	F*	-	-	P
Steadfast ATZ	C	14 oz	P-F*	P	P-F	P	P	-	-	-	P	-	-	-	-	-	P
Stout	C	0.75 oz	P-F	P	F-G	P	P	-	P	P	P	-	P	P	-	-	P
Yukon	C	4-8 oz	F	F-G	P	F-G	F	F	P-F	P-F	P-F	F	F	F	P	-	E

*control ratings will be higher if either Banvel or Clarity is included as a tank-mix.

[^]control ratings will be higher if 2,4-D is included as a tank-mix.

^bFor use only with glyphosate-resistant hybrids or varieties.

^cFor use only with Clearfield corn varieties.

^dRate I is 0.25 oz Part A and 1 pint Part B;
 Rate II is 0.5 oz Part A and 2 pints Part B.



Table 2: Relative Effectiveness of Postemergence Herbicides for Perennial Grass Weeds

Legend - based on adequate moisture, good growing conditions, and proper herbicide application

Effectiveness Ratings

E = Excellent (>90% control) **G-E** = Good to Excellent
G = Good (80-90% control) **F-G** = Fair to Good
F = Fair (60-80% control) **P-F** = Poor to Fair
P = Poor (20-60% control) **N** = None (<20% control)

Crop Applications:

A = Alfalfa **S** = Soybean
C = Corn **G** = Small Grains
P = Pasture
F = Fall (Post-harvest)

an “-“ indicates that insufficient data or experience available.

Single active ingredient products			Bermudagrass	Johnsongrass (rhizome)	Quackgrass	Wirestem muhley
Product	Crop(s)	Rate/A				
Accent	C	2/3 oz	N	G-E	G-E	F
Atrazine	C	2 qt	N	N	F-G	P-F
Beacon	C	3/4 oz	N	G	G	P-F
Fusilade DX	S	20 oz	G	G-E	G	G
Glyphosate products	C ^b ,S ^b ,F	0.75-1.5 lb ae	G	G	G-E	G-E
Ignite 280	C,S ^a	28-34 oz	N	N	F	F
Option	C	1.5 oz	N	E	G-E	G-E
Poast	A,S	24 oz	F-G	G	G	F
Poast Plus	A,S	36 oz	F-G	G	G	F
Pursuit	A,S	4 fl oz	P-F	P-F	N	N
Select	A,S	16 oz	E	G-E	G-E	G
Select Max	A,S	32 oz	E	G-E	G-E	G
Targa/Assure	S	10 oz	G	G-E	G	P-F

Premix products			Bermudagrass	Johnsongrass (rhizome)	Quackgrass	Wirestem muhley
Product	Crop(s)	Rate/A				
Basis	C	1/3 oz	N	F	-	P-F
Equip	C	1.5 oz	N	E	G-E	G-E
Extreme	S ^b	3 pt	G	G	G-E	G-E
Fusion	S	12 oz	F-G	G	G	P-F
Lightning	C ^c	1.28 oz	N	F	F-G	N
Marksman	C	2-3.5 pt	N	N	F	P
NorthStar	C	5 oz	N	G	G	P
Ready Master ATZ	C ^b	2 qt	G	G	G-E	G-E
Steadfast	C	3/4 oz	N	G-E	G-E	F
Steadfast ATZ	C	14 oz	N	G-E	G-E	F
Stout	C	3/4 oz	N	G-E	G-E	G-E

^aFor use only with Liberty-Link hybrids or varieties.

^bFor use only with glyphosate-resistant hybrids or varieties.

^cFor use only with Clearfield corn varieties.

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