

Herbicides for Annual Weed Control in Eastern Oregon Wheat

More than 50 different kinds of broad-leaf weeds and grasses can be found in most eastern Oregon cereal fields. Many of these weeds are resistant to one or more of the commonly used herbicides. The continued use of the same herbicide year after year will control certain species—and those uncontrolled will become persistent problems.

The best way to avoid buildup of herbicide-resistant species is to rotate the use of a herbicide at least once every third season. The wide selection of herbicides and herbicide combinations now available make a chemical rotation feasible.

Eleven registered herbicides and eight combinations with state registrations, for a total of 19, are available for broadleaf weed control. Trifluralin (Treflan) is registered as a downy brome (cheatgrass) herbicide for winter wheat. It is also effective on bulbous bluegrass (*Poa bulbosa*) and occasionally effective on goatgrass (*Aegilops cylindrica*).

Trifluralin is only effective as a preplant, soil-incorporated material. *To prevent severe injury or stand loss, seed your wheat below the trifluralin-treated zone.*

Diclofop (Hoelon) is also registered for downy brome control in winter wheat, but it must be soil-incorporated.

Soil-active herbicides such as diuron (Karmex), linuron (Lorox), metribuzin (Sencor or Lexone), and terbutryn (Igran) are normally used in the fall after the grain has emerged and when sufficient rain has occurred to firm the soil surface. Do not

apply before the crown root system is well developed, or damage may result.

Bromoxynil-dicamba, bromoxynil-diuron, bromoxynil-linuron, bromoxynil-metribuzin, and bromoxynil-MCPA combinations are used after weeds have emerged in late winter or early spring. The combinations generally are applied after the wheat has emerged but before the weeds have established a deep root system. Applications made after March 1 are less effective.

All 2,4-D and 2,4-D-dicamba materials are commonly applied in the spring after the wheat is well established, preferably in four- to six-tiller stage. MCPA can be applied any time after the wheat has three to four tillers.

Applications of most phenoxy materials must be delayed until the wheat is tillered. The weeds are often too large for effective control at this time, thus limiting the potential yield.

Chlorsulfuron (Glean), bromoxynil (Buctril, Brominal), and dinoseb (salt formulations) can be used any time in the fall or early winter, after the broadleaves have emerged, but before they are beyond the seedling stage (two- to six-leaf).

Metribuzin is a postemergence herbicide registered for the selective control of downy brome in winter wheat and winter barley, but it is partially effective on ripgut brome (*Bromus rigidis*) and bulbous bluegrass (*Poa bulbosa*).

Metribuzin is effective as a postemergence treatment after wheat or barley have three tillers and well developed crown roots.

Downy brome is sensitive to metribuzin in the seedling stage (three- to four-leaf), but it becomes resistant when growth exceeds four tillers.

Some unregistered herbicides show promise of aiding the weed control program, and new mixtures are being developed that will reduce chemical residues in crops and soil and provide the grower with a greater economic advantage.

Good weed control requires selection of the proper herbicide and uniform application. Selection is based on the weed species present and their stage of growth, age of the grain, and soil type.

Application uniformity partially determines the effectiveness of the selected herbicide. Adjust the spray nozzles on both aircraft and ground rigs carefully, to prevent a distortion of the spray pattern within the swath. This is necessary to prevent high and low deposit zones, which show up as streaks or skips in the field. Check the label on the container or get additional information from qualified weed control authorities.

Table 1 shows the relative performance of several herbicides and mixtures under eastern Oregon conditions. In some situations, weed control may be more or less effective than recorded. Since this is only a guide, obtain the additional information you'll need from qualified agents, dealers, or research investigators.

Table 2 lists registered herbicide rate ranges for individual herbicides. Table 3 does the same for herbicide combinations.

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OREGON STATE UNIVERSITY EXTENSION SERVICE

Table 1.—Herbicide effectiveness on annual weeds in eastern Oregon. Rating scale: E = excellent (95-100%), G = good (80-94%), F = fair (60-79%), P = poor (less than 59%), R = resistant species

Weed group	Foliar and soil-active							Translocated			Contact		Combination							
	Chlorisulfuron (Clean)	Diclofop (Healon)	Diuron (Karmex)	Linuron (Lorox)	Metribuzin (Sencor or Lexone)	Terbutryn (Igran)	Trifluralin (Treflan)	2,4-D	Dicamba + 2,4-D	Dicamba	MCPA	Bromoxynil	Dinoseb (salt formulations)	Bromoxynil + dicamba	Bromoxynil + MCPA	Bromoxynil + MCPA + dicamba	Diuron + bromoxynil	Linuron + bromoxynil	Metribuzin + bromoxynil	Metribuzin + chlorisulfuron
Borage																				
Fiddleneck (<i>Amsinckia intermedia</i>)	F	P	E	E	F	E	P	F	G	P	F	G	P	E	E	E	E	F	G	
Common bugloss (Alkanet) (<i>Anchusa officinalis</i>)	G	P	E	E	G	E	G	P	F	P	P	G	P	E	G	E	E	E	E	
Corn gromwell (<i>Lithospermum arvense</i>)	P	P	E	E	P	G	F	P	F	P	P	G	P	E	E	E	E	P	F	
Madwort (Catchweed) (<i>Asperugo procumbens</i>)	F	P	P	P	F	F	F	F	F	F	P	P	F	G	G	G	G	G	G	
Buckwheat																				
Prostrate knotweed (<i>Polygonum aviculare</i>)	G	P	P	P	G	P	G	P	G	E	P	P	F	E	G	E	F	G	E	
Wild buckwheat (<i>Polygonum convolvulus</i>)	G	P	P	P	P	P	P	P	F	G	P	P	P	F	P	F	P	P	G	
Buttercup																				
Testiculate buttercup (Horned-head) (<i>Ranunculus testiculatus</i>)	E	P	G	G	P	P	G	P	F	P	P	P	F	G	G	F	G	G	E	
Carrot																				
Bur beakchervil (<i>Anthriscus scandicina</i>)	E	P	P	F	P	F	G	P	F	G	E	P	F	E	G	E	P	F	E	
Poison hemlock (<i>Conium maculatum</i>)	E	P	F	G	P	F	P	F	G	P	P	P	P	F	F	F	P	P	G	
Figwort																				
Ivyleaf speedwell (<i>Veronica hederifolia</i>)	F	P	P	F	E	F	G	P	F	P	P	P	E	F	P	F	P	P	E	
Geranium																				
Redstem filaree (<i>Erodium cicutarium</i>)	E	P	F	F	F	G	G	F	F	G	F	P	G	G	F	G	G	F	E	
Goosefoot																				
Russian thistle (<i>Salsola kali</i>)	E	P	P	P	F	P	F	G	G	F	P	P	P	F	F	G	P	F	E	
Common lambsquarters (<i>Chenopodium album</i>)	E	P	G	G	E	G	E	E	E	G	G	F	G	E	E	E	G	E	E	
Kochia (<i>Kochia scoparia</i>)	E	P	G	G	E	E	E	G	E	G	G	F	G	E	E	E	G	E	E	
Mustard																				
Smallseed Falseflax (<i>Camelina microcarpa</i>)	E	P	G	G	G	P	G	G	F	F	G	G	E	E	E	G	E	E	E	
Shepherdspurse (<i>Capsella burs-pastoris</i>)	E	P	G	G	F	P	G	E	F	F	F	G	E	G	E	G	G	G	G	
Blue mustard (Purple) (<i>Chorispora tenella</i>)	E	P	E	E	G	G	P	F	G	P	P	G	P	F	G	E	E	G	G	
Tansymustard (<i>Descurainia pinnata</i>)	E	P	G	G	G	P	P	G	G	P	F	G	F	G	G	G	G	G	E	
Bushy wallflower (<i>Erysimum repandum</i>)	E	P	G	E	F	F	P	F	G	F	P	G	G	E	E	E	G	F	G	
Yellowflower pepperweed (<i>Lepidium perfoliatum</i>)	E	P	E	E	G	G	P	E	E	F	F	G	G	G	E	G	G	G	E	
Tumble mustard (Jim Hill) (<i>Sisymbrium altissimum</i>)	E	P	F	F	F	P	P	E	E	F	G	F	F	E	E	E	E	F	E	
Field pennycress (Fanweed) (<i>Thlaspi arvense</i>)	E	P	F	G	G	G	P	E	E	F	G	F	F	E	E	E	E	E	E	
Wild mustard (<i>Brassica spp.</i>)	E	P	G	G	G	G	P	E	E	P	G	P	P	F	G	E	F	G	G	
Flixweed (<i>Descurainia sophia</i>)	E	R	G	G	G	G	R	G	E	F	G	F	P	E	E	E	G	G	E	

Table 1.—Herbicide effectiveness on annual weeds in eastern Oregon. Rating scale: E = excellent (95-100%), G = good (80-94%), F = fair (60-79%), P = poor (less than 59%), R = resistant species (continued)

Weed group	Foliar and soil-active					Translocated				Contact		Combination								
	Chlorsulfuron (Clean)	Diclofop (Hoelon)	Diuron (Karmex)	Linuron (Lorox)	Metribuzin (Sencor or Lexone)	Terbutryn (gran)	Trifluralin (Treflan)	2,4-D	Dicamba + 2,4-D	Dicamba	MCPA	Bromoxynil	Dinoseb (salt formulations)	Bromoxynil + dicamba	Bromoxynil + MCPA	Bromoxynil + MCPA + dicamba	Diuron + bromoxynil	Linuron + bromoxynil	Metribuzin + bromoxynil	Metribuzin + chlorsulfuron
Madder																				
Catchweed bedstraw (cleavers) (<i>Galium aparine</i>)	P	P	G	G	F	E	G	P	P	G	P	F	F	G	F	F	G	G	F	F
Mint																				
Henbit (dead nettle) (<i>Lamium amplexicaule</i>)	E	P	G	G	E	E	G	P	F	P	F	F	E	G	F	G	G	G	E	E
Nightshade																				
Nightshade (<i>Solanum spp.</i>)	P	R	P	F	F	F	R	G	G	F	F	P	F	F	F	G	P	F	F	P
Purslane																				
Minerslettuce (<i>Montia perfoliata</i>)	E	P	G	G	F	G	F	P	F	P	P	F	F	F	F	F	G	G	F	E
Pea																				
Hairy vetch (<i>Vicia villosa</i>)	G	P	P	P	P	P	P	E	E	P	F	P	P	P	F	F	P	P	P	F
Pigweed																				
Pigweed (<i>Amaranthus spp.</i>)	E	R	G	G	G	G	E	G	E	F	G	F	G	G	G	G	G	G	G	E
Pink																				
Corn cockle (<i>Agrostemma githago</i>)	E	P	F	F	G	F	F	P	E	P	P	F	P	G	G	E	E	E	G	G
Cow cockle (<i>Vaccaria segetalis</i>)	G	P	F	F	F	F	F	P	G	P	F	F	P	G	G	G	G	G	F	G
Jagged chickweed (Umbel chickweed) (<i>Holosteum umbellatum</i>)	P	P	F	F	F	F	E	P	G	F	P	P	F	F	F	F	F	F	G	F
Knawel (<i>Scleranthus annuus</i>)	E	P	G	G	P	P	G	P	G	P	F	F	F	F	F	G	G	G	F	E
Polemonium																				
Annual polemonium (Jacobs ladder) (<i>Polemonium micranthum</i>)	F	P	G	G	G	G	G	G	G	F	G	P	F	G	F	E	G	G	G	E
Sunflower																				
Annual sowthistle (<i>Sonchus oleraceus</i>)	G	P	F	F	G	G	P	E	E	P	F	F	F	G	G	G	F	F	F	E
Prickly lettuce (<i>Lactuca scariola</i>)	P	P	P	F	G	G	F	E	E	G	G	F	G	G	G	E	G	G	G	G
Mayweed (Dog fennel) (<i>Anthemis cotula</i>)	E	P	E	G	F	G	G	P	G	P	P	P	F	F	F	G	F	F	G	E
Pineappleweed (<i>Matricaria matricarioides</i>)	E	P	G	G	P	G	G	P	F	P	P	G	P	F	G	F	F	F	P	E
Cornflower (Bachelor button) (<i>Centaurea cyanus</i>)	P	P	G	G	F	F	F	F	F	P	P	F	P	F	G	G	G	G	F	F
Grasses																				
Downy brome (Cheatgrass) (<i>Bromus tectorum</i>)	R	E*	P	P	E	P	G*	R	R	R	R	R	P	R	R	R	P	P	E	E
Ripgut brome (<i>Bromus rigidus</i>)	R	G*	P	P	G	P	G*	R	R	R	R	R	P	R	R	R	P	P	G	G
Wild barley (foxtail) (<i>Hordeum leporinum</i>)	R	F	P	P	E	P	G*	R	R	R	R	R	P	R	R	R	P	P	E	E
Barnyardgrass (watergrass) (<i>Echinochloa crus-galli</i>)	R	G	F	G	E	F	E*	R	R	R	R	R	P	R	R	R	P	P	E	E
Bulbous bluegrass (<i>Poa bulbosa</i>)	R	G*	P	P	G	P	F*	R	R	R	R	R	P	R	R	R	P	P	G	G
Jointed goatgrass (<i>Aegilops cylindrica</i>)	R	P	P	P	P	P	F*	R	R	R	R	R	P	R	R	R	P	P	P	P

* Must be soil-incorporated.

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	Chlorsulfuron (Glean)	Diclofop (Hoelon)	Diuron (Karmex)	Linuron (Lorox)	Metribuzin (Sencor or Lexone)	Terbutryn (Igran)	Trifluralin (Treflan)	2,4-D	Dicamba + 2,4-D	Dicamba	MCPA	Bromoxynil	Dinoseb (salt formulations)	Bromoxynil + dicamba	Bromoxynil + MCPA	Bromoxynil + MCPA + dicamba	Diuron + bromoxynil	Linuron + bromoxynil	Metribuzin + bromoxynil	Metribuzin + chlorsulfuron
Grasses (continued)																				
Wild oat (<i>Avena fatua</i>)	R	E	P	P	P	P	F*	R	R	R	R	R	P	R	R	R	P	P	P	P
Witchgrass (<i>Panicum capillare</i>)	R	E	P	P	G	F	G*	R	R	R	R	R	P	R	R	R	P	P	G	E
Italian ryegrass (<i>Lolium multiflorum</i>)	R	E	P	P	F	P	G*	R	R	R	R	R	P	R	R	R	P	P	F	G

* Must be soil-incorporated.

Table 2.—Registered herbicide rate ranges for eastern Oregon wheat

Herbicides	Application range (active ingredient/acre)
Chlorsulfuron (Glean)	0.13-0.38 oz
Diuron (Karmex)	0.8 -1.2 lb
Metribuzin (Sencor, Lexone)	0.25-0.50 lb
Terbutryn (Igran)	1.25-2.2 lb
Linuron (Clean Crop Linuron)	0.5 -0.75 lb
Trifluralin (Treflan)	0.75 lb
Dicamba (Banvel)	0.25 lb
2, 4-D	0.50-1.0 lb
MCPA	0.50-1.0 lb
Bromoxynil (Buctril, Brominal)	0.38-0.50 lb
Diclofop (Hoelon)	0.75-1.25 lb
Dinoseb Amine	1.5 lb lb
Barban (Carbyne)	0.25-0.375 lb
Triallate (Far-Go)	1.25 lb
Difenzoquat (Avenge)	0.51-1.0 lb

Table 3.—Registered herbicide-combination rate ranges for eastern Oregon wheat

Combinations	Application range (active ingredient/acre)
Bromoxynil (Buctril, Brominal) + Dicamba (Banvel)	0.38-0.50 lb + 0.031 lb
Bromoxynil (Buctril, Brominal) + MCPA	0.19-0.25 lb + 0.19-0.25 lb
Bromoxynil (Buctril, Brominal) + MCPA	0.19-0.25 lb + 0.19-0.25 lb
Bromoxynil (Buctril, Brominal) + Dicamba (Banvel)	0.19-0.25 lb + 0.031 lb
Diuron (Karmex) + Bromoxynil (Buctril, Brominal)	0.40-0.80 lb + 0.25 lb
Linuron (Clean Crop Linuron) + Bromoxynil (Buctril, Brominal)	0.25 lb + 0.25 lb
Metribuzin (Sencor, Lexone) + Bromoxynil (Buctril, Brominal)	0.13-0.25 lb + 0.25-0.32 lb
Metribuzin (Sencor, Lexone) + Chlorsulfuron (Glean)	0.25-0.50 lb + 0.13-0.33 oz
2, 4-D or MCPA + Dicamba (Banvel)	0.5 -0.75 lb + 0.125 lb

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This publication was prepared by Donald J. Rydrych, associate professor of agronomy, and Tom Whitson, Extension agronomist, Oregon State University. Trade-name products are cited as illustrations only; their mention does not constitute endorsement of these products by the Oregon State University Extension Service.

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