



Idaho's Noxious Weeds
2008 CONTROL GUIDELINES
Noncrop and Rangeland Sites

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These guidelines are not recommendations. If site-specific help is needed, land managers should contact a licensed consultant. The label will describe legal use of the herbicide for pasture, rights-of-way, rangeland, etc., and it will document restrictions on reentry intervals and subsequent haying or grazing restrictions.

Preface to 2008 control guidelines

The Idaho noxious weed law now contains three categories of weeds: (1) those that are thought not to be in Idaho or, if here, recently established (statewide early detection and rapid response), (2) those not widely distributed in the state that must be controlled or eradicated in some areas (statewide control), and (3) those distributed throughout the state that must be contained or controlled to prevent further economic and environmental damage (statewide containment).

The control guidelines include control using herbicides, cultural methods, and biological control for noncropland and rangeland sites. These guidelines are updated annually.

The **Pacific Northwest Weed Management Handbook** contains more detailed information on most of the weed species encountered in Idaho. The handbook is available online at:

<http://pnwpest.org/pnw/weeds>

Order printed copies through UI Educational Publications Warehouse at P.O. Box 442240, Moscow, ID 83844-2240, phone: 208/885-7982, fax: 208/885-4648, email: calspubs@uidaho.edu

Legend

oz/A	=	ounces per acre of product
lb/A	=	pounds per acre of product
pt/A	=	pints per acre of product
qt/A	=	quarts per acre of product
gal/A	=	gallons per acre
oz ai/A	=	ounces active ingredient per acre
oz ae/A	=	ounces acid equivalent per acre
lb ai/A	=	pounds active ingredient per acre
lb ae/A	=	pounds acid equivalent per acre
ai/A	=	active ingredient per acre
ae/A	=	acid equivalent per acre
mg	=	milligrams
L	=	liters
ml	=	milliliters
v/v	=	by volume

Black henbane *Hyoscyamus niger*

Chemical control

Herbicide: Escort (metsulfuron)

Description: Apply 0.5 oz/A Escort; use a surfactant

Timing: Actively growing plants

Herbicide: Tordon (picloram)

Description: Apply 0.25 to 0.50 lb ae/A picloram

Timing: Before bloom

Herbicide: Banvel, Clarity, Vanquish, etc. (dicamba)

Description: Apply 0.125 to 0.375 lb ai/A dicamba

Timing: Rosette stage

Herbicide: Cimarron X-tra (metsulfuron + chlorsulfuron)

Description: Apply one 20-oz pack of Cimarron X-tra for each 10 acres

Timing: Actively growing plants

Herbicide: Cimarron Max (metsulfuron + dicamba + 2,4-D)

Description: Apply 0.5 oz/A Part A and 2 pt/A Part B

Timing: Actively growing plants

Bohemian knotweed *Polygonum x bohemicum*

Chemical control

Herbicide: Garlon 4 (triclopyr)

Description: Apply 1% v/v Garlon 4 to foliage

Timing: Actively growing plants

Bohemian knotweed (cont.)

Chemical control (cont.)

Herbicide: Habitat or Arsenal (imazapyr)

Description: Apply 0.5 to 1 lb/A or 1% v/v Habitat adjacent to water or Arsenal away from water

Timing: Mid-summer after seed head forms

Herbicide: Aquamaster or Rodeo (glyphosate)

Description: Hollow-stem injection—Inject 5 ml Aquamaster or Rodeo per stem between 2nd and 3rd internode

Timing: Actively growing plants

Brazilian elodea *Egeria densa*

Chemical control

Herbicide: Sonar (fluridone)

Description: Maintain a concentration of 45 to 90 ppb for 30 to 90 days

Timing: Early in the season as plants begin growth and oxygen levels are higher. Applying early reduces the chance of aquatic animals facing an oxygen deficit when dying plants use oxygen as they decompose. Applications within ¼ mile of a potable water intake cannot exceed 20 ppm

Herbicide: Aquathol K (endothall dipotassium salt)

Description: Apply 1 to 3 ppm endothall (24-hour swimming restriction, 3-day fishing restriction, and 14-day irrigation/stock watering restriction). Rates above 1 ppm should be limited to 10% of the water body to avoid damage to fish

Timing: Actively growing plants

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Brazilian elodea (cont.)

Chemical control (cont.)

Herbicide: Nautique (copper)

Description: Apply 0.5 to 1 ppm copper depending on water depth and infestation density. Treat $\frac{1}{3}$ of the surface in 10-day intervals to prevent depletion of dissolved oxygen. No swimming or irrigation restrictions

Timing: Sunny mornings when water temperature is above 60°F

Herbicide: Reward (diquat)

Description: Apply 0.185 to 0.74 gal/surface A (0.5 ppm is effective in clear water, but with clay sediment turbidity, 1 to 2 ppm is effective)

Timing: When water temperatures rise above 50°F

Buffalobur

Solanum rostratum

Chemical control

Herbicide: 2,4-D + Banvel, Clarity (dicamba)

Description: Apply 1.6 lb ae/A 2,4-D and 0.5 lb ai/A dicamba

Timing: Rosette stage

Herbicide: Tordon (picloram) + 2,4-D

Description: Apply 0.25 to 0.50 lb ae/A picloram + 0.5 lb ae/A 2,4-D

Timing: Rosette stage

Herbicide: Cimarron Max (metsulfuron + dicamba + 2,4-D)

Description: Apply 0.5 oz/A Part A and 2 pt/A Part B

Timing: Actively growing plants

Canada thistle

Cirsium arvense

Chemical control

Herbicide: Redeem R&P (clopyralid + triclopyr)

Description: Apply 2.5 to 4 pt/A Redeem R&P. Higher rates may result in persistence into the next field season

Timing: Rosette to bud stages

Herbicide: Stinger or Transline (clopyralid)

Description: Apply 0.25 to 1.33 pt/A Stinger or Transline

Timing: Up to bud stage

Herbicide: Milestone (aminopyralid)

Description: Apply 5 to 7 fl oz/A Milestone. Higher rates may result in persistence into the next field season

Timing: In spring to plants in the prebud growth stage; in fall to plant regrowth

Herbicide: Tordon (picloram)

Description: Apply 0.5 lb ae/A picloram

Timing: Before budding

Herbicide: Telar (chlorsulfuron)

Description: Apply 1.5 oz/A Telar; use a surfactant

Timing: Fall rosettes or when plants are at the bud to bloom stages

Herbicide: Roundup, Touchdown, etc. (glyphosate)

Description: Apply 1.50 to 2.25 lb ae/A glyphosate

Timing: Actively growing plants at bud stage

Herbicide: Banvel, Clarity, Vanquish, etc. (dicamba)

Description: Apply 2 lb ae/A dicamba

Timing: Actively growing plants

Canada thistle (*cont.*)

Biological control

Insect: Stem weevil (*Ceutorhynchus litura*)

Description: Adults feed on leaf and stem tissue. The greatest damage is caused by larvae feeding within the stem and crown. Impact is mostly indirect, providing access into shoots for harmful arthropods, nematodes, and pathogens. Collect weevils as adults in spring.

Redistribution: April 1 to May 1

Insect: Gall fly (*Urophora cardui*)

Description: Larvae burrow into the stems, causing a gall to form. Some plant resources are used to maintain the gall rather than for plant growth. Stem deformation may prevent seed production. Collect galls in early spring.

Redistribution: February 15 to April 15

Common crupina

Crupina vulgaris

Chemical control

Herbicide: Transline or Stinger (clopyralid)

Description: Apply 0.35 pt/A Transline or Stinger

Timing: Split—fall then spring

Herbicide: Tordon (picloram)

Description: Apply 0.25 to 0.50 lb ae/A picloram

Timing: Fall or late winter

Herbicide: Banvel, Clarity, Vanquish, etc. (dicamba) + 2,4-D

Description: Apply 0.5 lb ae/A dicamba + 1 lb ae/A 2,4-D

Timing: Actively growing plants

Dalmatian toadflax

Linaria dalmatica ssp. *dalmatica*

Chemical control

Herbicide: Telar (chlorsulfuron)

Description: Apply 2 to 3 oz/A Telar; use a surfactant

Timing: Bud to bloom

Herbicide: Tordon (picloram) + Telar (chlorsulfuron)

Description: Apply 0.25 ae/A picloram + 1.5 oz/A Telar

Timing: Bud to bloom

Herbicide: Tordon (picloram)

Description: Apply 0.25 to 1 lb ae/A picloram

Timing: Late summer to fall or late winter

Herbicide: Banvel, Clarity, Vanquish, etc. (dicamba)

Description: Apply 2 lb ae/A dicamba

Timing: Early spring

Biological control

Insect: Defoliating moth (*Calophasia lunula*)

Description: Defoliation from larval feeding reduces plant vigor and seed production. Collect moths as larvae.

Redistribution: May and June

Insect: Stem-boring weevil (*Mecinus janthinus*)

Description: Larval feeding can kill shoots, which reduces flower and seed production. Adult weevils feed externally on foliage. Collect weevils as adults.

Redistribution: May to early July

David's spurge *Euphorbia davidii*

Chemical control

Herbicide: Plateau (imazapic)

Description: Apply 8 oz/A Plateau

Timing: When plant is under 4 inches tall

Diffuse knapweed *Centaurea diffusa*

Chemical control

Herbicide: Redeem R&P (clopyralid + triclopyr)

Description: Apply 0.75 to 1 qt/A Redeem R&P

Timing: Rosette to early bolting

Herbicide: Tordon (picloram)

Description: Apply 0.25 to 0.50 lb ae/A picloram

Timing: Spring—rosette to early bolting stages

Herbicide: Stinger or Transline (clopyralid)

Description: Apply 0.66 to 1.33 pt/A Transline or Stinger

Timing: Up to bud stage

Herbicide: Milestone (aminopyralid)

Description: Apply 5 to 7 fl oz/A Milestone

Timing: Rosette to bolting stages or in fall

Herbicide: Curtail (clopyralid + 2,4-D)

Description: Apply 2 to 4 qt/A Curtail; higher rates may result in persistence into the next field season

Timing: Rosette to early bolting stages

(cont. on page 11)

Diffuse knapweed (cont.)

Chemical control (cont.)

Herbicide: Roundup, Touchdown, etc. (glyphosate)

Description: Apply 3 lb ae/A glyphosate

Timing: Bud stage

Herbicide: 2,4-D

Description: Apply 1 to 2 lb ae/A 2,4-D

Timing: Early bolting

Biological control

Insect: Seedhead fly (*Urophora affinis*, *U. quadrifasciata*)

Description: The two species together reduce seed production by 75% to 95% at some sites but have little impact on stand density. *U. affinis* larvae attack the seed head causing the plant to form a hard gall, which depletes the plant's energy resources. Collect infested seed heads in early spring.

Redistribution: March 1 to April 30

Insect: Root boring moth (*Agapeta zoegana*)

Description: Larvae mine the root of the plant, reducing storage capacity and increasing susceptibility to infection from fungi or bacteria.

Redistribution: July 1 to August 15

Insect: Seed-head weevil (*Larinus minutus*, *L. obtusus*)

Description: Larvae destroy seeds in the seed heads, reducing seed production. Adults can defoliate plants. *L. minutus* is causing the decline of diffuse knapweed in some areas. Collect weevils as adults.

Redistribution: June 1 to October 1

(cont. on page 12)

Diffuse knapweed (*cont.*)

Biological control (*cont.*)

Insect: Root boring beetle (*Sphenoptera jugoslavica*)

Description: Larvae tunnel within the roots. Surviving plants are stunted and produce fewer flowers. Adults do less damage feeding on leaves. Collect beetles as adults.

Redistribution: July 15 to August 1

Insect: Broad-nosed knapweed seedhead weevil (*Bangasternus fausti*)

Description: Adults feed on leaves, stems, and florets but prefer flower heads when available. Collect weevils as adults.

Redistribution: June 1 to July 1

Insect: Knapweed peacock fly (*Chaetorellia acrolophi*) Not established in Idaho

Description: Larvae burrow into the center of the bud and eat their way into the seed, destroying the seed head. Collect infested seed heads in early spring (February 1 to March 30).

Redistribution: March 1 to April 30

Insect: Root weevil (*Cyphocleonus achates*)

Description: Larvae mine into the root, causing a root gall to form. Dispersal is slow as adults rarely fly. Collect weevils as adults.

Redistribution: August 1 to October 1

Insect: Knapweed seedhead moth (*Metzneria paucipunctella*) Widely established in the West

Description: Larvae feed on developing seeds. Larvae also attack and destroy other seed head insects, including larvae of the two seed head flies, *Urophora* spp. Collect infested seed heads in early spring.

Redistribution: March 15 to April 30

Dyer's woad

Isatis tinctoria

Chemical control

Herbicide: Escort (metsulfuron)

Description: Apply 0.5 to 1 oz/A Escort; use a surfactant

Timing: Actively growing plants

Herbicide: Telar (chlorsulfuron)

Description: Apply 1 oz/A Telar

Timing: Before or just after emergence

Herbicide: Cimarron Max (metsulfuron + dicamba + 2,4-D)

Description: Apply 0.5 oz/A Part A and 2 pt/A Part B

Timing: Actively growing plants

Herbicide: Cimarron X-tra (metsulfuron + chlorsulfuron)

Description: Apply one 20-oz pack of Cimarron X-tra for each 10 acres; use a surfactant

Timing: Actively growing plants

Herbicide: 2,4-D LV ester

Description: Apply 1.90 to 2.85 lb ae/A 2,4-D LV ester

Timing: Rosette or bud stage

Eurasian watermilfoil

Myriophyllum spicatum

Cultural control

Method: Hand pull

Description: Divers pull plants by hand

Timing: Late spring to summer

Method: Suction dredge

Description: Plants can be selectively removed

Timing: Late spring to summer

Method: Benthic barrier

Description: Place benthic barrier frames over milfoil for 8 weeks

Timing: When plants are small

Chemical control

Herbicide: Sonar (fluridone)

Description: Apply 0.06 to 0.09 mg ai /L fluridone in ponds. Special regulations apply; may require NPDES (National Pollution Discharge Elimination System) permit

Timing: Actively growing plants

Herbicide: Aquathol K (endothall dipotassium salt)

Description: Apply 1 to 3 ppm of endothall (24-hour swimming restriction, 3-day fishing restriction, and 14-day irrigation/stock watering restriction). Rates above 1 ppm should be limited to 10% of the water body to avoid damage to fish

Timing: Actively growing plants

Herbicide: Aquaclean or Navigate (2,4-D)

Description: Apply 100 to 200 lb/A Aquaclean or Navigate. Do not irrigate unless concentration is less than 0.1 ppm and do not use for drinking above 0.07 ppm

Timing: Spring to early summer

(cont. on page 15)

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Eurasian watermilfoil (cont.)

Chemical control (cont.)

Herbicide: Renovate 3 (triclopyr)

Description: Apply 0.75 to 2 ppm triclopyr. Setback distance from potable water intake applies; see label

Timing: Spring to early summer

Field bindweed

Convolvulus arvensis

Chemical control

Herbicide: Banvel, Clarity, Vanquish, etc. (dicamba)

Description: Apply 0.5 to 1 lb ae/A dicamba

Timing: Actively growing plants; during bloom

Herbicide: Tordon (picloram)

Description: Apply 1 lb ae/A picloram

Timing: Early bud to bloom

Herbicide: Banvel, Clarity, Vanquish, etc. (dicamba) + 2,4-D

Description: Apply 0.5 to 1 lb ae/A dicamba + 1 to 2 lb ae/A 2,4-D

Timing: Late summer or fall before frost

Herbicide: Escort (metsulfuron)

Description: Apply 1.5 to 2 oz/A Escort; use a surfactant

Timing: Bloom stage

Herbicide: Roundup, Touchdown, etc. (glyphosate)

Description: Apply 3 to 3.75 lb ae/A glyphosate

Timing: Full bloom

Herbicide: 2,4-D

Description: Apply 2 to 3 lb ae/A 2,4-D

Timing: Bud stage

Read and follow the herbicide label—15

Giant hogweed
Heracleum mantegazzianum

Chemical control

Herbicide: glyphosate

Description: Apply 1.5 lb ae/A glyphosate broadcast, or inject 5% v/v into stems

Timing: Bud stage

Herbicide: 2,4-D

Description: Apply 0.95 to 1.9 lb ae/A 2,4-D

Timing: Bud stage

Giant knotweed
Polygonum sachalinense

Chemical control

Herbicide: Garlon 4 (triclopyr)

Description: Apply 1% v/v Garlon 4 to foliage

Timing: Actively growing plants

Herbicide: Habitat or Arsenal (imazapyr)

Description: Apply 0.5 to 1 lb/A or 1% v/v Habitat adjacent to water or Arsenal in areas away from water

Timing: Mid-summer after seed head forms

Herbicide: Aquamaster or Rodeo (glyphosate)

Description: Hollow-stem injection—Inject 5 ml Aquamaster or Rodeo per stem between the 2nd and 3rd internodes

Timing: Actively growing plants

Hoary alyssum
Berteroa incana

Chemical control

Herbicide: Escort (metsulfuron)

Description: Apply 0.5 to 1 oz/A Escort; use a surfactant

Timing: Rosette to bolting stages

Herbicide: Telar (chlorsulfuron)

Description: Apply 1 oz/A Telar; use a surfactant

Timing: Rosette to bolting stages

Houndstongue
Cynoglossum officinale

Chemical control

Herbicide: Escort or Cimarron (metsulfuron)

Description: Apply 1 to 2 oz/A Escort or Cimarron; use a surfactant

Timing: Actively growing plants

Herbicide: Plateau (imazapic)

Description: Apply 8 to 12 oz/A Plateau

Timing: Low rate at rosette stage; high rate at rosette to bolting stages

Herbicide: Tordon 22K (picloram)

Description: Apply 1 to 2 pt/A Tordon 22K

Timing: Actively growing plants

Herbicide: 2,4-D ester

Description: Apply 2 lb ae/A 2,4-D ester

Timing: Actively growing plants; before bloom stage

Hydrilla

Hydrilla verticillata

Chemical control

Herbicide: fluridone

Description: Maintain a concentration of 45 to 90 ppb of fluridone for 30 to 90 days

Timing: Early in the season as plants begin growth and oxygen levels are higher. Applying early reduces the chance that aquatic animals will face an oxygen deficit when dying plants use oxygen as they decompose. Applications within ¼ mile of a potable water intake cannot exceed 20 ppm

Herbicide: Aquathol K (endothall dipotassium salt)

Description: Apply 1 to 3 ppm endothall (24-hour swimming restriction, 3-day fishing restriction, and 14-day irrigation/stock watering restriction). Rates above 1 ppm should be limited to 10% of the water body to avoid damage to fish

Timing: Actively growing plants

Japanese knotweed

Polygonum cuspidatum

Chemical control

Herbicide: Garlon 4 (triclopyr)

Description: Apply 1% v/v Garlon 4 to foliage

Timing: Actively growing plants

Herbicide: Habitat or Arsenal (imazapyr)

Description: Apply 0.5 to 1 lb/A or 1% v/v Habitat adjacent to water or Arsenal away from water

Timing: Mid-summer after seed head forms

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Japanese knotweed (cont.)

Chemical control (cont.)

Herbicide: Aquamaster or Rodeo (glyphosate)

Description: Hollow-stem injection—Inject 5 ml Aquamaster or Rodeo per stem between the 2nd and 3rd internodes

Timing: Actively growing plants

Johnsongrass

Sorghum halepense

Chemical control

Herbicide: Roundup, Touchdown, etc. (glyphosate)

Description: Apply 2.25 lb ae/A glyphosate

Timing: Heading

Herbicide: Poast (sethoxydim)

Description: Apply 1.5 to 2.5 pt/A Poast

Timing: Actively growing plants 15 to 25 inches tall

Herbicide: Fusilade (fluzifop)

Description: Apply 1 to 1.5 pt/A Fusilade

Timing: Actively growing plants 8 to 18 inches tall; before boot stage

Herbicide: Bueno or Trans-Vert (MSMA)

Description: Apply 2 lb ai/A MSMA

Timing: Rapidly growing plants

Herbicide: Acclaim Extra (fenoxaprop)

Description: Apply 2 to 2.4 pt/A Acclaim Extra. For turf and ornamental use only

Timing: 2- to 5-leaf stages; 24 to 60 inches tall

Jointed goatgrass *Aegilops cylindrica*

Chemical control

Herbicide: Roundup, Touchdown, etc. (glyphosate)

Description: Apply 0.38 to 0.75 lb ae/A glyphosate

Timing: Actively growing plants before boot stage

Herbicide: Oust (sulfometuron)

Description: Apply 1.3 to 2 oz/A Oust; use a surfactant

Timing: Early in fall to late winter before plants are 3 inches tall

Leafy spurge *Euphorbia esula*

Chemical control

Herbicide: Plateau (imazapic)

Description: Apply 8 oz/A Plateau

Timing: After summer dry period when plants begin to grow

Herbicide: Tordon + 2,4-D (picloram + 2,4-D)

Description: Apply 0.5 lb ae/A picloram + 1 lb ae/A 2,4-D

Timing: Bloom stage

Herbicide: Tordon (picloram)

Description: Apply 0.5 to 1 lb ae/A picloram

Timing: Bloom stage

Herbicide: Roundup, Touchdown, etc. (glyphosate)

Description: Apply 0.38 lb ae/A glyphosate three times at 1-month intervals beginning in June or apply 0.75 lb ae/A glyphosate two times at 1-month intervals beginning in June

Timing: June, July, and August or June and July

(cont. on page 21)

Leafy spurge (cont.)

Chemical control (cont.)

Herbicide: Banvel, Clarity, Vanquish, etc. (dicamba)

Description: Apply 1 lb ae/A dicamba

Timing: Spring to early summer

Herbicide: 2,4-D LV ester

Description: Apply 1 lb ae/A 2,4-D LV ester to suppress seed production or 6 lb ae/A 2,4-D LV ester for control

Timing: Actively growing plants

Biological control

Insect: Flea beetle (*Aphthona cyparissiae*, *A. czwalinae*, *A. flava*, *A. nigriscutis*, and *A. abdominalis*)

Description: Adult aphthona beetles feed on leaves; larvae feed on root hairs and root tissues. Collect beetles as adults.

Redistribution: August 1 to October 1

Insect: Gall midge (*Spurgia esulae*)

Description: Larvae feed on shoot tips and stimulate the production of galls and malformed shoots. Collect galls in spring.

Redistribution: April 1 to May 1

Insect: Red-headed spurge stem borer (*Obera erythrocephala*)

Description: Larval feeding kills shoots and reduces root reserves. Adult feeding has little impact. Collect beetles as adults.

Redistribution: July 15 to August 31

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Leafy spurge (cont.)

Biological control (cont.)

Insect: Spurge clearwing moth (*Chamaesphecia hungarica*)

Description: Root feeding inhibits shoot production and reduces plant vigor. Collect moths as adults.

Redistribution: May 15 to June 30

Insect: Leafy spurge hawkmoth (*Hyles euphorbiae*)

Description: Larvae feed and defoliate the plant. Collect moths as adults June 15 to July 30 and again August 15 to September 30.

Redistribution: June 15 to July 30 and August 15 to September 30

Matgrass

Nardus stricta

Cultural control

Method: Hand removal

Description: Dig small clumps and remove them from the site

Timing: Early to late spring

Chemical control

Herbicide: Roundup, Touchdown, etc. (glyphosate)

Description: Apply 2 lb ae/A glyphosate as a spot treatment or to heavily infested areas where selective control is not required

Timing: Actively growing plants

Meadow knapweed

Centaurea nigrescens

Chemical control

Herbicide: Redeem R&P (clopyralid + triclopyr)

Description: Apply 0.75 to 1 qt/A Redeem R&P

Timing: Rosette to early bolting stages

Herbicide: Stinger or Transline (clopyralid)

Description: Apply 0.66 to 1.33 pt/A Stinger or Transline

Timing: Up to bud stage

Herbicide: Milestone (aminopyralid)

Description: Apply 5 to 7 fl oz/A Milestone

Timing: Rosette to bolting stages or in the fall

Herbicide: Tordon (picloram)

Description: Apply 0.25 to 0.50 lb ae/A picloram

Timing: Spring before bolting

Herbicide: Curtail (clopyralid + 2,4-D)

Description: Apply 2 to 4 qt/A Curtail. Higher rates may result in persistence into the next field season.

Timing: After rosettes form in spring; before bolting

Herbicide: 2,4-D

Description: Apply 1 to 2 lb ae/A 2,4-D

Timing: Early bolting

Herbicide: Roundup, Touchdown, etc. (glyphosate)

Description: Apply 3 lb ae/A glyphosate

Timing: Bud stage

Mediterranean sage

Salvia aethiopis

Chemical control

Herbicide: Escort (metsulfuron) + 2,4-D

Description: Apply 1 oz/A Escort + 32 oz/A 2,4-D

Timing: Rosette to bolting stages

Herbicide: Tordon 22K (picloram)

Description: Apply 1 to 2 pt/A Tordon 22K

Timing: Rosette to bolting stages

Herbicide: Roundup, Touchdown (glyphosate)

Description: Spot spray 1 to 2% v/v Roundup

Timing: Rosette to bolting stages

Biological control

Insect: Mediterranean root weevil (*Phrydiuchus tau*)

Description: Adults chew holes in the aromatic sage leaves, leaving characteristic shot holes. At high weevil densities, leaves can be severely damaged. Females lay eggs at the base of rosette leaves in fall or early spring. Larvae chew into the root crown, feeding on root tissue for about 6 weeks before emerging from the root to pupate for about 10 days. Heavy larval feeding damage can kill small plants. Collect weevils as adults of the new (spring) generation in May to June (adults hide during the hot summer).

Redistribution: Distribute weevils as adults in the spring

Milium

Milium vernale

Chemical control

Herbicide: Hoelon (diclofop)

Description: Apply 1 lb ai/A diclofop

Timing: 1- to 5-leaf stage

Musk thistle

Carduus nutans

Chemical control

Herbicide: Telar (chlorsulfuron)

Description: Apply 1 oz/A Telar; use a surfactant

Timing: After rosettes form in spring; before bolting

Herbicide: Escort (metsulfuron)

Description: Apply 1 oz/A Escort; use a surfactant

Timing: Actively growing rosettes

Herbicide: Redeem R&P (triclopyr + clopyralid)

Description: Apply 1.5 to 2 pt/A Redeem R&P

Timing: Rosette to early bolting stages

Herbicide: Stinger or Transline (clopyralid)

Description: Apply 0.25 to 1 pt/A Stinger or Transline

Timing: Rosette to early bolting stages

Herbicide: Milestone (aminopyralid)

Description: Apply 3 to 5 fl oz/A Milestone

Timing: Apply 3 to 5 fl oz/A to rosettes or bolting plants. Apply 4 to 5 fl oz/A at the late bolting through early flowering growth stages

(cont. on page 26)

Musk thistle (cont.)

Chemical control (cont.)

Herbicide: Tordon (picloram)

Description: Apply 0.25 lb ae/A picloram

Timing: Rosettes in fall

Herbicide: Curtail (clopyralid + 2,4-D)

Description: Apply 2 to 4 qt/A Curtail. Higher rates may result in persistence into the next field season.

Timing: Late rosette to just before flower bud formation

Herbicide: Banvel, Clarity, Vanquish, etc. (dicamba)

Description: Apply 0.5 to 1 lb ae/A dicamba

Timing: Fall or spring but before bolting

Herbicide: 2,4-D

Description: Apply 1.5 to 2 lb ae/A 2,4-D

Timing: Fall or spring but before bolting

Herbicide: Campaign (glyphosate + 2,4-D)

Description: Apply 1 to 2 pt/A Campaign

Timing: Rosette in fall; before freezing in spring

Biological control

Insect: Thistle rosette weevil (*Trichosirocalus horridus*)

Description: Larvae attack the rosettes and interrupt apical dominance of the plant. Rosette weevil populations have caused a dramatic reduction in both thistle population and plant vitality. Collect weevils as adults.

Redistribution: March 15 to April 1 and July 15 to August 1

Orange hawkweed

Hieracium aurantiacum

Chemical control

Herbicide: Transline or Stinger (clopyralid)

Description: Apply 0.66 to 1 pt/A Transline or Stinger

Timing: Fall or spring but before bolting

Herbicide: Milestone (aminopyralid)

Description: Apply 4 to 6 fl oz/A Milestone

Timing: Rosette to bolting stages

Herbicide: Curtail (clopyralid + 2,4-D)

Description: Apply 2 qt/A Curtail

Timing: Fall or spring but before bolting

Herbicide: Redeem R&P (clopyralid + triclopyr)

Description: Apply 1.5 to 2 qt/A Redeem R&P

Timing: In fall to rosettes

Herbicide: Tordon (picloram)

Description: Apply 0.25 lb ai/A picloram

Timing: After rosettes form in spring; before bolting

Herbicide: 2,4-D

Description: Apply 1.43 to 1.90 lb ae/A 2,4-D

Timing: Actively growing rosettes

Oxeye daisy
Leucanthemum vulgare

Chemical control

Herbicide: Escort (metsulfuron)

Description: Apply 0.5 to 1 oz/A Escort; use a surfactant

Timing: Rosette to bolting stages

Herbicide: Milestone (aminopyralid)

Description: Apply 4 to 6 oz/A Milestone

Timing: Rosette to bolting stages

Herbicide: Tordon 22K (picloram)

Description: Apply 1.5 to 2 pt/A Tordon 22K with at least 30 gal/A of water

Timing: Rosette to bolting stages

Herbicide: Transline (clopyralid)

Description: Apply 4 to 11 oz/A Transline

Timing: Rosette to bolting stages

Parrotfeather milfoil
Myriophyllum aquaticum

Chemical control

Herbicide: Navigate (2,4-D) + Stingray (carfentrazone)

Description: Apply 100 to 200 lb/A Navigate + 0.286 to 2.86 gal/A Stingray

Timing: New growth in spring to early summer

Herbicide: Habitat (imazapyr)

Description: Apply 2 to 4 pt/A (1% v/v) Habitat

Timing: Actively growing emerged foliage; foliage must be above water

Perennial pepperweed
Lepidium latifolium

Chemical control

Herbicide: Telar (chlorsulfuron)

Description: Apply 1 oz/A Telar; use a surfactant

Timing: Flower bud stage

Herbicide: Escort (metsulfuron)

Description: Apply 1 oz/A Escort; use a surfactant

Timing: Flower bud stage

Herbicide: Telar (chlorsulfuron) + mowing

Description: Apply 1 oz/A Telar; use a surfactant

Timing: Apply to resprouting stems

Herbicide: Roundup Ultra Max, Touchdown, Rodeo etc. (glyphosate)

Description: Apply 3 lb ae/A glyphosate to stems recovered to flower bud stage after previous mowing at flower bud stage. In riparian areas and wetlands, apply 3 qt/A Rodeo.

Timing: Flower bud stage

Herbicide: Weedar (2,4-D amine)

Description: Apply 1.9 lb ae/A 2,4-D amine

Timing: Flower bud stage

Herbicide: Weedone (2,4-D ester)

Description: Apply 2 lb ae/A 2,4-D ester; see label for air temperature restrictions

Timing: Resprouting stems in late summer

Herbicide: Arsenal (imazapyr)

Description: Apply 6 to 24 fl oz/A Arsenal as a spot treatment

Timing: Flower bud stage

(cont. on page 30)

Perennial pepperweed (*cont.*)

Chemical control (*cont.*)

Herbicide: Cimarron Max (metsulfuron + dicamba + 2,4-D)

Description: Apply 1 oz/A Part A plus 4 pt/A Part B

Timing: Bud to bloom stages

Herbicide: Cimarron X-tra (metsulfuron + chlorsulfuron)

Description: Apply one 20-oz pack of Cimarron X-tra per 10 acres; use a surfactant

Timing: Bud to bloom stages

Perennial sowthistle

Sonchus arvensis

Chemical control

Herbicide: 2,4-D

Description: Apply 2 lb ae/A 2,4-D

Timing: Bud stage or regrowth 8 to 10 inches high

Herbicide: Curtail (clopyralid + 2,4-D)

Description: Apply 1 to 4 qt/A Curtail. Higher rates may result in persistence into the next field season.

Timing: Rosettes or before flower buds form

Herbicide: Redeem R&P (triclopyr + clopyralid)

Description: Apply 2 pt/A Redeem R&P

Timing: Rosettes or before flower buds form

Herbicide: Milestone (aminopyralid)

Description: Apply 3 to 5 fl oz/A Milestone

Timing: Rosettes or before flower buds form

Plumeless thistle

Carduus acanthoides

Chemical control

Herbicide: Weedar (2,4-D amine)

Description: Apply 2 to 4 pt/A 2,4-D amine

Timing: Rosette to bolting stages

Herbicide: Banvel, Clarity, Vanquish (dicamba)

Description: Apply 0.5 to 1 lb ae/A dicamba

Timing: Rosette stage

Herbicide: Escort (metsulfuron)

Description: Apply 0.5 to 1.0 oz/A Escort; use a surfactant

Timing: Rosette to bolting stages

Herbicide: Tordon 22K (picloram)

Description: Apply 8 to 12 oz/A Tordon 22K

Timing: Rosette to bolting stages; in fall prior to freeze up

Herbicide: Milestone (aminopyralid)

Description: Apply 3 to 5 oz/A Milestone

Timing: Rosette to bolting stages in early summer; seedling to rosette stages in fall

Poison hemlock

Conium maculatum

Chemical control

Herbicide: Escort (metsulfuron)

Description: Apply 0.75 oz/A Escort; use a surfactant

Timing: Rosette in spring

Herbicide: 2,4-D

Description: Apply 1 to 2 lb ae/A 2,4-D

Timing: Rosette in spring

Herbicide: MCPA

Description: Apply 1 to 2 lb ae/A MCPA

Timing: Rosette in spring

Herbicide: Roundup, Rodeo, Touchdown, etc. (glyphosate)

Description: Apply 1 lb ae/A glyphosate

Timing: Rosette in spring

Herbicide: Cimarron Max (metsulfuron + dicamba + 2,4-D)

Description: Apply 1 oz/A Part A plus 4 pt/A Part B

Timing: Bud to bloom stages

Herbicide: Cimarron X-tra (metsulfuron + chlorsulfuron)

Description: Apply one 20-oz pack of Cimarron X-tra per 10 acres; use a surfactant

Timing: Bud to bloom stages

Biological control

Insect: Defoliating hemlock moth (*Agonopterix alstroemeriana*)

Description: Larvae can cause severe defoliation by consuming leaves, young stem tissue, flowers, and seeds. Collect March 15 to June 15.

Redistribution: April 1 to July 1

Policeman's helmet

Impatiens glandulifera

Chemical control

Herbicide: glyphosate

Description: Apply 35% to 75% glyphosate solutions for wick applications; apply 1 to 2% v/v glyphosate for spot spray

Timing: Wick applications—when Policeman's helmet plants are taller than surrounding desirable plants; spot spray—rosette to bolting

Herbicide: 2,4-D

Description: Apply 0.8 to 1 lb ae/A 2,4-D

Timing: Spring after plants emerge

Puncturevine

Tribulus terrestris

Chemical control

Herbicide: Telar (chlorsulfuron)

Description: Apply 1.5 oz/A Telar; use a surfactant

Timing: Late fall or late winter

Herbicide: Krovar (bromacil + diuron)

Description: Apply 10 lb/A Krovar in fall or 8 lb/A Krovar in spring

Timing: Fall or spring

Herbicide: 2,4-D

Description: Apply 2 lb ae/A 2,4-D

Timing: Seedlings; will require retreatment when new seedlings emerge

Purple loosestrife

Lythrum salicaria

Chemical control

Herbicide: Garlon 3A (triclopyr)

Description: Apply 1 to 1.5% v/v Garlon 3A

Timing: Bloom stage or seedlings

Herbicide: Rodeo (glyphosate) + 2,4-D

Description: Apply 0.25% v/v Rodeo + 2% v/v 2,4-D

Timing: Before bloom

Herbicide: Rodeo (glyphosate)

Description: Apply 1% v/v Rodeo

Timing: Full to late flowering

Herbicide: Escort (metsulfuron)

Description: Apply 1 oz/A Escort

Timing: Actively growing plants

Herbicide: Cimarron X-tra (metsulfuron + chlorsulfuron)

Description: Apply one 20-oz pack of Cimarron X-tra per 10 acres; use a surfactant

Timing: Actively growing plants

Biological control

Insect: Loosestrife leaf feeding beetle (*Galerucella calmariensis* and *G. pusilla*)

Description: Adults consume newly formed buds and leaves, while larvae feed on buds, leaves, and stems. Collect beetles as adults in May and June (early generation) or July 1 to August 1 (summer generation).

Redistribution: May and June or July 1 to August 1

(cont. on page 35)

Purple loosestrife (cont.)

Biological control (cont.)

Insect: Loosestrife flower weevil (*Nanophyes marmoratus*)

Description: Adults feed on developing leaves near shoot tips and flower buds. Larvae consume the developing petals, stamens, and ovaries, thereby destroying the bud. Collect weevils as adults.

Redistribution: July 15 to August 15

Insect: Loosestrife root mining weevil (*Hylobius transversovittatus*)

Establishment not confirmed in Idaho.

Description: Adults feed on newly formed foliage. Larvae penetrate the root and feed within it, depleting important sugar reserves and diminishing plant survival. Collect adults in spring to late summer.

Redistribution: April 15 to September 30

Rush skeletonweed

Chondrilla juncea

Chemical control

Herbicide: Transline or Stinger (clopyralid)

Description: Apply 0.66 to 1 pt/A Transline or Stinger

Timing: Rosettes in fall or spring

Herbicide: Milestone (aminopyralid)

Description: Apply 5 to 7 fl oz/A Milestone

Timing: After rosettes form in spring

Herbicide: Tordon (picloram)

Description: Apply 1 lb ae/A picloram

Timing: Rosettes in fall or spring

(cont. on page 36)

Rush skeletonweed (*cont.*)

Chemical control (*cont.*)

Herbicide: 2,4-D

Description: Apply 2 lb ae/A 2,4-D; additional treatment will be necessary

Timing: Rosettes in spring

Herbicide: MCPA

Description: Apply 2 lb ae/A MCPA; additional treatment will be necessary

Timing: Rosettes in spring

Biological control

Rust: Rust (*Puccinia chondrillina*)

Description: Rust infects the rosette in fall and spring, causing brown pustules to erupt through the leaf and stem surfaces. Collect July 1 to August 15.

Redistribution: July 1 to August 15

Insect: Gall midge (*Cystiphora schmidtii*)

Description: Larval feeding stresses the plant and can reduce flowering. Collect stems with galls.

Redistribution: July 1 to August 1

Insect: Gall mite (*Eriophyes chondrillae*)

Description: Mites feed on flower buds or stem tips. High mite populations stunt and deform plants and can stop seed production. Collect green galls with some yellow to rust color.

Redistribution: July 1 to August 15

Russian knapweed

Acroptilon repens

Chemical control

Herbicide: Redeem R&P (triclopyr + clopyralid)

Description: Apply 1.25 to 2 qt/A Redeem R&P. Higher rates may result in persistence into the next field season.

Timing: Rosette to early bolting stages

Herbicide: Tordon (picloram)

Description: Apply 1 lb ae/A picloram

Timing: Spring before bolting

Herbicide: Curtail (clopyralid + 2,4-D)

Description: Apply 2 to 4 qt/A Curtail. Higher rates may result in persistence into the next field season.

Timing: After rosettes form in spring; before bolting

Herbicide: Stinger or Transline (clopyralid)

Description: Apply 0.66 to 1.33 pt/A Stinger or Transline

Timing: Up to bud stage

Herbicide: Milestone (aminopyralid)

Description: Apply 4 to 6 fl oz/A Milestone

Timing: Bud to flowering stages; dormant plants in fall

Herbicide: Roundup, Touchdown, etc. (glyphosate)

Description: Apply 3 lb ae/A glyphosate

Timing: Bud stage

Herbicide: 2,4-D

Description: Apply 4 to 8 lb ae/A 2,4-D

Timing: Early bolting

(*cont. on page 38*)

Russian knapweed (*cont.*)

Biological control

Nematode: Nematode (*Subanguina picridis*)

Description: Nematode produces galls on stems. Collect galls in fall (September to November), transfer them to new sites, and place them on soil.

Redistribution: September to November

Saltcedar

Tamarix sp.

Chemical control

Herbicide: Garlon 4 (triclopyr)

Description: Cut stump—Apply 100% v/v of Garlon 4 to wet circumference of cut stump. Low-volume basal bark—Apply with oil-water mix at 20 to 30% v/v of Garlon 4 to thoroughly wet lower stems, including the root collar

Timing: Cut stump—year-round but avoid drought conditions. Basal bark—year-round unless snow covers root collar

Herbicide: Habitat (imazapyr)

Description: Spot spray—Apply 1% v/v Habitat. Foliar—Apply 2 pt/A Habitat

Timing: Actively growing foliage; during flowering

Herbicide: Rodeo (glyphosate)

Description: Broadcast—Apply 3 to 7.5 pt/A Rodeo. Cut stump—Apply 100% v/v of Rodeo to wet circumference of stump

Timing: Broadcast—When soil moisture is available for plant growth. Cut stump—Year-round; avoid drought conditions

Scotch broom

Cytisus scoparius

Chemical control

Herbicide: Roundup, Touchdown, etc. (glyphosate)

Description: Apply 2% v/v of glyphosate to foliage; stop application before runoff

Timing: Actively growing plants

Herbicide: Garlon 3A or 4 (triclopyr)

Description: Apply 1 to 1.5% v/v of Garlon 3A or 0.5 to 1.5% of Garlon 4 to foliage; stop application before runoff

Timing: Actively growing plants

Herbicide: Crossbow (triclopyr + 2,4-D)

Description: Apply 1 to 1.5% v/v of Crossbow to foliage; stop application before runoff

Timing: Actively growing plants

Scotch thistle

Onopordum acanthium

Chemical control

Herbicide: Telar (chlorsulfuron)

Description: Apply 1 oz/A Telar; use a surfactant

Timing: Actively growing rosettes

Herbicide: Escort (metsulfuron)

Description: Apply 1 oz/A Escort; use a surfactant

Timing: Actively growing rosettes

Herbicide: Redeem R&P (triclopyr + clopyralid)

Description: Apply 1.5 to 2 pt/A Redeem R&P

Timing: Rosette to early bolting stages

(*cont. on page 40*)

Scotch thistle (*cont.*)

Chemical control (*cont.*)

Herbicide: Curtail (clopyralid + 2,4-D)

Description: Apply 2 to 4 qt/A Curtail. Higher rates may result in persistence into the next field season

Timing: Late rosette to just before flower bud formation

Herbicide: Stinger or Transline (clopyralid)

Description: Apply 0.25 to 1 pt/A Stinger or Transline

Timing: Rosette to early bolting stages

Herbicide: Tordon (picloram)

Description: Apply 0.25 lb ae/A picloram

Timing: Rosettes in the fall

Herbicide: Banvel, Clarity, Vanquish, etc. (dicamba)

Description: Apply 0.5 to 1 lb ae/A dicamba

Timing: Fall or spring before bolting

Herbicide: 2,4-D

Description: Apply 1.5 to 2 lb ae/A 2,4-D

Timing: Fall or spring before bolting

Herbicide: Campaign (glyphosate + 2,4-D)

Description: Apply 1 to 2 pt/A Campaign

Timing: Rosette in fall before freezing or in spring

Silverleaf nightshade

Solanum elaeagnifolium

Chemical control

Herbicide: Banvel, Clarity, Vanquish, etc. (dicamba)

Description: Apply 0.5 to 1 lb ae/A dicamba

Timing: Before bud stage

Herbicide: Garlon 3A, 4 (triclopyr)

Description: Apply 2 to 3 lb ae/A triclopyr

Timing: Before bud stage

Herbicide: 2,4-D

Description: Apply 1 to 2 lb ae/A 2,4-D

Timing: Before bud stage

Herbicide: Roundup, Touchdown, etc. (glyphosate)

Description: Apply 2% by volume of glyphosate; stop application before solution drips from plant

Timing: Before bud stage

Skeletonleaf bursage

Ambrosia tomentosa

Chemical control

Herbicide: Banvel, Clarity, Vanquish, etc. (dicamba)

Description: Apply 2 to 4 lb ae/A dicamba

Timing: Before bud stage

Herbicide: 2,4-D

Description: Apply 1.5 to 2 lb ae/A 2,4-D

Timing: Before bud stage

(*cont. on page 42*)

Skeletonleaf bursage (cont.)

Chemical control (cont.)

Herbicide: Arsenal (imazapyr)

Description: Apply 3 to 4 pt/A Arsenal

Timing: Before bud stage

Herbicide: Tordon (picloram)

Description: Apply 1 lb ae/A picloram

Timing: Before bud stage

Small bugloss

Anchusa arvensis

Chemical control

Herbicide: 2,4-D ester

Description: Apply 2 lb ae/A 2,4-D ester; surfactant necessary

Timing: Rosette to bolting stages

Herbicide: Roundup or Touchdown (glyphosate)

Description: Apply 1 to 2% v/v Roundup or Touchdown

Timing: Spot spray rosette to bolting stages

Herbicide: Tordon 22K (picloram)

Description: Apply 1 to 2 pt/A Tordon 22K; surfactant necessary

Timing: Rosette to bolting stages

Herbicide: Escort (metsulfuron)

Description: Apply 1 to 2 oz/A Escort; surfactant necessary

Timing: Rosette to bolting stages

Spotted knapweed

Centaurea stoebe ssp. micranthos

Chemical control

Herbicide: Redeem R&P (triclopyr + clopyralid)

Description: Apply 0.75 to 1 qt/A Redeem R&P

Timing: Rosette to early bolting stages

Herbicide: Tordon (picloram)

Description: Apply 0.25 to 0.50 lb ae/A picloram

Timing: Spring before bolting

Herbicide: Curtail (clopyralid + 2,4-D)

Description: Apply 2 to 4 qt/A Curtail. Higher rates may result in persistence into the next field season

Timing: After rosettes form in spring, before bolting

Herbicide: Stinger or Transline (clopyralid)

Description: Apply 0.66 to 1.33 pt/A Stinger or Transline

Timing: Up to bud stage

Herbicide: Milestone (aminopyralid)

Description: Apply 5 to 7 fl oz/A Milestone

Timing: Rosette to bolting stages or in fall

Herbicide: 2,4-D

Description: Apply 1 to 2 lb ae/A 2,4-D

Timing: Early bolting

Herbicide: Roundup, Touchdown, etc. (glyphosate)

Description: Apply 3 lb ae/A glyphosate

Timing: Bud stage

(cont. on page 44)

Spotted knapweed (cont.)

Biological control

Insect: Seedhead fly (*Urophora affinis* and *U. quadrifasciata*)

Description: The two species together reduce seed production by 75% to 95% at some sites but have no impact on stand density. *U. affinis* larvae attack the seed head causing the plant to form a hard gall, which depletes the plant's energy resources. Collect infested seed heads in early spring.

Redistribution: March 1 to April 30

Insect: Root-boring moth (*Agapeta zoegana*)

Description: Larvae mine the root of the plant, reducing its storage capacity and increasing susceptibility to infection by fungi or bacteria.

Redistribution: July 1 to August 15

Insect: Seed-head weevil (*Larinus minutus* and *L. obtusus*)

Description: Larvae destroy seeds in the seed heads, reducing seed production. *L. minutus* is causing decline of diffuse knapweed in some areas. Collect weevils as adults.

Redistribution: June 1 to October 1

Insect: Root boring beetle (*Sphenoptera jugoslavica*)

Description: Larvae tunnel within the roots. Surviving plants are stunted and produce fewer flowers. Adults do less damage by feeding on leaves. Collect beetles as adults.

Redistribution: July 15 to August 1

Insect: Broad-nosed knapweed seedhead weevil (*Bangasternus fausti*)

Description: Adults feed on leaves, stems, and florets but prefer flower heads when available. Collect weevils as adults.

Redistribution: June 1 to July 1

(cont. on page 45)

Spotted knapweed (cont.)

Biological control (cont.)

Insect: Knapweed peacock fly (*Chaetorellia acrolophi*) Not released in Idaho

Description: Larvae burrow into the center of the bud and eat their way into the seed, destroying the seed head. Collect infested seed heads in early spring (February 1 to March 30).

Redistribution: March 1 to April 30

Insect: Root weevil (*Cyphocleonus achates*)

Description: Larvae mine into the root, causing a root gall to form. Dispersal is slow as adults rarely fly. Collect weevils as adults.

Redistribution: August 1 to October 1

Insect: Knapweed seedhead moth (*Metzneria paucipunctella*) Widely established in the West

Description: Larvae feed on developing seeds. Larvae also attack and destroy other seed head insects, including larvae of the two seed head flies, *Urophora* spp. Collect infested seed heads in early spring (February 1 to March 30).

Redistribution: March 15 to April 30

Squarrose knapweed

Centaurea virgata var. *squarrosa*

Chemical control

Herbicide: Milestone (aminopyralid)

Description: Apply 4 to 6 fl oz/A Milestone

Timing: Rosette to bud stages

Herbicide: Tordon (picloram)

Description: Apply 0.25 to 0.5 lb ae/A picloram

Timing: Rosette stage

Herbicide: Stinger or Transline (clopyralid)

Description: Apply 0.25 to 0.5 lb ae/A clopyralid

Timing: Rosette to bud stages

Syrian beancaper

Zygophyllum fabago

Chemical control

Herbicide: Roundup, Touchdown, etc. (glyphosate)

Description: Apply 1.5 lb ae/A glyphosate

Timing: Flower bud stage

Herbicide: Tordon 22K (picloram)

Description: Apply 1 lb ae/A picloram

Timing: In fall before frost

Tall hawkweed

Hieracium piloselloides

Chemical control

Herbicide: Milestone (aminopyralid)

Description: Apply 4 to 6 oz/A Milestone

Timing: Rosette to bolting stages

Herbicide: Transline (clopyralid)

Description: 0.66 to 1 pt/A Transline

Timing: Rosette to bolting stages

Herbicide: Tordon (picloram)

Description: Apply 0.25 lb ae/A

Timing: Rosette to bolting stages

Tansy ragwort

Senecio jacobaea

Chemical control

Herbicide: 2,4-D

Description: Apply 1 to 2 lb ae/A 2,4-D

Timing: Before flowers open

Herbicide: Tordon (picloram)

Description: Apply 0.25 lb ae/A picloram

Timing: Up to flowering stage

Herbicide: Milestone (aminopyralid)

Description: Apply 4 to 5 fl oz/A Milestone

Timing: Up to flowering stage

Herbicide: Banvel, Clarity, Vanquish, etc. (dicamba)

Description: Apply 1 lb ae/A dicamba

Timing: Up to flowering stage

(cont. on page 48)

Tansy ragwort (*cont.*)

Chemical control (*cont.*)

Herbicide: Weedmaster (2,4-D + dicamba)

Description: Apply 2 qt/A Weedmaster

Timing: Up to flowering stage

Herbicide: Crossbow (triclopyr + 2,4-D)

Description: Apply 1.5 to 2 qt/A Crossbow

Timing: Before flowering stage

Herbicide: Escort (metsulfuron)

Description: Apply 0.75 oz/A Escort; use a surfactant

Timing: Actively growing plants

Biological control

Insect: Cinnabar moth (*Tyria jacobaeae*) Not established in Idaho

Description: Larvae feed on leaves, buds, and flowers, frequently defoliating all plants in 1 to 3 weeks.

Redistribution: May and June

Insect: Ragwort seed fly (*Botanophila seneciella*) Not released in U.S.

Description: Larvae penetrate the seed heads and feed on the developing seeds.

Redistribution: June

Insect: Ragwort flea beetle (*Longitarsus jacobaeae*) Established in Idaho

Description: Larvae burrow into and feed on roots, injuring or killing them. Adults feed on the leaves.

Redistribution: Fall through early spring

Vipers bugloss

Echium vulgare

Chemical control

Herbicide: 2,4-D ester

Description: Apply 2 lb ae/A 2,4-D ester; surfactant necessary

Timing: Rosette to bolting stages

Herbicide: Roundup or Touchdown (glyphosate)

Description: Apply 1 to 2% v/v Roundup or Touchdown

Timing: Spot spray rosette to bolting stages

Herbicide: Tordon 22K (picloram)

Description: Apply 1 to 2 pt/A Tordon 22K; surfactant necessary

Timing: Rosette to bolting stages

Herbicide: Escort (metsulfuron)

Description: Apply 1 to 2 oz/A Escort; surfactant necessary

Timing: Rosette to bolting stages

Water hyacinth

Eichhornia crassipes

Chemical control

Herbicide: Renovate (triclopyr)

Description: Apply 1.5 to 6 lb ae/A triclopyr

Timing: Actively growing plants

White bryony

Bryonia alba

Chemical control

Herbicide: Roundup, Touchdown (glyphosate)

Description: Apply 100% v/v glyphosate to cut root

Timing: Cut root 3 to 4 inches below surface

Whitetop *Cardaria draba*

Chemical control

Herbicide: Escort (metsulfuron)

Description: Apply 1 oz/A Escort; use a surfactant

Timing: Bud to bloom stages or rosette in fall

Herbicide: Telar (chlorsulfuron)

Description: Apply 1 oz/A Telar; use a surfactant

Timing: Bud to bloom stages or rosette in fall

Herbicide: Cimarron X-tra (metsulfuron + chlorsulfuron)

Description: Apply one 20-oz pack of Cimarron X-tra per 10 acres; use a surfactant

Timing: Bud to bloom stages

Herbicide: 2,4-D

Description: Apply 2 to 3 lb ae/A 2,4-D

Timing: Before bud stage

Yellow devil hawkweed *Hieracium glomeratum*

Chemical control

Herbicide: Milestone (aminopyralid)

Description: Apply 4 to 6 oz/A Milestone

Timing: Rosette to bolting stages

Herbicide: Transline (clopyralid)

Description: Apply 0.66 to 1 pt/A Transline

Timing: Rosette to bolting stages

Herbicide: Tordon (picloram)

Description: Apply 0.25 lb ae/A picloram

Timing: Rosette to bolting stages

Yellow hawkweed *Hieracium caespitosum*

Chemical control

Herbicide: Redeem R&P (clopyralid + triclopyr)

Description: Apply 1.5 to 2 qt/A Redeem R&P. Higher rates may result in persistence into the next field season

Timing: After basal leaves form, before flower bud stage

Herbicide: Tordon (picloram)

Description: Apply 0.25 lb ae/A picloram

Timing: After basal leaves form, before flower bud stage

Herbicide: Curtail (clopyralid + 2,4-D)

Description: Apply 2 qt/A Curtail

Timing: After basal leaves form, before flower bud stage

Herbicide: Transline or Stinger (clopyralid)

Description: Apply 0.66 to 1 pt/A Transline or Stinger

Timing: After basal leaves form, before flower bud stage

Herbicide: Milestone (aminopyralid)

Description: Apply 4 to 6 fl oz/A Milestone

Timing: Rosette to bolting stages

Herbicide: 2,4-D

Description: Apply 1.43 to 1.90 lb ae/A 2,4-D

Timing: After basal leaves form, before flower bud stage

Yellow starthistle

Centaurea solstitialis

Chemical control

Herbicide: Transline or Stinger (clopyralid)

Description: 0.25 to 1 pt/A Transline or Stinger

Timing: Rosette to early bolting stages

Herbicide: Milestone (aminopyralid)

Description: Apply 3 to 5 fl oz/A Milestone

Timing: Rosette to bolting stages

Herbicide: Redeem R&P (triclopyr + clopyralid)

Description: Apply 1.5 to 2 pt/A Redeem R&P

Timing: Rosette to bolting stages

Herbicide: Tordon (picloram)

Description: Apply 0.25 to 0.375 lb ae/A picloram

Timing: Rosette to bolting stages

Herbicide: Curtail (clopyralid + 2,4-D)

Description: Apply 2 to 4 qt/A Curtail. Higher rates may result in persistence into the next field season

Timing: Rosette to bolting stages

Herbicide: Telar (chlorsulfuron)

Description: Apply 1.5 oz/A Telar; use a surfactant

Timing: Rosette stage

Herbicide: 2,4-D LV ester

Description: Apply 1 lb ae/A 2,4-D LV ester

Timing: Before flowering

(cont. on page 53)

Yellow starthistle (cont.)

Biological control

Insect: Starthistle bud weevil (*Bangasternus orientalis*)

Description: Larvae tunnel through the flowering stalk and into the flower head where they feed on receptacle tissue and developing seeds. Larval feeding reduces seed production. Collect weevils as adults.

Redistribution: May 31 to July 1

Insect: Starthistle hairy weevil (*Eustenopus villosus*)

Description: Adult weevils feed externally on flowers; larvae feed within, destroying seed production. A good disperser, this agent can become widespread and have a significant impact on seed production. Collect weevils as adults.

Redistribution: June 15 to August 15

Insect: Starthistle flower weevil (*Larinus curtus*)

Description: Larvae feed on the developing seeds, with single larvae destroying more than 90% of the seeds in infested heads. Collect weevils as adults.

Redistribution: July 15 to August 30

Insect: Peacock fly (*Chaetorellia australis*)

Description: Larvae feed in the flower head and reduce seed production. Collect infested seed heads in early spring.

Redistribution: March 1 to April 15

Insect: Starthistle gallfly (*Urophora sirunaseva*)

Description: Larvae feed in the flower head and reduce seed production. Collect infested seed heads in early spring.

Redistribution: March 1 to 15

Yellow toadflax

Linaria vulgaris

Chemical control

Herbicide: Telar (chlorsulfuron)

Description: Apply 2 to 3 oz/A Telar; use a surfactant

Timing: Bud to bloom

Herbicide: Tordon (picloram) + Telar (chlorsulfuron)

Description: Apply 0.5 ae/A picloram + 1 oz/A Telar

Timing: Bud to bloom

Herbicide: Tordon (picloram) + Escort (metsulfuron)

Description: Apply 0.5 ae/A picloram + 1 oz/A Escort

Timing: Bud to bloom

Herbicide: Tordon (picloram)

Description: Apply 0.25 to 1 lb ae/A picloram

Timing: Late summer to fall or late winter

Herbicide: Banvel, Clarity, Vanquish, etc. (dicamba)

Description: Apply 2 lb ae/A dicamba

Timing: Early spring

Biological control

Insect: Flower feeding beetle (*Brachypterus pulicarius*)

Description: Flower and fruit feeding by larvae may reduce toadflax seed production by more than 75%. Collect adult beetles in late spring.

Redistribution: May 1 to June 15

(cont. on page 55)

Yellow toadflax (cont.)

Biological control

Insect: Defoliating moth (*Calophasia lunula*)

Description: Defoliation from larval feeding reduces plant vigor and seed production. Collect moth as larvae.

Redistribution: May and June

Insect: Stem-boring weevil (*Mecinus janthinus*)

Description: Larval feeding can kill shoots, which reduces flower and seed production. Adult weevils feed externally on foliage, and larvae feed within the stems. Collect weevil as adults.

Redistribution: May to early July

Insect: Toadflax seed weevil (*Rhinusa antirrhini*) Establishment confirmed in Idaho

Description: Adults eat shoots and flowers, and larvae feed on developing seed capsules. Both adult and larval feeding can reduce seed production by 85% to 90%. Collect weevil as adults.

Redistribution: June

**Always read and follow the label to ensure
any application made is safe and legal.**

ALWAYS read and follow the instructions printed on the pesticide label. The pesticide recommendations in this UI publication do not substitute for instructions on the label. Due to constantly changing pesticide laws and labels, some pesticides may have been cancelled or had certain uses prohibited. Use pesticides with care. Do not use a pesticide unless both the pest and the plant, animal, or other application site are specifically listed on the label. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock. Trade names are used to simplify the information; no endorsement or discrimination is intended.

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