

Weed Control



Tina Booton

Weld County Weed Division Supervisor

970-400-3770

www.weldweeds.org



Topics Covered

- ▶ Background: What is a noxious weed and other issues surrounding them
- ▶ Annuals, Biennials & Perennials
- ▶ General Control Options
- ▶ Plant ID for specific problematic plants



What is a Noxious Weed vs. Any Weed?

- ▶ A non-native plant that meets one or more of these criteria
 - ▶ Aggressively invades or is detrimental to economic crops or native plant communities
 - ▶ Is poisonous to livestock
 - ▶ Is a carrier of detrimental insects, diseases or parasites
 - ▶ The direct or indirect effect of the presence of this plant is detrimental to the environmentally sound management of natural or agricultural ecosystems.

Why Should We Care?

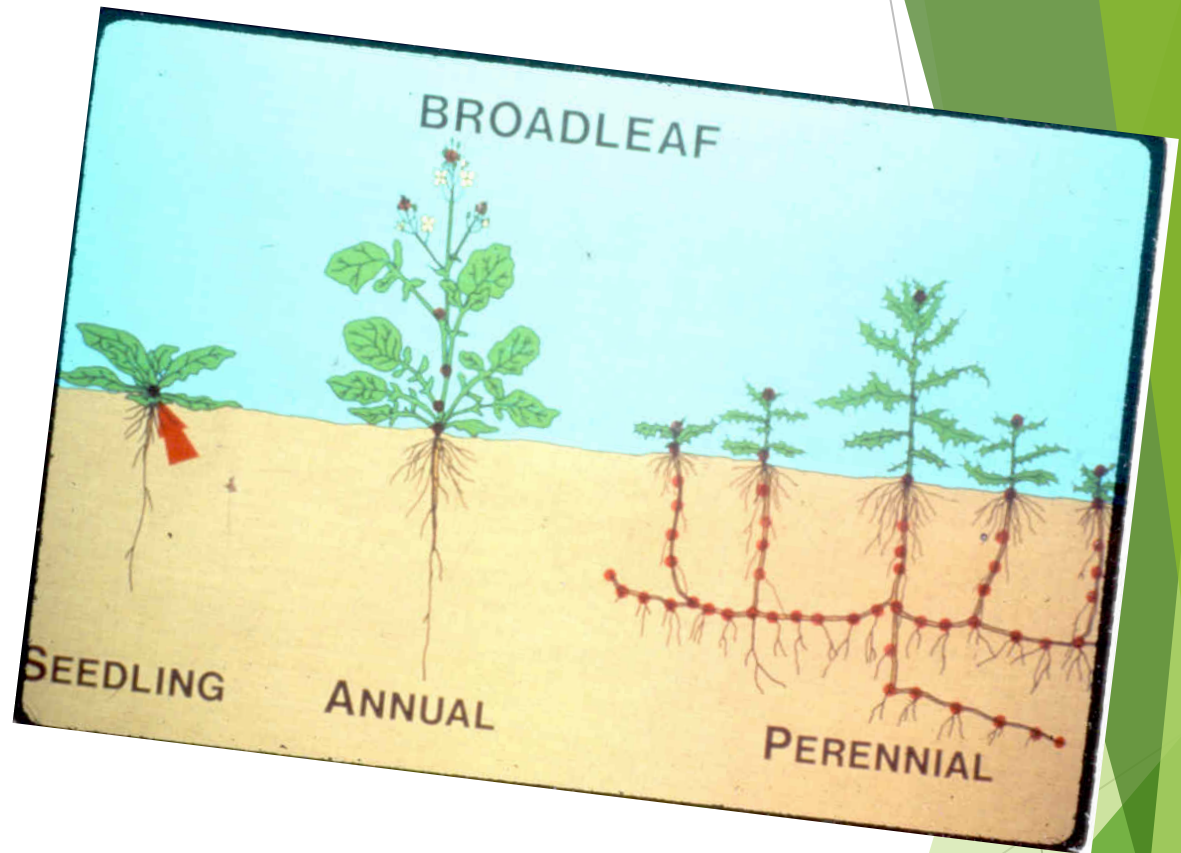
- ▶ Noxious weeds threaten the very reasons we live, work and recreate in Colorado
- ▶ They displace native plant species reducing biodiversity, ecosystem stability and remove important food sources for animals
- ▶ They can clog rivers and lakes reducing habitat and recreational opportunities
- ▶ They can impact water availability and quality
- ▶ They can increase fire frequency in forests and rangelands
- ▶ They steal nutrients and sunlight from surrounding plants while altering soil properties.

Can the same can be said for other plants/weeds?

Ready to Begin?



Annuals, Biennials and Perennials



24 Watch List Species

- ▶ Asian Mustard - a
- ▶ Baby's Breath - p
- ▶ Bathurst Burr, Spiny Cocklebur - a
- ▶ Brazilian elodea - p
- ▶ Common Bugloss - b, p
- ▶ Common Reed - p
- ▶ Garden Loosestrife - p
- ▶ Garlic Mustard - a, b
- ▶ Himalayan Blackberry - p
- ▶ Japanese Blood Grass/Cogongrass - p
- ▶ Meadow Hawkweed - p
- ▶ Onionweed - p
- ▶ Purple Pampas Grass - p
- ▶ Scotch Broom - p
- ▶ Sericea Lespedeza - p
- ▶ Swainsonpea - p
- ▶ Syrian Beancaper - p
- ▶ Water Hyacinth - p
- ▶ Water Lettuce - p
- ▶ White Bryony - p
- ▶ Woolly Distaff Thistle - a
- ▶ Yellow Flag Iris - p
- ▶ Yellow floatingheart - p
- ▶ Yellow Tuft Alyssum - p

23 "A" List Species

Not yet in Colorado

- ▶ Camelthorn - p
- ▶ Common Crupina - a
- ▶ Flowering Rush - p
- ▶ Giant Salvinia - p
- ▶ Hydrilla - p
- ▶ Medusahead - a
- ▶ Parrotfeather - p
- ▶ Squarrose Knapweed - p

Already in Colorado

- ▶ African Rue - a
- ▶ Cypress Spurge - p
- ▶ Dyer's Woad - a, b, p
- ▶ Elongated Mustard - b, p
- ▶ Giant Reed - p
- ▶ Hairy Willow-Herb - p
- ▶ Japanese, Giant & Bohemian Knotweed - p
- ▶ Meadow Knapweed - p
- ▶ Mediterranean Sage - b, p
- ▶ Myrtle Spurge - p
- ▶ Orange Hawkeed - p
- ▶ Purple Loosestrife - p
- ▶ Rush Skeletonweed - p, b
- ▶ Tansy Ragwort - b, p
- ▶ Yellow Starthistle - a

36 "B" List Species

- ▶ Absinth wormwood - p
- ▶ Black henbane - a, b
- ▶ Bouncingbet - p
- ▶ Bull thistle - b
- ▶ Canada thistle - p
- ▶ Chinese clematis - p
- ▶ Common tansy - p
- ▶ Common teasel - b
- ▶ Corn Chamomile - a, p
- ▶ Cutleaf teasel - b
- ▶ Dalmatian toadflax x 2 - p
- ▶ Dame's Rocket - b, p
- ▶ Diffuse knapweed - b, p
- ▶ Eurasian watermilfoil - p
- ▶ Hoary cress - p
- ▶ Houndstongue - b
- ▶ Jointed goatgrass - a
- ▶ Leafy spurge - p
- ▶ Mayweed Chamomile - a, p
- ▶ Moth mullein - b
- ▶ Musk thistle - b
- ▶ Oxeye daisy - p
- ▶ Perennial pepperweed - p
- ▶ Plumeless thistle - b
- ▶ Russian knapweed - p
- ▶ Russian olive - p
- ▶ Saltcedar/tamarisk - p
- ▶ Scentless Chamomile - a, p
- ▶ Scotch thistle - b
- ▶ Spotted knapweed - p, b
- ▶ Spotted x diffuse hybrid - p, b
- ▶ Sulfur cinquefoil - p
- ▶ Wild Caraway - b
- ▶ Yellow Nutsedge - p
- ▶ Yellow toadflax - p

16 C List Species

- ▶ Bulbous Bluegrass - p
- ▶ Cheatgrass / Downy Brome - a
- ▶ Chicory - p
- ▶ Common burdock - b
- ▶ Common mullein - b
- ▶ Field bindweed - p
- ▶ Halogeton - a
- ▶ Johnsongrass - p
- ▶ Perennial sowthistle - p
- ▶ Poison hemlock - b
- ▶ Puncturevine - a
- ▶ Quackgrass - p
- ▶ Redstem Filaree - a, b
- ▶ St. Johnswort - p
- ▶ Velvetleaf - a
- ▶ Wild proso millet - a

"Junk" Weeds

- ▶ Buffalo Bur - n a
- ▶ Cocklebur - n a
- ▶ Curlycup Gumweed - n b (p)
- ▶ Horseweed - n a
- ▶ Marshelder - n a
- ▶ Mustards - n a, (b), p
- ▶ Pigweed - n a
- ▶ Ragweed - n a, p
- ▶ Sand Bur - n a
- ▶ Common mallow - nn a (b)
- ▶ Kochia - nn a
- ▶ Mustards - nn a, b, p
- ▶ Prickly lettuce - nn a
- ▶ Purslane - nn a
- ▶ Russian thistle - nn a
- ▶ Salsify - nn b (p)
- ▶ Sowthistle - nn a
- ▶ Sunflower - n a

n = native; nn = non-native; a = annual; b = biennial; p = perennial

Annual vs. Biennial vs. Perennial

- ▶ Annuals are one year plants.
- ▶ Biennials are two to three year plants.
- ▶ Perennials are longer lived plants.
 - ▶ Simple perennial
 - ▶ Creeping perennial



Annuals!

- ▶ Prolific seed producers.
- ▶ Respond best to herbicides in the early stages of growth. (Spring.)
- ▶ By fall are usually working on dying.
- ▶ In fall some may be starting to grow.
- ▶ If kept mowed will still try to make seed below the mower height.

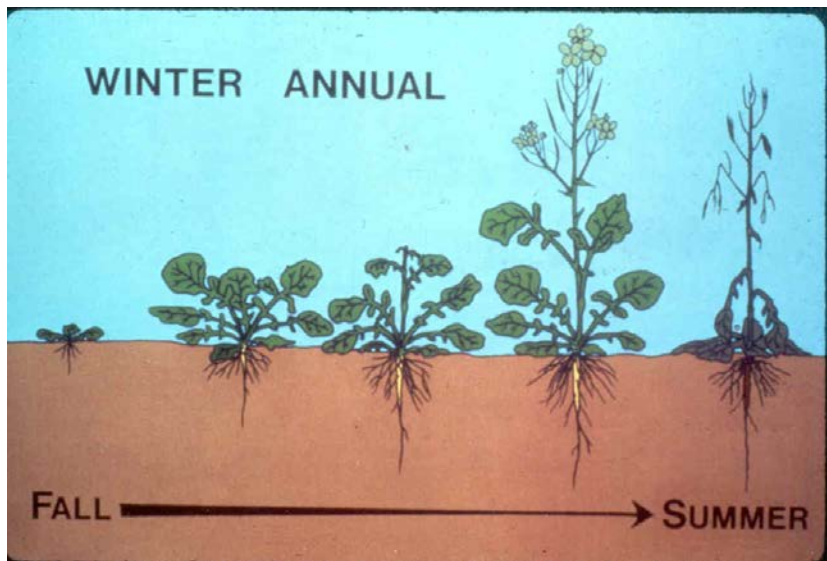
Biennials!

- ▶ Great seed producers.
- ▶ Best time to treat is in the “rosette” stage. This can be spring or fall.
- ▶ By fall the mature plants are dead. However, if they have been mowed or were later to germinate may still be in the rosette stage to early flower stage.

Perennials!

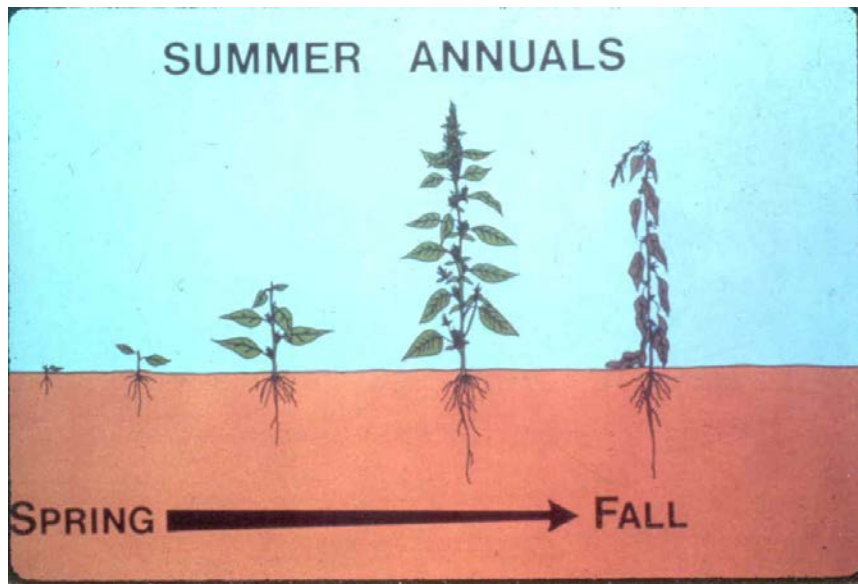
- ▶ Reproduces from seed **AND** roots.
- ▶ Best control is achieved with using multiple control techniques throughout the season.
- ▶ Fall is an excellent time to treat.

Winter Annual Species Examples



- ▶ Cheatgrass
- ▶ Blue mustard
- ▶ Shepherdspurse
- ▶ Tumble mustard
- ▶ Field pennycress

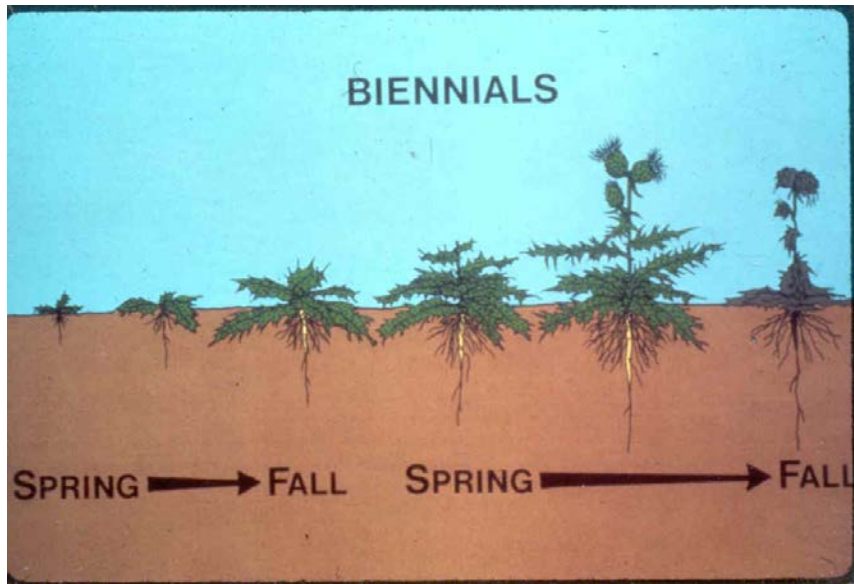
Summer Annual Species Examples



- ▶ Kochia
- ▶ Russian thistle
- ▶ Puncturevine
- ▶ Sand bur
- ▶ Sunflower
- ▶ Common ragweed
- ▶ Horseweed/marestail
- ▶ Fetid marigold

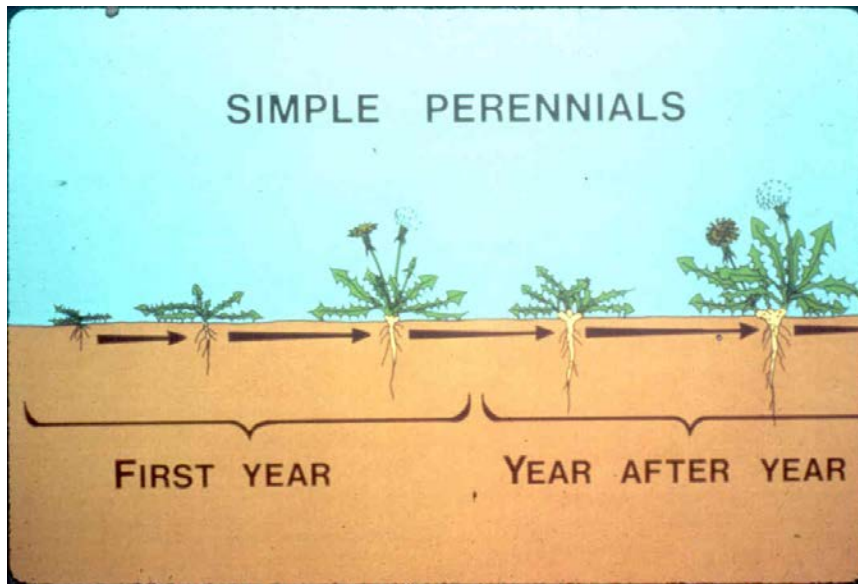
Biennial Species

Examples



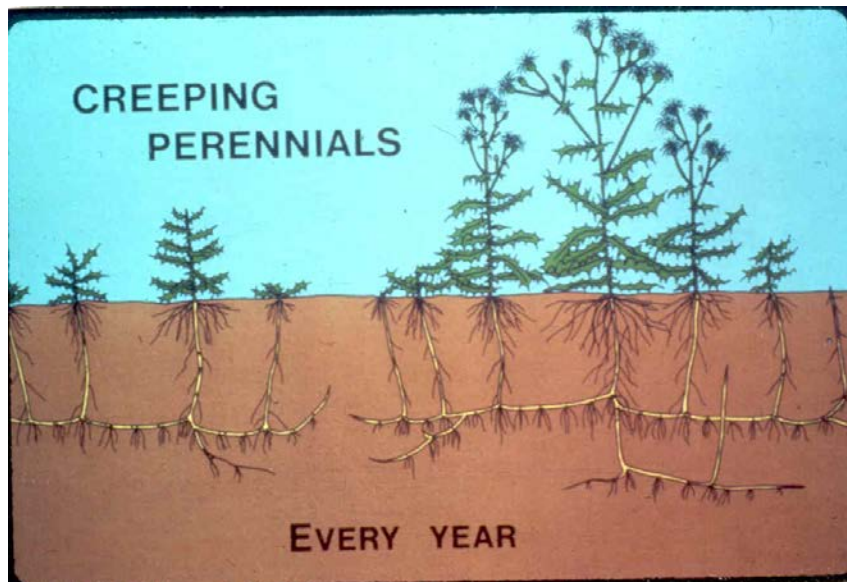
- ▶ Diffuse knapweed
- ▶ Houndstongue
- ▶ Musk thistle
- ▶ Scotch thistle
- ▶ Bull thistle
- ▶ Salsify
- ▶ Curlycup gumweed

Simple Perennial Species Examples



- ▶ Dandelion
- ▶ Curly dock
- ▶ Diffuse knapweed
- ▶ Spotted knapweed

Creeping Perennial Species Examples



- ▶ Canada thistle
- ▶ Russian knapweed
- ▶ Field bindweed
- ▶ Leafy spurge
- ▶ Hoary cress

Control Techniques



Overall Questions to ponder?!?!

When thinking about weed control.

- ▶ What changes have you made/seen? Vegetation? Buildings? Animals?
- ▶ What do you want to do with your property?
- ▶ Pollinators?
- ▶ How long do you have?
- ▶ How much money do you want to spend?
- ▶ How long do you want to “fight” the weeds?
- ▶ How much work do you want to put into it?

There is no 1 way to control weeds. The sky is the limit with options.

Control Options

- ▶ Cultural Control
 - ▶ Utilize desirable vegetation to compete with weeds.
- ▶ Mechanical Control
 - ▶ Mowing, disking or tilling the weed stand multiple times throughout the year keeping the plants from going to seed.
- ▶ Biological Control
 - ▶ Use of insects, bacteria, fungus, and livestock to consume and weaken the plants.
- ▶ Chemical Control
 - ▶ The use of herbicides to control the existing weeds.
 - ▶ Some herbicides make the plants more palatable when first treated.

Annual Control Techniques

- ▶ Pre-emergent treatment depending on location of infestation.
- ▶ Post-emergent chemical application.
 - ▶ This may need to happen early and multiple treatments.
- ▶ Pulling or digging individual plants.
- ▶ Regular mowing.
 - ▶ Plants may still seed out below the mower height.
 - ▶ Timing is critical
- ▶ Regular disking.
 - ▶ Creates ground disturbance for additional species to move in or more seeds to germinate.
- ▶ Grazing
 - ▶ Toxicity concerns
 - ▶ Stocking rates

Biennial Control Techniques

- ▶ Pre-emergent treatment depending on location of infestation.
- ▶ Post-emergent chemical application in the rosette stage to early bolting.
 - ▶ This may need to happen early and multiple treatments.
- ▶ Dig up rosettes. Be sure to get below the root crown growing point.
 - ▶ Labor intensive if a large number of plants exist
 - ▶ Disturbs the ground
- ▶ Deadhead the plants.
 - ▶ Labor intensive if a large number of plants exist
 - ▶ Bag and dispose of
- ▶ Regular mowing later in the growth cycle of the plant.
 - ▶ Some plants may still regrow enough to flower.
 - ▶ Timing is critical
- ▶ Regular disking.
 - ▶ Creates ground disturbance for additional species to move in or more seeds to germinate.
- ▶ Grazing
 - ▶ Toxicity concerns
 - ▶ Stocking rates

Perennial Control Techniques

- ▶ Spray in the spring with an appropriate herbicide.
- ▶ Mow or graze through out the spring and summer to limit seed production and weaken root system.
- ▶ Possibly a deep till or plow with re-growth sprayed.
 - ▶ Note: This will spread the infestation of creeping perennial plants
- ▶ Spray in the fall.
- ▶ Plan on 3 to 5 years of continuous work and follow through (at the minimum).
- ▶ Simple perennials can be dug up.
 - ▶ Must get the majority of the root system.
 - ▶ May need to be repeated.

Tree Control Techniques

- ▶ Chemical mow with Krenite S.
- ▶ Manual removal of tree and root system
- ▶ Cut-stump treatment
- ▶ Frill treatments

Range and Pasture Chemicals for Grasses

| Trade Name | Chemical | Trees | Water | Grazing Restrictions | Haying Restrictions | Reseeding Restrictions | Newly Seeded | Notes |
|--------------------------------------|-------------------------------|---------|--------------|-------------------------------------|---|------------------------|--|--|
| Tordon 22K | Picloram | No | No | Dairy = 2wks | 2 weeks | 3-6 months | Well est./ 2nd root ~ 60 days | max. rate is 2 qt/acre/yr. License required. |
| Milestone | Aminopyralid | Some | edge ok | none | none if kept on property - not for sale for 18 months | 3-6 months | Well est./ 2nd root ~ 60 days | 14 days to work..max. rate is 7oz/acre/yr |
| ForeFront HL | Aminopyralid + 2,4-D | Some | edge ok | Dairy = 7 D | 7 days | 3-6 months | Well est./ 2nd root ~ 60 days | max rate is 84 oz/acre/yr |
| Opensight | Aminopyralid + metsulfuron | Careful | edge ok | none | none if kept on property - not for sale for 18 months | 3-6 months | previous growing season and fully tillered | Do not use on Timothy or other cool season grasses for hay. |
| Curtail | Clopyralid + 2,4-D | Careful | No | Dairy = 14 D | 7 days | 3-6 months | Well est./ 2nd root | max rate is 4 qts/acre/year - Do not use clippings, hay or manure for mulch for 18 months |
| Transline | Clopyralid | Ok | No | none | none | 3-6 months | Well est./ 2nd root | max rate is 1.33 pints/acre/yr - Do not use clippings, hay or manure for mulch for 18 months |
| Panormaic 2SL | Imazapic | Some | edge ok | none | none | 3-6 months | well est....5 leaf stage | shows symptons slowly; max rate = 12 oz/acre |
| Telar XP | Chlorsulfuron | Some | edge ok | none | none | 1-6 months | Well est./ 2nd root ~ 60 days | up to 3 weeks to show signs of treatment. At 1 1/3 for no restrictions. Max rate is 3 oz/acre/yr |
| Escort XP | Metsulfuron | Some | edge ok | none | none | 1-4 months | Well est...3-4 leaf stage | up to 4 weeks to show signs of treatment max rate is 1 2/3 oz/acre/yr for no restrictions. At 3 1/3 oz/acre/yr 3 day interval |
| 2,4-D | 2,4-D | Maybe | Maybe | 7 days | 30 days | 3 months | Well est./ 2nd root ~ 60 days | check for aquatic label max rate is 2 qts/acre/season |
| Clarity | Dicamba | No | No | Dairy = 21 D | 51 days | 90 days | Exceeds 3 leaf stage | also sold as Banvel max. rate is 64 oz (4 pints)/acre/yr |
| Outlaw, Weedmaster, Rangestar, Brash | Dicamba + 2,4-D | No | No near edge | Dairy = 7 D 8 wks after application | 37 days | 3 weeks and up | 30-60 days | max. rate is 8 pints/acre/yr |
| Glyphomax | Glyphosate (41%) | Ok | edge | 8 wks after application | 8 wks after application | 7 days | not recommended | non-selective 7 or more days to show symptoms |
| E2 | 2,4-D, Fluroxypyr and Dicamba | No | No | Dairy - 7 D | 7 days | 3 weeks and up | Not indicated on the label | 2 pounds of 2,4-D/acre/application. Minimum 21 days between applications. Limited to 2 applications/year. Don't use on buffalograss. |
| Vista XRT | Fluroxypyr | Some | some | none | 7 days | 4 months | Not indicated on the label | Remove meat animals eating treated forage 2 days before slaughter. Maximum use 23 oz/acre |
| Esplanade 200SC | Indaziflam | yes | No | Not Allowed | Not Allowed | 8 months min. | Well established. 1-2 years | Do not use more than 10 oz/ 12 calendar months |

Chemical Weed Matrix

March 2019

| | Canada Thistle - Creeping perennial; 6-10 inches to bud or fall | Musk Thistle; Scotch Thistle & Bull Thistle - Biennial; rosette stage or fall | Russian Knapweed - Creeping perennial; bud to early flower or fall | Diffuse Knapweed; Spotted Knapweed - Biennial or simple perennial; rosette stage or fall | Field Bindweed - Creeping perennial; at full bloom or fall | Hoary Cress; Perennial Pepperweed - Creeping perennial; bolting to bud maybe bloom | Leafy Spurge - Creeping perennial; spring true flowers or fall** | Absnith Wormwood - Perennial; 12 inches to flowering or fall | Mullein - Biennial; Rosette to pre-bud or fall | Yellow Toadflax; Dalmatian Toadflax - Creeping perennial; bud to early flowering or fall | Cheatgrass (Downy Brome) - annual; early germination, maybe spring |
|---|---|---|--|--|--|--|--|--|--|--|--|
| Tordon 22K (Picloram) - RU No trees or water; Graze - 14D wait | 1 quart/acre with NIS | 1 quart/acre with NIS | 1 quart/acre with NIS | 1 quart/acre with NIS | 1 quart/acre PLUS 2.4-D @ 1 quart/acre with NIS | NA | 1 quart/acre with NIS | 1 pint/acre with NIS | 1 - 1.5 pints /acre w/NIS | 1 quart/acre with NIS | NA |
| Milestone (aminopyralid) - Some trees; To waters edge; No irrigation; No Graze wait | 5-7 oz/acre with NIS | 3-5 oz/acre with NIS | 4 -6 oz/acre with NIS | 5-7 oz/acre with NIS | NA | NA | NA | 7 oz/acre with NIS | 7 oz/acre with NIS | NA | NA |
| Curtail (Clopyralid & 2.4-D) - Some trees; No water; Graze - 14 D wait | 2 -3 quarts/acre with NIS | 1.5-2 quarts/acre with NIS | 3 quarts/acre with NIS | 2 quarts/ acre with NIS | NA | NA | NA | 2 quarts/ acre with NIS | NA | NA | NA |
| Transline (Clopralid) - Most trees; No water; Graze - no wait. | 0.66 - 1.33 pints/acre with NIS | 0.33 - 1 pints/ acre with NIS | 1 - 1.33 pints /acre with NIS | 0.66 - 1.33 pints/acre with NIS | NA | NA | NA | NA | NA | NA | NA |
| 2.4-D - Careful trees; Maybe water = formulation; Graze - 7D wait | weak alone | 1 quart/acre with NIS | weak alone | weak alone | weak alone | 3 quarts/acre with NIS | 2 -3 quarts/acre with NIS | weak alone | 1 quart /acre w/NIS | NA | NA |
| Clarity/Banvel (Dicamba) - No trees or water; Graze - 21D wait | weak alone | 1 quart/acre with NIS | weak alone | weak alone | weak alone | | weak alone | weak alone | NA | NA | NA |
| Dicamba & 2.4-D - Graze - 7D; No water or trees; | 1 quart each/acre with NIS | | 1 quart each/acre with NIS | 1 quart each/acre with NIS | 1 quart each/acre with NIS | | 1 quart each/acre with NIS | 1 quart each/acre with NIS | NA | NA | NA |
| Glyphosate (40-50%) - Trees okay; Yes water depending on label; Non-selective | 2 quarts/acre | 1.5 quarts/acre | NA | 1.5 quarts/acre | 4-5 quarts/acre | 4 quarts/acre | 3.3 quarts/acre; partial control | | 2-3 quarts/ acre | 2 quarts/acre | 4-5 quarts/acre |
| Panoramic (Imazapic) - Some trees; waters edge ok; No irrigation; Graze - no wait | NA | 8 -10 oz/acre with MSO | 8 -10 oz/acre with MSO | NA | NA | 8 oz/acre with MSO | 10 oz/acre with MSO | NA | NA | 10 oz/acre with MSO | 6-8 oz/acre with NIS |
| Telar (Chlorsulfuron) - Some trees; waters edge ok; Graze - no wait | 1-2.6 oz/acre with NIS | 1 oz/acre with NIS | NA | NA | NA | 1 oz/acre with NIS | NA | NA | 1-2.6 oz/acre with NIS | Yellow: 1.25 oz/acre with NIS; Dalmatian 2 - 2.6 oz/acre with NIS | NA |
| Escort XP (Metsulfuron) - Some trees; waters edge ok; No irrigation; Graze - no wait | 1.5 to 2 oz/acre with NIS | 1 to 2 oz/acre with NIS | 1.5 to 2 oz/acre with NIS (suppression) | NA | NA | 1 to 2 oz/acre with NIS | NA | NA | 1 to 2 oz/acre with NIS | 1.5 to 2 oz/acre with NIS (suppression) | NA |
| Vista XRT (Fluroxypyr) - Some trees, some water; Graze - no wait | 4-6 oz Vista and 4-7 oz Milestone | 4-6 oz Vista and 4-7 oz Milestone | 4-6 oz Vista and 4-7 oz Milestone | 4-6 oz Vista and 4-7 oz Milestone | 6 oz Vista and 1/2 pint Tordon | 4-6 oz Vista and 3.3 oz Opensight | 23 oz /acre with MSO | NA | 6 oz Vista and 1/2 pint Tordon | NA | NA |

Herbicide Options Around Various Water Situations

** The label is the law. Read it for more details.

| | Outside banks of irrigation ditch | Top of ditch bank | Inside banks of Irrigation ditch | To waters edge of wetlands, rivers and lakes | To seasonally dry wetladns, marshes , bogs | In rivers | In lakes | Drainage or non-irrigation ditch banks | Notes |
|--|---|---|----------------------------------|--|--|-----------|----------|--|--------------------------------------|
| Aquatic 2,4-D amine; EPA #: 34707-120 & 5905-549 & 11773-2 | Yes | Yes | Yes - do not spray water surface | Yes; up to 2 foot overspray into water allowed | Yes | Yes | Yes | Yes; except for small canals with less than 10 CFS | Max. treatments/year2 |
| Glyphosate; (Rodeo - EPA #: 62719-324) | Yes | Yes | Yes | Yes | | Yes | Yes | Yes | |
| Arsenal (EPA #: 241-346) | Yes, w/caution possible 120 day restriction | Yes, w/caution possible 120 day restriction | Yes, w/ 120 day restriction | Yes | Yes | Maybe | Yes | Yes | non-selective product that will move |
| Garlon 3A (EPA#: 62719-37); Vastlan (EPA#: 62719-687) | Yes, w/caution possible 120 day restriction | Yes, w/caution possible 120 day restriction | Yes, w/ 120 day restriction | Yes, minimize overspray | Yes | No | No | Yes | Can contaminate ground water |
| Clearcast (EPA #: 241-437) | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Limited Species of Control |
| Banvel (EPA#: 66330-276) | Maybe | Maybe | No | No | No | No | No | No | Do not contaminate water |
| Milestone (EPA#: 62719-519) | Maybe | Maybe | No | Yes, take precautions to avoid drift | Yes | No | No | Yes | Do not apply directly to water |
| Telar | No | No | No | No | Yes | No | No | No | Do not apply directly to water |
| Triclopyr 3 (EPA #: 81927-13) | No | No | No | Yes, minimize overspray | Yes | No | Yes | Yes | |

Plant ID



Annuaals

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the page, creating a modern, layered effect. The word 'Annuaals' is centered in a clean, sans-serif font.

Annual Control Techniques

- ▶ Pre-emergent treatment depending on location of infestation.
- ▶ Post-emergent chemical application.
 - ▶ This may need to happen early and multiple treatments.
- ▶ Pulling or digging individual plants.
- ▶ Regular mowing.
 - ▶ Plants may still seed out below the mower height.
 - ▶ Timing is critical
- ▶ Regular disking.
 - ▶ Creates ground disturbance for additional species to move in or more seeds to germinate.
- ▶ Grazing
 - ▶ Toxicity concerns
 - ▶ Stocking rates

Puncturevine or Goatheads - C, NN



Chemical Control Options

- ▶ Glyphosate: at least 41% active ingredient; 2 % solution
- ▶ 2,4-D: 4 lb product; 1 qt/acre (2 pints)
- ▶ 2,4-D and Dicamba mixes (Range Star): 1 to 2 pints per acre depending on length of runners;
- ▶ Telar XP: $\frac{1}{4}$ to $\frac{1}{2}$ oz/acre (pre-emergent option)
- ▶ Non Crop areas (pre-emergent): Pendulum Aquacap or Prowl H2O: 2 to 4 qts/acre.

Cheatgrass or Downy Brome - C, NN

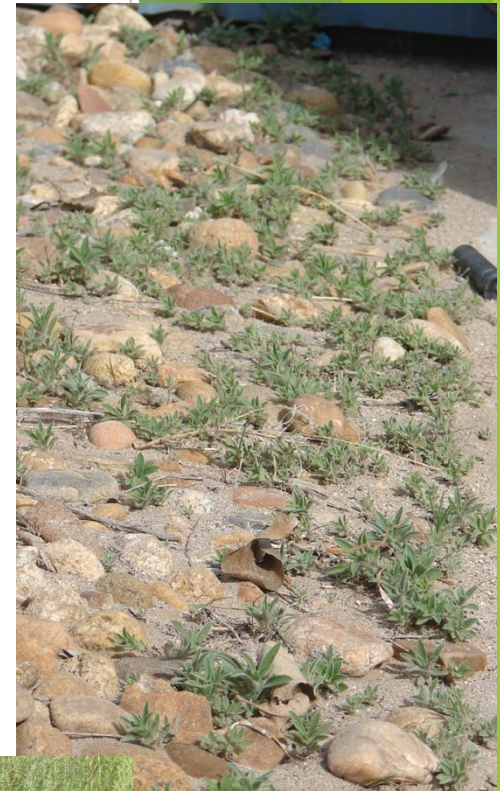


Chemical Control Options

- ▶ Glyphosate: at least 41% active ingredient; 2 % solution or higher
- ▶ Plateau or Panoramic 2SL: 4 to 8 oz/acre depending on the size of the cheatgrass.
- ▶ Prowl H2O: Pre-emergent only - weather concerns. 4 qts/acre.
- ▶ Non-crop areas: (Pre or Post emergent): Esplanade 200SC: 5 oz/acre

Kochia - NN

- ▶ A study found that kochia germination went from an initial level of 40 per cent in the first year after shed to five per cent the second year and nearly zero in the third year after shed. Other studies have shown that kochia germination can be as high as 76 per cent in the first year after shed, exhausting the seed bank more quickly.



Russian Thistle - NN

- ▶ A study found that of a collection of harvested seeds planted in the fall of the year they were produced, only 31 per cent germinated the following April and May, 0.5 per cent germinated in the second year and 0.04 per cent germinated in the third year. Other studies have shown that Russian thistle germination can be as high as 60 per cent in the season following shed, when conditions are optimal.



Redroot Pigweed - N



Non Chemical Resistant Varieties

Chemical options - Earlier is better

- ▶ Glyphosate: at least 41% active ingredient; 2 % solution
- ▶ 2,4-D: 4 lb product; 1 qt/acre (2 pints)
- ▶ 2,4-D and Dicamba mixes (Range Star): **kochia**: 1 to 2 pints for plants 1 inch to 20 inches tall; or 4 pints for actively growing/taller plants per acre; **Russian thistle**: rosette stage 1 qt/acre (2 pints)/acre; **Redroot pigweed**: 1.5 pints for plant 3 - 10 inches tall.
- ▶ Dicamba (Clarity): small, actively growing: 8-16 oz/acre; established growth: 16-24 oz/acre.

Kochia, Russian Thistle and Redroot Pigweed Control

- ▶ **Some** of the plants have become resistant to: Glyphosate, 2,4-D, Dicamba and Imazapyr products.

Chemical Resistant Variety Options

- ▶ E2: (2,4-D, Fluroxypyr, Dicamba) 1 to 2 qts/acre depending on the stage of growth.
- ▶ WideMatch: (Clopyralid, Fluroxypyr) 1 pint/acre when plants are less than 4 inches. (7 day grazing; 14 day haying)
- ▶ Non-cropland options: Vista XRT (Fluroxypyr) 6-12 oz/acre; Esplanade (Indaziflam) 5-7 oz/acre; Detail (Saflufenacil) 2-6 oz/acre; Piper (Flumioxazin & Pyroxasulfone) 10 oz/acre; Frequency (Topramezone) 4-16 oz/acre; Prowl H2O (Pendimethalin) 2-4 quarts/acre

Blue Mustard - NN



Flixweed - NN



Prickly Lettuce - NN



Buffalo bur - N



Field Pennycress - NN



Pineapple Weed - N



Redstem Filaree - C, NN



Prostrate Vervain - N



Prostrate Pigweed - N



Prostrate Spurge - N



Common Mallow - NN



Fetid Marigold - N



Tumble Mustard - NN



Common Ragweed - N



Horseweed or Marestalk - N



Shepherdspurse - NN



Chemical options - Earlier is better

- ▶ Glyphosate: at least 41% active ingredient; 2 % solution
- ▶ 2,4-D: 4 lb product; 1 qt/acre (2 pints)
- ▶ 2,4-D and Dicamba mixes (Range Star): 1 to 2 pints for actively growing plants per acre depending on the size of growth; Up to 4 pints/acre in some situations.
- ▶ Dicamba (Clarity): small, actively growing: 8-16 oz/acre; established growth: 16-24 oz/acre.

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the frame, creating a dynamic, layered effect. The rest of the background is plain white.

Biennials

Biennial Control Techniques

- ▶ Pre-emergent treatment depending on location of infestation.
- ▶ Post-emergent chemical application in the rosette stage to early bolting.
 - ▶ This may need to happen early and multiple treatments.
- ▶ Dig up rosettes. Be sure to get below the root crown growing point.
 - ▶ Labor intensive if a large number of plants exist
 - ▶ Disturbs the ground
- ▶ Deadhead the plants.
 - ▶ Labor intensive if a large number of plants exist
 - ▶ Bag and dispose of
- ▶ Regular mowing later in the growth cycle of the plant.
 - ▶ Some plants may still regrow enough to flower.
 - ▶ Timing is critical
- ▶ Regular disking.
 - ▶ Creates ground disturbance for additional species to move in or more seeds to germinate.
- ▶ Grazing
 - ▶ Toxicity concerns
 - ▶ Stocking rates

Salsify - NN



Curlycup Gumweed - N



Dames Rocket - B, NN



Musk Thistle - B, NN



Scotch Thistle - B, NN



Bull Thistle - B, NN



Common Mullein - C, NN



Diffuse Knapweed



Chemical Control Options

Optimum time to treat is in the rosette stage:

- ▶ Milestone: 5 to 7 oz/acre. Musk: 3- 5 oz; Mullein 7 oz
- ▶ Curtail: 2 to 3 qts/acre.
- ▶ Glyphosate: at least 41% active ingredient; 2 % solution
- ▶ 2,4-D: 4 lb product; 1 to 2 qt/acre (2 to 4 pints)
- ▶ 2,4-D and Dicamba mixes: rosette stage 1 qt/acre (2 pints)
- ▶ Tordon 22K and 2,4-D tank mix (.5-1 pint + 1 qt./acre)
- ▶ Redeem R&P (1.5-2 pints/acre)

Chemical Control Options Cont.

Optimum time to treat is after the bolt up to the early flower stage with these products:

- ▶ Telar XP (.5-1 oz./acre)
- ▶ Escort XP (.5-1 oz./acre)

Poison Hemlock



Houndstongue



Chemical Control Options

Optimum time to treat is in the rosette stage:

- ▶ Escort XP (1 oz/acre)
- ▶ Telar XP (1 to 2.6 oz/acre)
- ▶ Panoramic 2SL (8 oz/acre)
- ▶ Dicamba and 2,4-D (1 qt each/acre)

Perennials

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the frame, creating a modern, layered effect. The rest of the background is plain white.

Perennial Control Techniques

- ▶ Spray in the spring with an appropriate herbicide.
- ▶ Mow or graze through out the spring and summer to limit seed production and weaken root system.
- ▶ Possibly a deep till or plow with re-growth sprayed.
 - ▶ Note: This will spread the infestation of creeping perennial plants
- ▶ Spray in the fall.
- ▶ Plan on 3 to 5 years of continuous work and follow through (at the minimum).
- ▶ Simple perennials can be dug up.
 - ▶ Must get the majority of the root system.
 - ▶ May need to be repeated.

Curly Dock - NN



Bouncingbet - B, NN



Absinth Wormwood



Russian Knapweed



Canada Thistle - B, NN





Chemical Control Options

- ▶ Dicamba and 2,4-D tank mix (1 quart each/acre)
- ▶ Tordon and 2,4-D tank mix (1 quart each/acre)
- ▶ Tordon and Clarity tank mix (1 pint each/acre)
- ▶ Curtail (2-3 quarts/acre)
- ▶ Redeem R&P (2.5-4 pints/acre)
- ▶ Telar XP (1-1.5 ounces/acre)
- ▶ Milestone (5 to 7 oz/acre)
- ▶ Escort XP (.5-1 oz./acre)



Leafy Spurge - B, NN



Chemical Control Options

- ▶ Tordon and 2,4-D tank mix (1 pint + 1 quart/acre)
- ▶ Clarity and 2,4-D tank mix (1 quart each/acre)
- ▶ Panoramic 2SL (8 to 10 oz/acre)
- ▶ Tordon 22K (1 qt/acre)
- ▶ Non-Crop areas:
 - ▶ Krenite S (2 gallons/acre)
 - ▶ Quinstar 4L and Vista XRT (24 oz + 20 oz/acre)

This product may be applied in pine plantations and non-crop sites that contain areas of temporary surface water caused by collection of water between planting beds, in equipment ruts, or in other depressions created by management activities. It is permissible to treat intermittent drainage, intermittently flooded low-lying sites, seasonally dry flood plains and transitional areas between upland and lowland sites when no water is present. It is also permissible to treat marshes, swamps and bogs after water has receded, as well as seasonally dry flood deltas. **DO NOT** make applications to natural or man-made bodies of water, such as lakes, reservoirs, ponds, streams and canals.

KRENITE® S is non-flammable and nonvolatile.

Field Bindweed - C, NN



Chemical Control Options

- ▶ Dicamba and 2,4-D tank mix (1 quart each/acre)
- ▶ 2,4-D and Dicamba mixes (ex. Range Star) 2-3 qts/acre
- ▶ Tordon 22K and 2,4-D tank mix (1 quart each/acre)
- ▶ Tordon 22K and Dicamba tank mix (1 pint each/acre)
- ▶ Glyphosate at least 41% active ingredient; (2 % solution)
- ▶ E2 (2,4-D, Fluroxypyr & Dicamba): (2 -5 pints/acre)
- ▶ QuinStar 4L (3/4 pints/acre in fall - non-crop areas)

Hoary Cress / Whitetop - B, NN



Perennial Pepperweed



Chemical Control Options

- ▶ Panoramic 2SL (8 to 10 oz/acre)
- ▶ 2,4-D (3 qts/acre)
- ▶ Escort XP (1-2 oz/acre)
- ▶ Telar XP
 - ▶ Hoary Cress: ½ - 1 oz/acre
 - ▶ Perennial pepperweed: 1 - 2.6 oz/acre
- ▶ Glyphosate: at least 41% active ingredient; 2 % solution

Dalmatian Toadflax



Yellow Toadflax



Chemical Control Options

- ▶ Telar XP (2 oz/acre)
- ▶ Tordon 22K (1 qt./acre)
- ▶ Panoramic 2SL (10-12 oz/acre)

Trees



Saltcedar or Tamarisk - B, NN



Russian Olive - B, NN



Products With the Highest Potential For Woody Plant Root Pickup

- ▶ Glyphosate (50-100% concentrate)
- ▶ Remedy Ultra (1.5 -2% solution in oil)
- ▶ Pathfinder RTU
- ▶ Imazapyr (Arsenal) (8 - 12 oz/gallon of water)
- ▶ Habitat (Aquatic Arsenal) (2-4 pints/acre)
- ▶ Tebuthiuron (Spike 20P) RUP (20 pounds/acre)
- ▶ Krenite S (1.5 - 6 gallons/acre)

Questions, Comments

Tina Booton

tbooton@weldgov.com

970-400-3770

