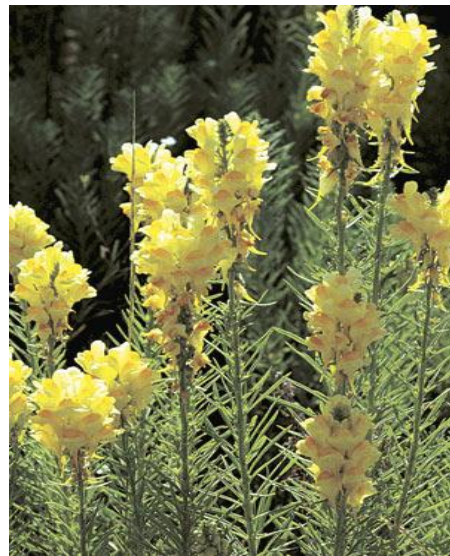


# *Routt County's* **13 Noxious Weeds**



Colorado  
State  
University

Extension



**Do you have any of these weeds in your garden  
or on your property?**

# Table of Contents

Introduction	pg. 2
Management Plans	pg. 3
Species Information	pg. 4-16
Cypress spurge	pg. 4
Diffuse knapweed	pg. 5
Meadow knapweed	pg. 6
Myrtle spurge	pg. 7
Orange hawkweed	pg. 8
Purple loosestrife	pg. 9
Russian knapweed	pg. 10
Spotted knapweed	pg. 11
Dalmatian toadflax	pg. 12
Houndstongue	pg. 13
Leafy spurge	pg. 14
Whitetop	pg. 15
Yellow toadflax	pg. 16
Glossary	pg. 17
Appendix	
• Herbicide Purchasing Guide	
• Mixing Directions for Small Sprayers	
• Sprayer Calibrations- Backpack	
• Sprayer Calibrations- Boom Type Sprayers	

## Contact Information

NOTE: Species listed in RED fall under the **eradication** management plan

## **Introduction**

The state of Colorado mandates that each county maintain control of all noxious weeds within county boundaries. The Routt County Weed Program uses chemical and biological methods to manage, control, and eradicate noxious weeds.

Identifying weeds is the primary step in control. Until the family of the specimen is determined a weed management plan cannot accurately, nor successfully, be developed and/or implemented. Noxious weed control is an ongoing battle.

Chemical control methods change while the weeds can become resistant to chemicals. Consistency is the best method for long-term and successful eradication of noxious weeds. While noxious weeds must be eradicated, a certain level of knowledge is required before any eradication effort should be made.

Thirteen noxious weeds have been identified and placed on Routt County's Noxious Weed List, all of which are included in this booklet. The information sheets on individual species include tips on identification, different methods of control, recommended herbicides, and impacts the species have on surrounding habitats.

## **Management Plans**

Routt County maintains two different levels of weed control:

### **1. Eradication**

- These MUST be destroyed!
- 7 of the 13 noxious weeds in Routt County fall into this category.
- Treated chemically, but may also be controlled mechanically.
- Biological controls are not an option (these species are denoted in red throughout this booklet.)

### **2. Suppression or management**

- The remaining six plants in this booklet fall under this category.
- Chemical management is the primary method of control; however, biological controls (weevils and other insects) are also used.
- Sometimes the two methods are used together.

# CYPRESS SPURGE



*(Euphorbia Cyparissias)*

## CHARACTERISTICS

- Cypress spurge is a perennial plant that reproduces by lateral root buds and seeds
- Flowers are yellowish-green when plant is young, and becomes reddish green as plant matures
- Cypress spurge prefers direct sunlight and occurs mostly in dry to moderately moist habitats
- Soil seed reserve for Cypress spurge is thought to be at least 8 years

## WHY BE CONCERNED?

- **CAUTION:** Cypress spurge plants have a milky sap that may cause dermatitis or skin rashes
- **WARNING:** Animals should not be pastured where spurge plants grow

## MANAGEMENT

- **Practice** prevention! This is the best way to avoid a spurge infestation.
- **Clean** equipment that has been used in infested areas.
- **Remove** seedlings when young - newly established plants can usually be pulled without leaving root fragments in the ground.
- **Re-plant** disturbed areas with desirable grasses as soon as possible.
- **Dispose** of weeds properly; bag or burn seed heads or fragments that may resprout.
- **Monitor** the site for several years, promptly removing new seedlings.

**HAND PULLING** is not recommended as a way to remove Cypress Spurge due to the extensive root system and the potentially harmful sap.

**MOWING** is also not recommended due to the length of the seed reserve.

**BIOLOGICAL CONTROLS** are not currently available.

**HERBICIDES** are effective to control Cypress spurge, but should always be applied with care. **Read and follow all labeled instructions.** Trade names are used here to simplify matters - no endorsement is implied. Other brand names may be available with similar ingredients that also will work. *See the label for proper rates, sites and grazing restrictions.*

- Paramount can be applied at the flowering stage.
- 2,4-D + dicamba may also be applied at the flowering stage.

**RE-SEEDING** can be very helpful in the long-term. After treating an area with herbicide, re-seed with a grass seed mix in the fall.



# DIFFUSE KNAPWEED



*(Centaurea diffusa)*

## CHARACTERISTICS

- Flowers are usually white, sometimes purple, and bloom July through August

## WHY BE CONCERNED?

- Diffuse knapweed is a non-native species in the state of CO
- Diffuse knapweed is a biennial forb that only reproduces by seed
- Preventing seed production is the key to management
- Diffuse knapweed tends to invade disturbed, overgrazed areas

## MANAGEMENT

**PREVENTION** is critical!

- **Practice** good pasture management; avoid overgrazing, irrigate and fertilize as needed, and reseed bare ground. A healthy pasture will help resist weed invasion.
- **Use** weed-free hay and seed and avoid bringing in weed-contaminated soil.
- **Clean** equipment that has been used in infested areas.
- **Remove** seedlings when young - newly established plants can usually be pulled without leaving root fragments in the ground.
- **Re-plant** disturbed areas with desirable grasses as soon as possible.
- **Dispose** of weeds properly; bag or burn seed heads or fragments that may resprout.
- **Monitor** the site for several years, promptly removing new seedlings.

**HAND PULLING** is recommended as any method of removal which destroys the root below soil surface will kill the plant

**MOWING** is recommended when plant is in full bloom. BE SURE that cut plants are properly disposed of!

**BIOLOGICAL CONTROL** is not available.

**HERBICIDES** are effective to control Diffuse Knapweed, but should always be applied with care. **Read and follow all labeled instructions.** Trade names are used here to simplify matters - no endorsement is implied. Other brand names may be available with similar ingredients that also will work. *See the label for proper rates, sites and grazing restrictions.*

- Milestone: apply in spring at rosette to early bolt stage or in fall to rosettes.
- 2, 4-D Amine should be applied in spring or fall to rosettes. Add non-ionic surfactant.
- Tordon 22K: apply in spring or fall

**RE-SEEDING** can be very helpful in the long-term. After treating, re-seed with a grass seed mix in the fall.

# MEADOW KNAPWEED



(*Centaurea pratensis*)

## **CHARACTERISTICS**

- Meadow knapweed is a perennial and grows from a woody crown produces flowers that are purple or pink in color. Leaves grow up to 6 inches long and 1 inch wide
- Plants grow between 20 and 40 inches tall and bloom in late summer and early fall

## **WHY BE CONCERNED?**

- Meadow knapweed is not palatable for livestock
- Meadow knapweed primarily reproduces by seed
- Habitats include moist sites mainly, but also include roadsides and open forest areas
- This plant disturbs wetland habitats by pushing out native seedlings

## **MANAGEMENT**

**PREVENTION** is critical!

- **Practice** good pasture management; avoid overgrazing, irrigate and fertilize as needed, and reseed bare ground. A healthy pasture will help resist weed invasion.
- **Use** weed-free hay and seed and avoid bringing in weed-contaminated soil.
- **Clean** equipment that has been used in infested areas.
- **Remove** seedlings when young
- **Re-plant** disturbed areas with desirable grasses as soon as possible.
- **Dispose** of weeds properly; bag or burn seed heads or fragments that may resprout.
- **Monitor** the site for at least ten years after the last adult plants are eliminated

**HAND PULLING** and or digging is recommended for small infestations.

**BIOLOGICAL CONTROLS** are not currently available.

**HERBICIDES** are effective to control Meadow knapweed, but should always be applied with care. **Read and follow all labeled instructions.** Trade names are used here to simplify matters - no endorsement is implied. Other brand names may be available with similar ingredients that also will work. *See the label for proper rates, sites and grazing restrictions.*

- Milestone should be applied either in spring during bolting or during the fall
- Tordon apply either in spring during bolting to bud growth or during the fall.

**RE-SEEDING** can be very helpful in the long-term. After treating, re-seed with a grass seed mix in the fall.

# MYRTLE SPURGE



(*Euphorbia myrsinites*)

## CHARACTERISTICS

- Myrtle Spurge is a low growing perennial
- Flowers appear from March to May
- This plant is an escaped ornamental
- The plant grows from a taproot and reproduces by seed. Plants are capable of projecting seeds nearly 15 feet

## WHY BE CONCERNED?

- Myrtle spurge contains a toxic milky sap, which is poisonous if digested!
- Wearing gloves, long sleeves, and eye protection is recommended when working with or near Myrtle spurge

## MANAGEMENT

**PREVENTION** is critical!

- **Practice** good pasture management; avoid overgrazing, irrigate and fertilize as needed, and reseed bare ground. A healthy pasture will help resist weed invasion.
- **Use** weed-free hay and seed and avoid bringing in weed-contaminated soil.
- **Clean** equipment that has been used in infested areas.
- **Remove** seedlings when young - newly established plants can usually be pulled without leaving root fragments in the ground.
- **Re-plant** disturbed areas with desirable grasses as soon as possible.
- **Dispose** of weeds properly; bag or burn seed heads or fragments that may re-sprout.
- **Monitor** the site for several years, promptly removing new seedlings.

**HAND PULLING** is recommended only if entire root system can be removed.

**CAUTION: always wear gloves and eye protection!**

**BIOLOGICAL CONTROLS** are not available in Routt County due to current management plans.

**HERBICIDES** are effective to control Myrtle spurge, but should always be applied with care. **Read and follow all labeled instructions.** Trade names are used here to simplify matters - no endorsement is implied. Other brand names may be available with similar ingredients that also will work. *See the label for proper rates, sites and grazing restrictions.*

- 2,4-D low-vol ester is moderately effective, but may need more than one application.
- Roundup is highly effective, but will harm any surrounding vegetation.

**RE-SEEDING** can be very helpful in the long-term. After treating, re-seed with a grass seed mix in the fall.



# ORANGE HAWKWEED



## CHARACTERISTICS

- The flowers are orange in color
- Leaves are basal; rosette leaves are 4 to 6 inches in length and have finely toothed margins
- This plant contains a milky juice, but it is not considered an irritant
- Orange hawkweed grows in temperate and mountain regions and can tolerate a variety of conditions.

## WHY BE CONCERNED?

- Orange hawkweed reproduces from runners, rhizomes, sporadic root buds, and seed
- Orange hawkweed easily escapes gardens and can readily infest lawns and other garden settings

*(Hieracium aurantiacum)*

## MANAGEMENT

**PREVENTION** is critical!

- **Maintain** a specific garden or yard area and ensure that this species does not escape from the confined area.
- **Clean** equipment that has been used in infested areas.
- **Remove** seedlings when young - newly established plants can usually be pulled without leaving root fragments in the ground.
- **Re-plant** disturbed areas with desirable grasses as soon as possible.
- **Dispose** of weeds properly; bag or burn seed heads or fragments that may resprout.
- **Monitor** the site for several years, promptly removing new seedlings.

**HAND PULLING** is not recommended.

**BIOLOGICAL CONTROLS** are not currently available.

**HERBICIDES** are effective to control Orange hawkweed, but should always be applied with care. **Read and follow all labeled instructions.** Trade names are used here to simplify matters - no endorsement is implied. Other brand names may be available with similar ingredients that also will work. *See the label for proper rates, sites and grazing restrictions.*

- Milestone: Apply when plants are in rosette to bolting stage.
- Clopyralid: can be used alone or 2-4-D can be added to it. Either way, it should be applied when plants are in the rosette growth stage. 2-4-D can also be used alone.

# PURPLE LOOSESTRIFE



*(Lythrum salicaria)*

## CHARACTERISTICS

- Flowers bloom from late June through September and are reddish-purple in color
  - The stems can grow between 2 and 8 feet tall

## WHY BE CONCERNED?

- Purple loosestrife is a non-native species in the state of CO
- Purple loosestrife reproduces primarily by seed and the seeds can be viable in soil between 5 and 20 years

## MANAGEMENT

**PREVENTION** is critical!

- **Practice** good pasture management; avoid overgrazing, irrigate and fertilize as needed, and reseed bare ground. A healthy pasture will help resist weed invasion.
- **Use** weed-free hay and seed and avoid bringing in weed-contaminated soil.
- **Clean** equipment that has been used in infested areas.
- **Remove** seedlings when young - newly established plants can usually be pulled without leaving root fragments in the ground.
- **Re-plant** disturbed areas with desirable grasses as soon as possible.
- **Dispose** of weeds properly; bag or burn seed heads or fragments that may resprout.
- **Monitor** the site for several years, promptly removing new seedlings.

**HAND PULLING** is recommended only for small infestations and should be performed before seed set.

**BIOLOGICAL CONTROLS** are not currently available.

**HERBICIDES** are effective to control Purple loosestrife, but should always be applied with care. **Read and follow all labeled instructions.** Trade names are used here to simplify matters - no endorsement is implied. Other brand names may be available with similar ingredients that also will work. *See the label for proper rates, sites and grazing restrictions.*

- Garlon 3A can be applied in summer. If plants are flowering, remove flower heads before applying herbicide.
- Rodeo should be applied in summer. Add a non-ionic surfactant. Again, dispose of flower heads before applying herbicide.
- Aquatice 2, 4-D Amine can be applied in early spring. Only prevents seed formation. Retreatment is necessary.

**RE-SEEDING** can be very helpful in the long-term. After treating, re-seed with a grass seed mix in the fall.

# RUSSIAN KNAPWEED



*(Acroptilon repens)*

## **CHARACTERISTICS**

- Roots are black in color with a scaly appearance, flowers are purple in color and are solitary at tips of upper branches
- Russian knapweed can grow to be 3 ft tall
- This weed may be toxic to horses and can result in the animals injury or death

## **WHY BE CONCERNED?**

- Russian knapweed is a non-native species in CO
- Spreads by roots and seeds
- Russian knapweed displaces native vegetation especially in rangeland and pastures
- May occur along roadsides, ditch banks, riparian zones, pastures, irrigated cropland, clear cuts, and cropland

## **MANAGEMENT**

**PREVENTION** is critical!

- **Maintain** healthy pastures and rangeland
- **Use** weed-free hay and seed and avoid bringing in weed-contaminated soil.
- **Clean** equipment that has been used in infested areas.
- **Remove** seedlings when young - newly established plants can usually be pulled without leaving root fragments in the ground.
- **Re-plant** disturbed areas with desirable grasses as soon as possible.
- **Dispose** of weeds properly; bag or burn seed heads or fragments that may resprout.
- **Monitor** the site for several years, promptly removing new seedlings.

**MOWING** several times before the plants bolt stresses Russian knapweed and forces them to use nutrient reserves stored in the root system. Mowing needs to be repeated during the summer, followed by an herbicide application in the fall.

**BIOLOGICAL CONTROLS** are currently limited a potential insect currently under investigation. The insect is a gall forming nematode, *Subanguina picridis*.

**HERBICIDES** are effective to control Russian knapweed, but should always be applied with care. **Read and follow all labeled instructions.** Trade names are used here to simplify matters - no endorsement is implied. Other brand names may be available with similar ingredients that also will work. *See the label for proper rates, sites and grazing restrictions.*

- Milestone can be applied in the spring and summer to plants in the bud and flowering stage
- Tordon 22K should be applied during the same time of year as the Milestone
- Telar can be applied in the spring from pre-bloom to bloom and to fall rosettes.

**RE-SEEDING** can be very helpful in the long-term. After treating, re-seed with a grass seed mix in the fall.

# SPOTTED KNAPWEED



*(Centaurea maculosa)*

## CHARACTERISTICS

- Flowers are pink to purple in color and bloom from June thru October
- Grows up to 4 ft tall with erect stems
- Seed set usually occurs in mid-August
- Spotted knapweed is extremely adaptive

## WHY BE CONCERNED?

- Spotted knapweed is a short lived perennial forb that reproduces only by seed. One plant can produce 40,000 seeds

\*This type of knapweed can be distinguished from other types of knapweeds by the black-tipped bracts (phyllaries) at the base of the flower

## MANAGEMENT

### PREVENTION is critical!

- **Practice** good pasture management; avoid overgrazing, irrigate and fertilize as needed, and reseed bare ground. A healthy pasture will help resist weed invasion.
- **Use** weed-free hay and seed and avoid bringing in weed-contaminated soil.
- **Clean** equipment that has been used in infested areas.
- **Remove** seedlings when young - newly established plants can usually be pulled without leaving root fragments in the ground.
- **Re-plant** disturbed areas with desirable grasses as soon as possible.
- **Dispose** of weeds properly; bag or burn seed heads or fragments that may resprout.
- **Monitor** the site for several years, promptly removing new seedlings.

**BIOLOGICAL CONTROLS** are not available in Routt County due to current management plans.

**HERBICIDES** are effective to control spotted knapweed, but should always be applied with care. **Read and follow all labeled instructions.** Trade names are used here to simplify matters - no endorsement is implied. Other brand names may be available with similar ingredients that also will work. *See the label for proper rates, sites and grazing restrictions.*

- Milestone: spring at rosette to early bolt stage and/or in the fall to rosettes
- Curtail: apply in the spring and fall to rosettes
- Tordon 22K: apply in spring to rosettes through mid-bolt and in fall to rosettes. Do NOT apply near trees/shrubs/high water table.



# DALMATIAN TOADFLAX



*(Linaria dalmatica)*

## CHARACTERISTICS

- The plant can grow up to 3 feet tall and has bright yellow flowers which resemble snapdragons.
- The leaves alternate and have a waxy surface
- Flowers usually bloom in July

## WHY BE CONCERNED?

- Dalmatian toadflax is a non-native species to the state of CO
- An individual plant can produce up to 500,000 seeds
- Prevention is the key to controlling Dalmatian toadflax
- Dalmatian toadflax is highly aggressive and can easily push out native species

## MANAGEMENT

- **Practice** good pasture management; avoid overgrazing, irrigate and fertilize as needed, and reseed bare ground. A healthy pasture will help resist weed invasion.
- **Use** weed-free hay and seed and avoid bringing in weed-contaminated soil.
- **Clean** equipment that has been used in infested areas.
- **Remove** seedlings when young - newly established plants can usually be pulled without leaving root fragments in the ground.
- **Re-plant** disturbed areas with desirable grasses as soon as possible.
- **Dispose** of weeds properly; bag or burn seed heads or fragments that may resprout.
- **Monitor** the site for several years, promptly removing new seedlings.

**HAND PULLING** is recommended only for small infestations. Be sure the entire root is pulled!

**MOWING** will slow, but not stop, the spread of Dalmatian toadflax. Be careful to mow before the plant goes to seed in order to maintain control of seed dispersal.

**BIOLOGICAL CONTROLS** are available. *Calophasia lunula* feeds on the leaves and flowers of the plant. Other biological controls are available. For more information contact the Routt County Extension Office at (970) 879-0825 and ask for CJ Mucklow.

**HERBICIDES** are effective to control Dalmatian toadflax, but should always be applied with care. **Read and follow all labeled instructions.** Trade names are used here to simplify matters - no endorsement is implied. Other brand names may be available with similar ingredients that also will work. *See the label for proper rates, sites and grazing restrictions.*

- Tordon 22K: Apply when flowering or in the fall
- Telar: Apply in spring or fall. Add a non-ionic surfactant.
- 2, 4-D + Dicamba: Apply during pre-bloom or flowering stage. Retreatment required. Add a non-ionic surfactant

**RE-SEEDING** can be very helpful in the long-term. After treating, re-seed with a grass seed mix in the fall.



# HOUNDSTONGUE



(*Cynoglossum officinale* L.)

## **CHARACTERISTICS**

- Each flower produces 4-nutlets which turn into hooked or barbed prickles when mature
- Leaves are alternating and hairy
- Other common names are: beggar's lice, dog's tongue, common bur, and glove wart

## **WHY BE CONCERNED?**

- Houndstongue is toxic to horses.
- Houndstongue grows in disturbed habitats such as roadsides, sand dunes, or open woodlands
- Houndstongue grows a long taproot that can reach up to 1 meter deep

## **MANAGEMENT**

**PREVENTION** is critical!

- **Practice** good pasture management; avoid overgrazing, irrigate and fertilize as needed, and reseed bare ground. A healthy pasture will help resist weed invasion.
- **Use** weed-free hay and seed and avoid bringing in weed-contaminated soil.
- **Clean** equipment that has been used in infested areas.
- **Remove** seedlings when young - newly established plants can usually be pulled without leaving root fragments in the ground.
- **Re-plant** disturbed areas with desirable grasses as soon as possible.
- **Dispose** of weeds properly; bag or burn seed heads or fragments that may resprout.
- **Monitor** the site for several years, promptly removing new seedlings.

**HAND PULLING** is recommended for small infestations. Make sure to pull entire root!

**MOWING** will slow, but not stop, the spread of Houndstongue. Plants that are periodically mowed continue to flower and produce seed on shorter plants, prolonging the season of growth and flowering.

**BIOLOGICAL CONTROLS** are not currently available.

**HERBICIDES** are effective to control Houndstongue, but should always be applied with care. **Read and follow all labeled instructions.** Trade names are used here to simplify matters - no endorsement is implied. Other brand names may be available with similar ingredients that also will work. *See the label for proper rates, sites and grazing restrictions.*

- Telar can be applied in early summer or in the fall. Add a surfactant.
- 2,4-D can also be applied in early summer or in the fall.
- Escort can be applied in early summer or in the fall.

**RE-SEEDING** can be very helpful in the long-term. After treating, re-seed with a grass seed mix in the fall.

# LEAFY SPURGE



(*Euphorbia esula*)

## CHARACTERISTICS

- There is a white, milky, sap-like substance inside the entire plant
- Leafy spurge grows from 1-3ft tall with roots that are up to 30ft deep
- Leafy spurge is one of the first plants to emerge in the spring

## WHY BE CONCERNED?

- Leafy spurge is non-native, extremely invasive, and spreads by extensive creeping roots and seeds
- Leafy spurge has adapted to a large variety of habitats across the state of CO

## MANAGEMENT

**PREVENTION** is critical!

- **Maintain** healthy pastures and rangeland
- **Clean** equipment that has been used in infested areas.
- **Re-plant** disturbed areas with desirable grasses as soon as possible.
- **Dispose** of weeds properly; bag or burn seed heads or fragments that may resprout.
- **Monitor** the site for several years, promptly removing new seedlings.
- **Create** a management plan for the area that incorporates several compatible control methods

**HAND PULLING** is not recommended due to the extensive length of the root system.

**MOWING** will reduce seed production if repeated bi-monthly during the growing season.

**BIOLOGICAL CONTROL** can be accomplished either by allowing sheep and/or goats to graze the impacted area, or through insect grazing. The flea beetles *Apthona nigriscutis*, *A. lacertosa*, and *A. cyparissiae*, are effective.

**HERBICIDES** are effective to control Leafy spurge, but should always be applied with care. **Read and follow all labeled instructions.** Trade names are used here to simplify matters - no endorsement is implied. Other brand names may be available with similar ingredients that will also work. *See the label for proper rates, sites and grazing restrictions.*

- Tordon 22K: should be applied in the spring, following full-bloom and/or fall.
- Tordon + 2, 4-D: apply in the spring or fall
- Plateau: apply in the spring only, during bloom to post-bloom stage

# WHITETOP



(*Cardaria draba*)

photo courtesy "Weeds of the West" Western Society of Weed Science

## CHARACTERISTICS

- Whitetop grows up to 2 feet tall and has white flowers which are tiny and occur only at the ends of the stem.
- The upper leaves clasp the stem and leaves have jagged edges
- Plants usually bloom in May and early June.
- Seeds are formed in a bladder-like pod

## WHY BE CONCERNED?

- Whitetop is an aggressive, non-native species that invades pastures and meadows
- Whitetop is unpalatable and displaces grasses and other more valuable forage plants for wildlife and livestock

## MANAGEMENT

### PREVENTION is critical!

- **Practice** good pasture management; avoid overgrazing, irrigate and fertilize as needed, and reseed bare ground. A healthy pasture will help resist weed invasion.
- **Use** weed-free hay and seed and avoid bringing in weed-contaminated soil.
- **Clean** equipment that has been used in infested areas.
- **Remove** seedlings when young - newly established plants can usually be pulled without leaving root fragments in the ground.
- **Re-plant** disturbed areas with desirable grasses as soon as possible.
- **Dispose** of weeds properly; bag or burn seed heads or fragments that may resprout.
- **Monitor** the site for several years, promptly removing new seedlings.

**HAND PULLING** is recommended only for new seedlings.

**MOWING** will slow, but not stop, the spread of whitetop. Plants that are periodically mowed continue to flower and produce seed on shorter plants, prolonging the season of growth and flowering.

**BIOLOGICAL CONTROLS** are not currently available.

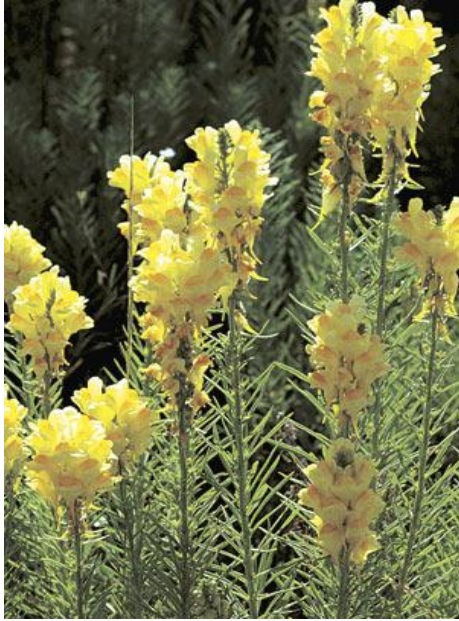
**HERBICIDES** are effective to control whitetop, but should always be applied with care.

**Read and follow all labeled instructions.** Trade names are used here to simplify matters - no endorsement is implied. Other brand names may be available with similar ingredients that also will work. *See the label for proper rates, sites and grazing restrictions.*

- Escort™ and Telar™ are very effective on whitetop. Application needs to occur when sufficient moisture is available in the soil, and a good non-ionic surfactant must be used.
- MCPA is moderately effective, but may need more than one application.
- Roundup™ (glyphosate) if used must be applied only to the whitetop. It is non-selective and will kill other plants, including grasses. You must re-seed after treatment.

**RE-SEEDING** can be very helpful in the long-term. After treating, re-seed with a grass seed mix in the fall.

# YELLOW TOADFLAX



*(Linaria vulgaris)*

## CHARACTERISTICS

- The leaves of this plant are narrow, linear and 1-2 inches long
- Yellow toadflax is known to be mildly poisonous to livestock

## WHY BE CONCERNED?

- Yellow toadflax is an escaped ornamental plant that is native to the Mediterranean region.
- Yellow toadflax can inhabit a wide variety of landscapes

## MANAGEMENT

**PREVENTION** is critical!

- **Practice** good pasture management; avoid overgrazing, irrigate and fertilize as needed, and reseed bare ground. A healthy pasture will help resist weed invasion.
- **Use** weed-free hay and seed and avoid bringing in weed-contaminated soil.
- **Clean** equipment that has been used in infested areas.
- **Remove** seedlings when young - newly established plants can usually be pulled without leaving root fragments in the ground.
- **Re-plant** disturbed areas with desirable grasses as soon as possible.
- **Dispose** of weeds properly; bag or burn seed heads or fragments that may resprout.
- **Monitor** the site for several years, promptly removing new seedlings.

**HAND PULLING** is not recommended due to the extended root system of Yellow toadflax.

**MOWING** is also not recommended because of the creeping root system.

**BIOLOGICAL CONTROL** is the Toadflax weevil. For more information contact the Routt County Weed Program Supervisor at 870-5246

**HERBICIDES** are effective to control Yellow toadflax, but should always be applied with care. **Read and follow all labeled instructions.** Trade names are used here to simplify matters - no endorsement is implied. Other brand names may be available with similar ingredients that also will work. *See the label for proper rates, sites and grazing restrictions.*

- Tordon + 2, 4-D can be effective if applied at the flowering stage (through fall). Re-treatment may be necessary.

**RE-SEEDING** can be very helpful in the long-term. After treating, re-seed with a grass seed mix in the fall.



# Glossary

**Weed-** Any plant growing in an unwanted area

**Noxious Weed-** An invasive plant which starts growing in a non-native area

**Poisonous Weed-** Has the ability to kill, injure or impair some species of livestock if they eat it (these can be native plants)

**Annual-** A plant which completes its' life cycle in one growing season

**Biennial-** A plant which completes its' life cycle in two growing seasons

**Perennial-** A plant which is regularly repeated or renewed for several years with new growth each growing season

**Broadleaf** (or Forb) - an herb other than a grass

**Mechanical Control-** Mowing, pulling, or burning to disrupt the growth of the plant

**Biological Control-** The use of insects or other competitive plants to disrupt the growth of a plant

**Chemical Control-** The use of herbicides to disrupt the growth of a plant

**Herbicide-** A chemical used to kill or control the growth of a plant

**Surfactant-** Additives used to make a product penetrate a plant better

**Rhizomes-** A horizontal underground stem which can send out both shoots and roots

**Runners-** (or stolons) are horizontal stems which grow at the soil surface; they form new plants at the ends or nodes

**Translocate-** When the herbicide travels from the leaves (site of entry) to the roots to kill the plan



## Herbicide Purchasing Guide

Please note: This guide does NOT replace the label. Legally what is stated on the label MUST be followed. You are liable for all uses of a product. If a site is not on the label of the product you purchase, you cannot legally use that product on that site. **Read the label before you purchase, mix, use, store or dispose of a product!**

Common Weeds	Some Labeled Sites	Product	Active Ingredient	Spot Mixing, from label (based on treating 1000 sq ft- unless noted)
All thistles, whitetop, knapweeds, toadflax (note: <i>can kill trees and shrubs</i> if it gets on them or if used where their roots reach.)	pasture, hay, rangeland	<b>Banvel®</b>	Dicamba	1 to 4½ teaspoons in 3 gallons of water
whitetop; houndstongue; biennial thistles; suppress Canada thistle	pasture and rangeland	<b>Cimarron®</b>	Metsulfuron Methyl	1 oz in 100 gallons; must use surfactant (area not specified)
many annual weeds; good on biennial thistles, houndstongue; okay on Canada thistle; fair on whitetop	non-crop areas, turf, grass pastures, rangeland	<b>Cornbelt 2,4-D amine, 4 lb.® Weed B Gon</b>	2,4-D amine	4 oz in 3 gallons of water (area not specified)
many annual weeds; good on biennial thistles, houndstongue; okay to good on Canada thistle and toadflax; fair to good on whitetop	non-crop areas, turf, grass pastures, rangeland	<b>Cornbelt 2,4-D ester, 6 lb. ®</b>	2,4-D ester	2.6 oz in 3 gallons of water (area not specified)
thistles, knapweeds	rangeland	<b>Curtail®</b>	Clopyralid, 2,4-D	3/8 to 1 oz in 1 gallon of water
whitetop; houndstongue; biennial thistles whitetop; houndstongue; biennial thistles; suppress Canada thistle	industrial and rangeland	<b>Escort XP®</b>	Metsulfuron Methyl	1 gram, approximately equal to ¼ tsp., in 1 gallon of water with surfactant
thistles, knapweeds	rangeland & grass pastures	<b>Forefront®</b>	Aminopyralid, 2,4-D	½ to 1 oz. in 1 gallon of water
thistles, knapweeds	rangeland, permanent grass pastures, non-cropland	<b>Milestone™</b>	Aminopyralid	2 to 4.8 milliliters in 2.5 gallons of water (4.9 mL = 1 tsp)
many weeds when young, including grasses, thistles, whitetop, houndstongue, toadflax	pastures, rangeland, turf ( <i>will kill turf grass!</i> )	<b>Round-Up Original®</b>	Glyphosate	½ to 10% solution, depending on plant size and site, see label.
thistles, knapweeds	rangeland & grass pastures	<b>Redeem®</b>	Triclopyr, clopyralid	1/3 to 1 oz in 1 gallon of water
general broadleaf weeds (including whitetop, thistles, toadflax)	turf	<b>Weed B Gon MAX®</b>	MCPA, Triclopyr, dicamba	2 fl. oz. per gallon of water for each 500 sq. ft.
general broadleaf weeds (including whitetop & thistles)	Pastures, rangeland, cropland, & turf	<b>Sword</b>	MCPA	3 oz. in 3 or 4 gallons of water

**Surfactants** = additives used to make a product penetrate a plant better. Soap is not recommended, as it will bind with many herbicides. Common surfactants include Activator 90® and AdWet 90®. Use rates vary but usually 2 oz. in 3 gallons or ½% will work.

No endorsement of products mentioned is intended nor is criticism implied of products not mentioned. Information current as of 11/15/08

1 Tablespoon (Tbsp) = 3 teaspoons (tsp)  
1 fluid oz = 2 Tablespoons.

## **Mixing Herbicides for Backpack & Small (3 gallon) Sprayers**

- Some of the most commonly used sprayers are small hand-held pump sprayers and backpack sprayers.
- These units can be extremely effective for some weed infestations, but the solutions for them must be carefully mixed.
- It is very easy to over apply herbicides with these sprayers. The old adage "if a little is good, a lot is better" does **NOT** apply!
  - Over application can cause undo expense, kill beneficial plants, and make weed infestations worse by creating bare patches.
- Always follow labeled directions - whatever is on the label is legally binding to you as an herbicide user. **These mixing directions do not supersede a label!**
  - Check the labels to see if this mix is allowable, and check the label to make sure that the site where you want to use the product is also on the label. Usually the section of the label that would apply is called "Spot Applications."

### **Mixing metsulfuron and chlorsulfuron herbicides, including Escort®, Cimarron® and Telar®.**

1. Add 3 gallons of water to sprayer.
2. Add 1.3 grams (about 1/2 tsp) of product to water (this roughly equals the one ounce per acre rate.)
3. Stir the mixture or shake the sprayer for about a minute, until it turns cloudy.
4. Add 1 teaspoon of household ammonia. This should make the solution clear. If it isn't add a few drops more until it clears.
5. Add approximately 2 Tbsp of surfactant (Activator 90®, Adwet 90®, or similar. Soap or detergents are not recommended - they will often bind with the herbicide making less of it available.)
6. Use this mix within 3 days or less. After that it will drastically lose its potency.

## ***BACKPACK – Sprayer Calibration***

### ***NO Math Version!***

- Step 1:** Establish a calibration plot that is exactly:  
18.5 feet wide X 18.5 feet long

- Step 2:** Spray the calibrated plot uniformly with water, noting the number of seconds required:  
Time Required = \_\_\_\_\_ seconds.
- Step 3:** Spray into a bucket for the same number of seconds.
- Step 4:** Measure the number of ounces of water in the bucket:  
Volume Sprayed = \_\_\_\_\_ ounces
- Step 5:** The number of ounces collected from the bucket is equal to the number of gallons per acre the sprayer is delivering:  
Gallons Per Acre (GPA) = \_\_\_\_\_

### Adding the Correct Amount of Herbicide to the Tank for Liquid Herbicides

- Step 6:** Record sprayer output in gallons per acre (calculated in Step 5).  
Output (volume) = \_\_\_\_\_ GPA
- Step 7:** Determine volume of full spray tank.  
Tank volume = \_\_\_\_\_ gallons
- Step 8:** From the herbicide label determine amount of herbicide concentrate to apply per acre.  
\_\_\_\_\_ Herbicide per Acre (ounces or pints)
- Step 9:** Determine the amount of herbicide to add to each gallon based on the chart below.
- Step 10:** Calculate the amount of herbicide to add to one backpack tank  
 \_\_\_\_\_ Amount of X \_\_\_\_\_ number of = \_\_\_\_\_ Total amount of  
 herbicide/gallon gallons in a tank herbicide to add to tank

Spray Volume GPA	Recommended Herbicide Rate/Acre			Amount of MSO to Add to Each Gallon 2 pints
	8 oz	10 oz	12 oz	
10	5½ tsp	2 T	2½ T	3½ T
20	2½ tsp	1 T	3½ tsp	10 tsp
30	1½ tsp	2 tsp	2½ tsp	2 T
40	1¼ tsp	1½ tsp	2 tsp	4¾ tsp
50	1 tsp	1¼ tsp	1½ tsp	3¾ tsp

**Example:** Assume that the calibration of your sprayer (Step 1-5) yields an output of 30 GPA and your sprayer holds 3 gallons. The PLATEAU® label for leafy spurge control recommends 8 to 12 oz/acre of herbicide plus 2 pints of MSO. You decide to spray 10 oz/acre of PLATEAU. Go to the chart and read across from 30 GPA to the 10 oz column – the amount of herbicide to add per gallon is 2 teaspoons in the chart. Since your sprayer holds 3 gallons of total solution, you would add 6 teaspoons (or 2 Tablespoons) of herbicide to your tank. Go to the chart and read across from 30 GPA to the 2 pints column – the amount of MSO to add per gallon is 2 Tablespoons. Add 6 Tablespoons (or 3 fluid ounces) of MSO in addition to the water and herbicide in each tank.

**Liquid Conversions:** tsp = teaspoon; T = Tablespoon; oz = ounces  
 3 teaspoons = 1 tablespoon    8 ounces = 1 cup    2 tablespoons = 1 ounce    1 cup = 16 tablespoons

*For calibrating hand wand sprayers (ATV) see: <http://www.ext.vt.edu/pubs/forestry/456-502/456-502.html#L.com>*

**Pesticide Education Program Fact Sheet****MP-93.3**

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Prepared by M.A. Ferrell, UW Cooperative Extension Pesticide Coordinator

## 1/128 Method of Calibration Calibrating Multiple Nozzle Boom-type Sprayers

Because a gallon = 128 ounces and the test area to be sprayed is 1/128th of an acre, ounces collected = gallons per acre.

This method of sprayer calibration gives sprayer output in gallons per acre when nozzle discharge is measured in ounces over a course length (D) determined from Table 1.

**STEP 1.**

Adjust the sprayer pressure (30 to 40 psi for most sprayers) and check for uniformity. Operate sprayer for one minute and measure spray from each nozzle. Clean or replace any nozzle tip that delivers 5 percent more or less than the output required for a new nozzle in good working condition.

**STEP 2.**

Measure the spray band width or nozzle spacing (W) in inches on the boom to determine the course length (D) in feet as shown in column 2 of Table 1. The area to be sprayed must equal 1/128th of an acre. An acre = 43,560 ft<sup>2</sup>. Therefore, 1/128th of an acre would equal 43,560 divided by 128 = 340 ft<sup>2</sup>. If the nozzle spacing = 20 inches then the distance to travel to equal 1/128th of an acre would be 204 feet. This can be determined by the following formula:

$$\frac{4084}{W \text{ (nozzle spacing in inches)}} = D \text{ (distance in feet)}$$

$$\text{or} \quad \frac{4084}{20 \text{ inches}} = 204 \text{ feet}$$

Or from Table 1. W = 20 inches and D = 204 feet.

**STEP 3.**

Catch the spray from one nozzle while operating the sprayer under field conditions or for the time required to travel the needed distance at a desired speed. Time required to travel distance (D) at selected speeds is shown in Table 1.

Time required for other speeds may be calculated with the following formula:

$$\text{time (seconds)} = \frac{0.682 \times \text{distance (feet)}}{\text{speed (miles per hour)}}$$

**STEP 4.**

Measure the spray collected in ounces. The number of ounces collected is the same as the number of gallons per acre.

**EXAMPLE**

You have a sprayer that has 15 nozzles on 30-inch spacings. How would you calibrate it using the 1/128th method?

Using the formula from Step 2 above:

$$\frac{4084}{30 \text{ inches}} = 136 \text{ feet}$$

Or from Table 1. W = 30 inches and D = 136 feet.

Therefore, you would need to time how long it takes for your sprayer to travel 136 feet. Travel this distance several times in the field and get an average time. Perhaps it takes an average of 31 seconds to cover 136 feet.

You would then collect the spray from one nozzle in a container for 31 seconds. Measure the water collected in ounces. The amount collected in ounces equals gallons per acre. If in 31 seconds you collected 20 ounces your sprayer output would be 20 gallons per acre.

### Determining how much pesticide to add to the spray mixture

The recommendation from the label is to apply 1 quart of 2,4-D per acre.

The sprayer is applying 20 gallons per acre. Therefore, you will need to add 1 quart of 2,4-D to each 20 gallons of water.

Your sprayer holds 200 gallons. So how much pesticide will you need to add to the 200 gallon spray tank?

*200 gallons divided by 20 gallons = 10 quarts of 2,4-D*

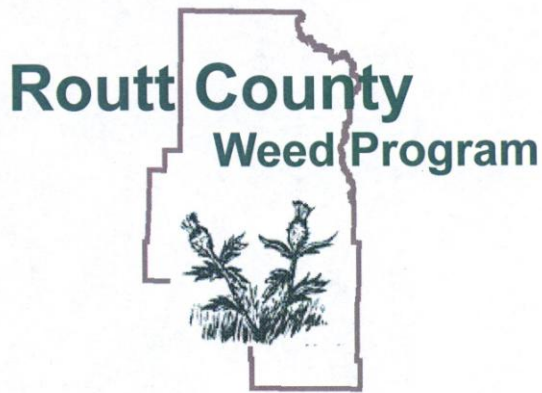
How large an area can be sprayed by your 200 gallon tank?

*200 gallons divided by 20 gallons per acre = 10 acres*

**Table 1.** Distance (D) to travel and seconds required for selected speeds when nozzle coverage is (W) inches so that discharge from one nozzle measured in ounces equals gallons per acre.

W (in)	D (ft)	Seconds to travel (D) feet at a speed of:			
		2 mph	3 mph	4 mph	5 mph
5	817	279	186	139	111
6	681	232	155	116	93
7	583	199	133	99	80
8	510	174	116	87	70
9	454	155	103	77	62
10	408	139	93	70	56
11	371	127	84	63	51
12	340	116	77	58	46
14	292	100	66	50	40
16	255	87	58	43	35
18	227	77	52	39	31
20	204	70	46	35	28
22	186	63	42	32	25
24	170	58	39	29	23
26	157	54	36	27	21
28	146	50	33	25	20
30	136	46	31	23	19
32	128	44	29	22	17
34	120	41	27	20	16
36	113	39	26	19	15
38	107	36	24	18	15
40	102	35	23	17	14





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**Feel free to contact us!**