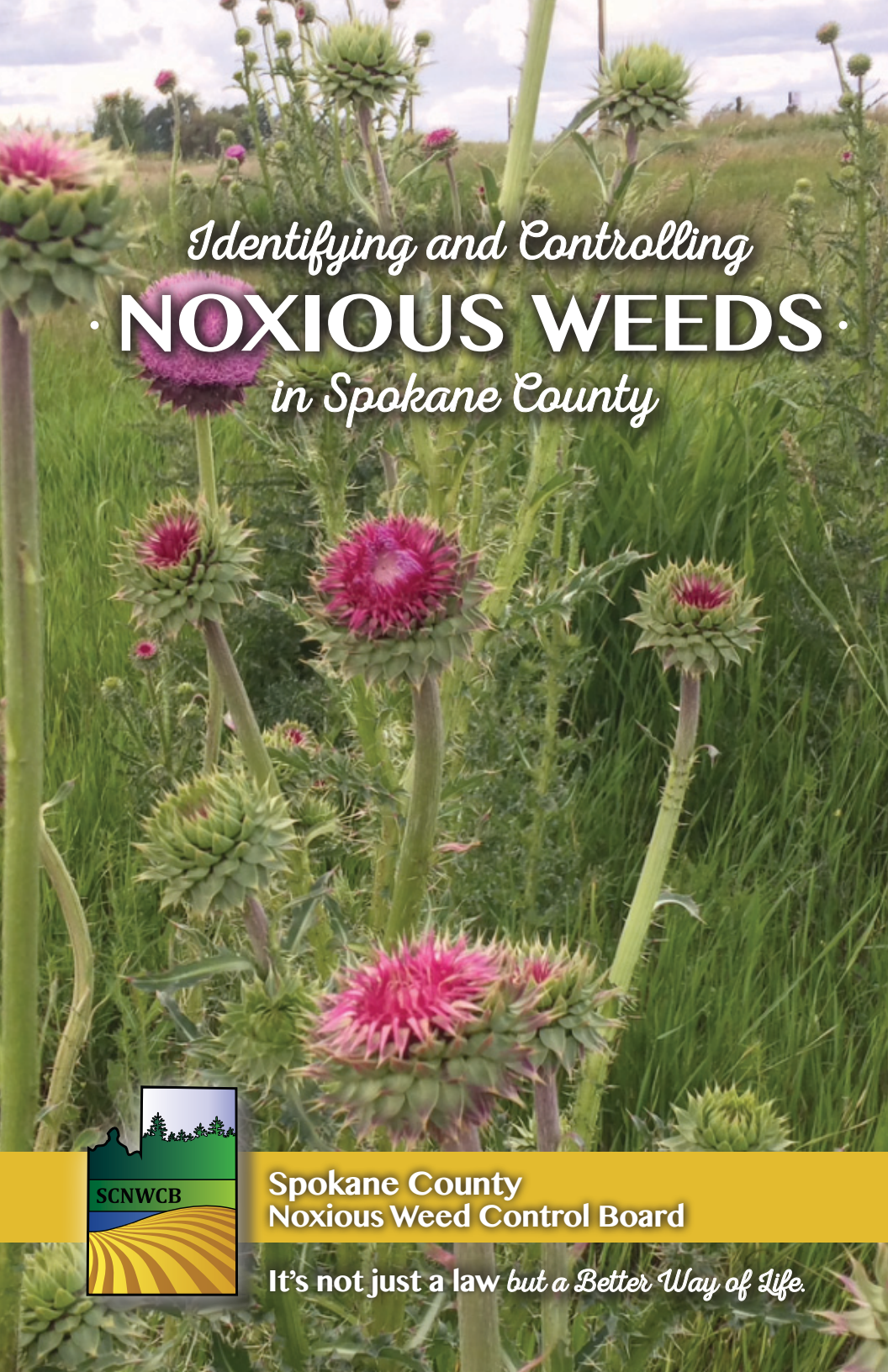

Identifying and Controlling NOXIOUS WEEDS in Spokane County

SCNWCB

Spokane County
Noxious Weed Control Board

It's not just a law *but a Better Way of Life.*

EVERYBODY'S PROBLEM:

Noxious weeds reduce property values, livestock forage and wildlife habitat; they threaten our native plants and ecosystems and they impact recreational activities and many are toxic to people and animals.

EVERYBODY'S SOLUTION:

You can be part of the solution to the noxious weed problem by being aware. Education – learn how noxious weeds are affecting your property and your recreational pursuits. Early detection and eradication of small infestations are the most cost effective ways to manage noxious weeds.

For more information, please contact:

Spokane County Noxious Weed Control Board
222 N. Havana
Spokane, WA 99202
509-477-5777
SpokaneCounty.org/WeedBoard

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Picture on cover is Musk Thistle

TABLE of CONTENTS

What is a Noxious Weed....4
Prevention....5
Manual and Mechanical....6
Cultural....7
Biological Control....8
Chemical Control....10
Identifying Noxious Weeds....11
Noxious Weeds with Blue, Purple or Pink Flowers....12
Noxious Weeds with Yellow or Orange Flowers....24
Noxious Weeds with White Flowers....36
Noxious Weeds with Green Flowers....42
Herbicide Recommendations for Noxious Weed Control....44
Herbicides: How Toxic are They?....45
Weed Growth Stage Influences Herbicide Activity....46
Herbicides and Surfactants....48
Recommended Herbicides for Noxious Weed Control....50
Measurements and Conversions....54
Don't Let This Happen to You....55

What is a NOXIOUS WEED?

They are non-native plants that have been introduced to Spokane County through human actions. Because of their aggressive growth and lack of natural enemies, these species can be destructive, competitive and difficult to control.

"Noxious" is a legal designation for many kinds of weeds found throughout the state. This is determined by a weeds potential threat ecologically, socially or economically and may vary by county and by state.

Help protect our natural resources, prevent noxious weeds from going to seed

Spokane County's Noxious Weed Control Program was established in 1970 and is available to all citizens in Spokane County. It was established to carry out the mandates of WA State Weed Law RCW 17.10. Under this law, the Spokane County Noxious Weed Control Board has the statutory responsibility to regulate the control of noxious weeds on all lands.

Spokane County's program focuses on education, notification, technical assistance and control of noxious weeds through voluntary compliance and when necessary - enforcement.

When an infestation is identified, the landowner is notified and given a variety of options on how to control the weeds. Including hand pulling, mowing or cutting, advice on pasture management, and on the most effective and least harmful methods of applying herbicides.

SCNWCB

Noxious weeds grow without regard to property lines. Cooperation is needed from all landowners.

Prevention is the first line of defense to keep weeds from occurring or increasing in an area.

Techniques include:

- Education...knowing how to identify the weeds growing on your property.
- Competition…plant high-quality, weed free crops or grass seed.
- Keep weeds from going to seed! This is particularly important for annual and biennial weeds that only reproduce by seed. Perennial weeds can spread by root stocks, stolons, stem sections as well as by seed. Preventing weeds from reproducing reduces new weed infestations.
- Knowing the best time to control noxious weeds. Weeds develop through multiple growth stages and knowing when they are the most vulnerable will improve your success rate.

Integrated Pest Management Plan

A good weed management plan uses more than one strategy. The key to successful weed management is to create a favorable situation for desirable plant growth. Cutting, pulling, mowing and spraying are just examples of methods that can be used to control weeds; they are components of an Integrated Pest Management Plan.

Adequate control may prevent future infestations and the whole site needs to be considered, not just the weed itself.

Manual & Mechanical CONTROL

This method physically disrupts weed growth and includes: ***tillage, hoeing, handpulling, cultivation, mulching*** and ***mowing***. To effectively control noxious weeds, these control methods need to be repeated often throughout the growing season for several years to weaken the plants to the point where they no longer continue to regrow.

Tillage works by disturbing the root system. The objective is to dislodge or cut the root system so the plant dies from drying out before it can reestablish its roots. Tillage easily controls small weeds and is most effective in hot, dry weather with dry soils. To effectively control noxious weeds, repeat tillage each time new shoots emerge (about every two weeks) for one or two growing seasons. Make sure you cut off every plant. Tillage can also kill weeds by burying them. Most annual weeds die when all growing points are buried. However, burial is not effective on most perennial noxious weeds since their underground roots will resprout.

Mowing noxious weeds is a temporary control measure. It can reduce annual and biennial weed growth, but when you mow perennial noxious weeds, you are training them to seed out at only a few inches tall. This is especially true with ***Spotted*** and ***Diffuse Knapweed***. It is ***NOT*** recommended to mow or cut down ***Dalmatian Toadflax, Canada Thistle, Leafy Spurge*** or ***Rush Skeletonweed***. These plants will expand their system of roots and the weeds will be worse the following growing season.

You will need to mow periodically throughout the growing season until the first frost to prevent noxious weeds from going to seed.

Cultural CONTROL

Cultural weed control methods use practices common to land and water management in helping your lawn, pasture or crops compete against weeds. The methods include planting desirable vegetation, fertilization and irrigation as well as having good grazing practices.

Competition is fundamental to a good weed control program. Crops or perennial grasses will compete for sunlight, water and soil nutrients against the weeds. If possible, select crops or grasses that will work well with your soil type and climate conditions and that have beneficial growth habits such as rapid establishment.

Healthy, well-established stands of vegetation have a better chance of resisting weed invasions; therefore, managing these stands will make them as competitive as possible against weeds. Sites such as roadways and fence lines should be the first to receive attention because desirable plants are sparse and the soil is disturbed. Weeds often become established in these areas.

Restoring disturbed sites to prevent weed reoccurrences and provide competition for the weeds is essential.

Biological CONTROL

The intentional use of a living organism to suppress the population of a pest to an acceptable level. This includes the use of goats, sheep or any grazing livestock. A significant factor to consider is cost and care of the animals. If weeds cover more than ¼ to ½ an acre, goats will need to be contained with fencing to ensure they feed on the weeds. Fencing needs to be moved often so the area is not overgrazed.

Grazing animals control some noxious weeds, but they also eat desirable plants; be sure to have a revegetation plan ready if necessary.

Biological control also includes insects that effectively target noxious weeds. Many weeds originated in foreign countries and these plants gained a competitive advantage over native plants.

Biological control is a slow process and its efficacy is highly variable. Once introduced to an area, it may take several years for the insects to establish and reach a density where it will have an impact on the weed.

Biological controls will not eradicate the weeds, but they do have a place in an IPM control plan. Contact the Spokane County Noxious Weed Control Board to determine if this would be an effective control method for your property.

For more information on Biological Controls:

USDA Animal & Plant Health Insp. Services • (509) 353-2950

Jennifer Andreas, WSU Extension, Puyallup • (253) 445-4657

It is often assumed that biological control will solve the problem. But each new biological weed control agent has only about a 1 in 3 chance of success.

Biological Agents available for:

SPOTTED and DIFFUSE KNAPWEED:

Larinus minutus: A seed-head weevil. The Adults feed on stems and leaves and the larvae feed on developing ovules. They reduce plant vigor and seed production.

Cyphocleonus achates: A large root-boring weevil that lays about 100 eggs at the base of older knapweed plants. Larvae mine into the taproot, and feed on the root reserves; they form galls that expose the root to other invaders, reducing the plants energy reserves. Adults feed on leaves and stems.

LEAFY SPURGE:

Aphthona spp: Flea beetles in the Aphthona family attack leafy spurge. Adults feed on foliage and lay eggs in the crown of the plant. Larvae migrate down to feed on root hairs reducing the root's function of supplying water and nutrients to the plant.

DALMATIAN TOADFLAX:

Mecinus janthiniformis: A stem-boring weevil that has shown the ability to kill plants and reduce infestations. Adults feed on leaves and the larvae "mine" the tissues in the stem reducing the plant's vitality and seed production.

RUSH SKELETONWEED:

Typically includes the introduction of three biological control agents that are all released at the same time:

Cystiphora schmidti: A gall midge causes gall formation on leaves and stems.

Puccinia chondrillina: A rust that causes stunting, desiccation and other stress induced problems. Seedling plants are damaged and stunted.

Eriophyes chondrillae: This mite causes gall tissue to form on shoots and buds. It reduces seed production and kills young plants.

Chemical CONTROL

Chemical Control is the use of herbicides to disrupt weed growth. Herbicides are chemicals approved by the EPA that kill or injure plants. There are many kinds of herbicides, some are derived from plants and others are manufactured synthetically. The choice of which herbicide is best for a particular situation depends on the target weed, the presence of desirable plants, distance to water and environmental conditions.

To purchase and apply restricted use herbicides, a pesticide license is required. In Spokane County, contact the WA Dept. of Agriculture at 509-533-2690 for information on the test and how to become licensed. Some of the products listed in this Guide are **Restricted** in sizes larger than one gallon. However – most are sold in smaller containers and can be purchased without a license at your local agricultural supply store.

The following section is color coded – the noxious weeds have been grouped by flower color:

Noxious Weeds with Blue, Pink or Purple Flowers:

Annual Bugloss....12
Blueweed....13
Bull Thistle....14
Canada Thistle....15
Common Bugloss....16
Houndstongue....17
Musk Thistle....18
Purple Loosestrife....19
Russian Knapweed....20
Scotch Thistle....21
Spotted Knapweed....22
Wild Four O'Clock....23

Noxious Weeds with Yellow or Orange Flowers:

Absinth Wormwood....24
Buffalobur....25
Common Mullein....26
Dalmatian Toadflax....27
Hawkweeds....28
Leafy Spurge....29
Myrtle Spurge....30
Puncturevine....31
Rush Skeletonweed....32
St. Johnswort....33
Sulfur Cinquefoil....34
Yellow Starthistle....35

Noxious Weeds with White Flowers:

Diffuse Knapweed....36
Garlic Mustard....37
Hoary Alyssum....38
Hoary Cress....39
Oxeye Daisy....40
Poison Hemlock....41

Noxious Weeds with Green Flowers:

Kochia....42
Medusahead/Ventenata (Grasses)....43

Annual Bugloss

Anchusa arvensis

Growth Traits: Diminutive weedy annual that grows 6 to 24 inches tall with branching stems that stand erect. Larger plants measure 3 feet in diameter.

Leaves and Stems: 1 to 2 inch, lance-shaped leaves grow alternately along the branching stem, they are crinkled at the margins and have bristly hairs that come out of warty bumps. Leaves reduce in size going up the stem.

Flowers: Pale-blue flowers are tube shaped with five unequal lobes that surround a white center. When pulled out of the calyx, the flowers have a distinct curve in the whitish tube. It blooms from June until a hard frost.

Roots and Reproduction: It reproduces by seed and may germinate in fall or spring. Seeds sown in August can produce seedlings within a month. Flowers produce 4 nutlets that each contain a seed.

Also known as small bugloss.

The scientific name means 'weedy in the field'. It is a serious pest in cropland, pastures and fields.

Small populations can be easily pulled or dug. Wear gloves when handling plants, the bristly hairs can be painful and cause skin irritation.

Blueweed

Echium vulgare

Growth Traits: A biennial to short-lived perennial growing from a long, woody taproot to approximately 3 feet tall. It thrives in sunny sites, does not tolerate shade.

Leaves and Stems: Rosette of basal leaves are hairy and covered with small white bumps. Leaves are lance shaped and the undersides have dark flecks. Stems are unbranched, covered with stiff, bristly hairs that have swollen, red, purple or black bases, giving them a spotted appearance.

Flowers: Bright blue, sometimes purple or pink, funnel-shaped flowers are arranged on the upper side of short stems in a fiddleneck coil that elongates after flowering.

Roots and Reproduction: Has a long, woody taproot and can reproduce from the crown, but primarily by seed. Seeds are produced in a hard, four-part nutlet and each plant can produce up to 2,800 seeds and remain viable in the soil for several years.

Also known as Viper's Bugloss or Blue Devil.

Contains pyrrolizidine alkaloids which cause liver damage in livestock and the bristly hairs can cause dermatitis in humans.

Found primarily in the Nine Mile and Seven Mile areas of Spokane County.

Bull Thistle

Cirsium vulgare

Growth Traits: A biennial weed that grows 2 – 5 feet tall, bearing many spreading branches.

Leaves and Stems: Leaves are hairy, long, deeply lobed and prickly on the upper side and cottony underneath. Each lobe has 3 or 4 points that end in a sharp, yellow spine. The leaves extend down the stem in spiny wings. Stems are stout, erect and hairy.

Flowers: Dark purple flowers are clustered at the end of branches, typically 1 – 3 per stalk. Involucre bracts surround each flower with sharp, yellow-tipped spines. Flowering occurs from June until the first hard frost.

Roots and Reproduction: Bull Thistle has a short, fleshy taproot and reproduces only by seed.

Bull Thistle is unpalatable to wildlife and livestock.

Seeds are tipped with long, white hairy plumes that move along the ground and in the air making Bull Thistle a highly competitive weed that infests pastures, roadsides and disturbed sites.

Bull thistle will not withstand regular cutting or tillage; if cut while in flower, be sure to bag and dispose of the flower heads.

Canada Thistle

Cirsium arvense

Growth Traits: Aggressive perennial; seedlings emerge mid-to-late spring and form rootstocks when they are 3 weeks old.

Leaves and Stems: Prickly, spine-tipped with a wavy surface, growing alternately and slightly clasping the stem. Sharp spines are on branches and main stem. Stems emerge from a basal rosette reaching 1 – 4 feet tall.

Flowers: Lavender, urn-shaped flowers form in clusters at the end of stems. Flowering occurs July to August.

Roots and Reproduction: It can reproduce by seed, but most of its spread is due to lateral roots that send up new shoots each year. Wind helps disseminate "parachute" seeds, but most often, the cotton breaks off, leaving the seed attached to the plant.

One Canada thistle plant can colonize an area 3 to 6 feet in diameter in one to two years.

Most grazing animals avoid Canada thistle infested areas due to the spiny leaves that can lead to mouth irritations and infections.

Canadian thistle is one of the most difficult weeds to control. Pulling is not recommended and mowing stimulates new thistle shoots.

Common Bugloss

Anchusa officinalis

Growth Traits: Perennial; a rosette of basal leaves forms the first year, then blue-purple flowered stalks the second year. Grows 1 – 2 feet at maturity.

Leaves and Stems: Flower stems are robust and hairy, they start out coiled, then straighten as each flower bud opens. Leaves are lance shaped, succulent and covered with stiff hairs and has smooth or slightly toothed edges.

Flowers: Originate at the ends of the stalks and have 5 petals. Initially reddish, they later turn to a deep blue to purple or pink flower with white centers.

Roots and Reproduction: Reproduces by seed and has a long taproot and new shoots can develop from root stock fragments. Each flower produces 4 small nutlet-like seeds.

Succulent leaves and stalks can mold hay once it is baled.

One plant can produce over 900 seeds, which can remain viable in the soil for years.

Originally found near Mead, WA, it has spread to most of north Spokane County with limited distribution in the south.

Houndstongue

Cynoglossum officinale

Growth Traits: Biennial, sometimes perennial weed. It forms a low growing rosette of leaves the first year and bolts the second year to form a plant 1 – 4 feet tall.

Leaves and Stems: Hairy leaves have a distinct vein, are 12 inches long and 3 inches wide at the bottom, growing smaller up the stem. The stems are erect, stout and usually branched above. Hairs on stems and leaves give it a silvery cast.

Flowers: Small, dull reddish-purple flowers originate on the upper part of the stem. Flowering occurs from May through July.

Roots and Reproduction: It is a taprooted, self-pollinating weed that reproduces solely by seed. Rounded, triangular shaped seeds are grayish brown and covered with short, hooked prickles that cling like velcro.

"Houndstongue" results from the size and shape of the rosette leaves which resemble a dog's tongue.

One plant can produce 600 seeds that attach easily to passing animals, contributing to its spread.

It contains pyrrolizidine alkaloids which cause liver damage in animals. Cattle and horse deaths have occurred from eating contaminated hay. Symptoms include weight loss, diarrhea and coma.

Musk Thistle

Carduus nutans

Growth Traits: Musk Thistle is an aggressive, biennial weed. Mature plants range in height from 1 ½ to 6 feet tall.

Leaves and Stems: Rosettes can reach a span of 3 feet by late fall. Leaves are dark green, hairless, deeply lobed with a waxy surface; small, sharp spines and a light green midrib. The upper stems are typically bare and the lower stems are spiny and winged.

Flowers: Pink to purple, 1 ½ to 3 inches in diameter, drooping at maturity. Just beneath the flowers are very spiny bracts. The large flower heads contain hundreds of tiny individual flowers.

Roots and Reproduction: It has numerous small roots in the fall and a large, fleshy taproot in the spring. Reproduction is entirely by seed that are dispersed short distances by wind. The seeds are smooth and hairless.

It is not palatable to livestock due to sharp spines.

Also known as "Nodding Thistle" because the flower heads droop to a 90° angle from the stem when they mature.

Has a history of being used for medicinal purposes. The flowers are fever reducers and used to purify blood. Seeds contain an oil that is rich in linoleic acid.

Purple Loosestrife

Lythrum salicaria

Growth Traits: Semi-aquatic perennial that grows up to 10 feet tall and 5 feet wide in moist or saturated soils.

Leaves and Stems: Clasping, lance-shaped leaves whorl up the stem. One plant has 30-50 erect, square shaped stems that arise from a common rootstock. Leaves turn red in the fall.

Flowers: Striking magenta flowers are clustered on an elongated terminal spike that extend 2 inches to 3 feet down the stem in vertical clusters. The wrinkled petals on the flowers appear to have been crushed.

Roots and Reproduction: A woody taproot, fibrous roots and rhizomatous roots that form dense, woody mats. A prolific seed producer, it spreads primarily by floating seeds. One plant can produce over 2.5 million, pepper-size seeds per year.

Purple Loosestrife is often confused with native spirea and fireweed.

It grows in wetlands as well as streams, marshes and other habitats with moist ground or standing water.

Cutting, mowing or digging is only partly effective, it prevents seed production, but it will resprout if you do not remove the entire root.

Russian Knapweed

Acroptilon repens

Growth Traits: A rhizomatous perennial forms dense colonies, is considerably branched and grows to 4 feet tall.

Leaves and Stems: Basal leaves are toothed and covered with fine hairs, giving the leaves a grayish-green color and they get smaller as they go up the stem.

Flowers: Pink to purple, thistle-like, growing in solitary heads with papery bracts at the tips of leafy branches. Flowering occurs June to September.

Roots and Reproduction: The black roots can grow to a depth of 27 feet. It spreads by both seeds and creeping roots. Ivory seeds are heavy and tipped by plumes that fall off at maturity. Transport of seeds is generally as a contaminant in hay or seed.

Russian Knapweed is poisonous to horses. When ingested, it causes chewing disease.

Roots from a recently established plant expand rapidly and may cover up to 12 square yards in two growing seasons.

Russian Knapweed is allelopathic, which means it exudes toxins into the soil so that no other plant species can grow.

Scotch Thistle

Onopordum acanthium

Growth Traits: Biennial that grows 12 ft tall and 5 ft wide, making it Washington's largest thistle.

Leaves and Stems: Forms a rosette of leaves the first year, then a tall, branching flowering stem the second. Leaves are up to 2 feet long; margins and midribs are covered with sharp, yellow spines. Leaves are covered with a mat of cotton-like hairs, giving it a gray-green appearance. Stems have broad, spiny wings.

Flowers: Dark pink to lavender, the flowers grow in spiny, globe-shaped heads in groups of 2 or 3 on the branch tips.

Roots and Reproduction: A taproot, it spreads entirely by plumed seeds. Plants produce up to 40,000 seeds that remain viable for 20+ years.

It is not palatable to livestock due to the sharp spines.

Dense stands of Scotch thistle create a physical barrier to humans and livestock. It reduces forage and prevents livestock and wildlife access to water.

Mowing has limited effectiveness; it prevents seed production if done immediately prior to flowering; when mowed too early, flowering is delayed, but not prevented.

Spotted Knapweed

Centaurea stoebe

Growth Traits: A very aggressive biennial or short-lived perennial with several branched, upright stems growing up to 4 feet tall.

Leaves and Stems: Rosettes form the first year in early spring as deeply lobed leaves radiating from a common point. Flowering stalks elongate the second year. Leaves grow 2 – 6 inches long, are twice divided and deeply lobed. Stems and leaves are covered with fine hairs giving the plant a greyish-green appearance.

Flowers: Solitary pink to purple flowers grow at the ends of clustered branches. Surrounded by stiff, black-tipped bracts, giving the flower head a "spotted" appearance.

Roots and Reproduction: Stout taproot, seeds fall within 3 - 4 feet of the parent plant and can remain viable in the soil for 7-10 years. The seed heads open soon after seeds mature.

Spotted Knapweed releases an allelopathic substance that inhibits growth of surrounding vegetation.

Mowing reduces seed production, but will not kill the plant. The plant will adjust to the level of the mower.

Introduced as a contaminant of alfalfa and clover seed, it is the most recognized noxious weed in Spokane County.

Wild Four O'Clock

Onopordum acanthium

Growth Traits: Perennial, sometimes woody at the base, reaching 3 – 4 feet tall.

Leaves and Stems: Waxy, hairless leaves are heart-shaped. Stems are oppositely branched; upper stems and leaves are covered with a whitish or bluish waxy covering.

Flowers: Are about 3/8 in diameter and grow in clusters of 3 to 5 from a short, hairy flowerstalk at the tips of the plants. A whorl of bracts is found at the base of each flowers. The flowers have 5 reddish to lavender sepals and no petals.

Roots and Reproduction: It has a thick, black taproot that can extend down 2 feet. It reproduces by seed and fragmented root pieces. Seed is set from July to September. The involucre aids in the dispersal of the seeds, acting as a small umbrella which catches on vehicles.

The name refers to the flowers, which open late in the day and whither early the next morning.

Do not pull - stems break at the crown and broken root pieces will resprout.

It can be found along riverbeds, in heavily cultivated soils, alfalfa fields, rangeland and roadsides.

Absinth Wormwood

Artemisia absinthium

Growth Traits: Perennial, it reaches a height of 3 feet tall, but may grow to five feet under favorable conditions. The plant is woody at the base and regrows from the soil level each spring.

Leaves and Stems: Leaves are light to olive-green; 2 to 5 inches long and divided into deeply lobed leaflets. Covered with fine, silky hairs giving it a grayish appearance. Flower stalks appear at each upper leaf node, producing numerous flower heads.

Flowers: Inconspicuous yellowish flowers are arranged in large, spike-like panicles. Flowering occurs late July through August.

Roots and Reproduction: A prolific seed producer that spreads from perennial rootstocks as well as from seed. Seeds are scattered by wind, water, animals or as a contaminant in hay.

This toxic plant has a strong, offensive sage odor.

It will taint the milk of cattle and is said to cause paralysis when grazed by horses.

Young flower heads are the source of an oil used in preparation of absinth and vermouth. Absinth oil is pure poison, only use externally.

Buffalobur

Solanum rostratum

Growth Traits: Low growing, hairy annual. Stems are erect and bushy, up to 2 feet long. The entire plant is covered with straight yellow spines.

Leaves and Stems: Alternate leaves grow 2 – 6 inches long; irregularly cut into 5-7 lobes, covered by short yellow star-like hairs and the midribs, veins and leaf stalks are spiny. Leaves resemble a watermelon leaf.

Flowers: Yellow flowers are wheel-shaped and clustered on spiny flower stalks. The calyx is covered by spines; it enlarges and forms a spiny bur completely covering the seedpod. Plants bloom in late June to early August.

Roots and Reproduction: Spreads by black, wrinkled, flattened seeds that mature shortly after flowering. Plants break off and tumble in the wind scattering seed.

Buffalobur is a common contaminant in birdseed.

Stiff spines cause injury as well as contain alkaloids that can be poisonous to livestock.

This plant dates back to the settlement of the Great Plains when buffalo carried the burs great distances in their shaggy coats.

Common Mullein

Verbascum thapsus

Growth Traits: A biennial, with a single, stout, erect stem that grows 2 – 6 feet tall.

Leaves and Stems: First year rosette has soft, thick, fuzzy leaves. Second year, the leaves overlap each other and are light green and densely wooly.

Flowers: Five lobed and sulfur yellow, they grow in long, terminal spikes. The length of the flowering period is a function of stalk height; longer stalks continue to flower into early October.

Roots and Reproduction: A stout taproot, a single plant can produce up to 180,000 seeds. The seeds are tiny, angular and brownish in a 2-chambered capsule. Seeds can remain viable in the soil for more than 100 years. It prefers gravelly soils, but will grow in almost any open area.

Livestock will not eat the plant because of its woolliness.

Plants are easily pulled in loose soils due to shallow tap roots; it will reduce populations and seed productivity if pulled before seed set.

It was originally brought over from Europe by settlers in the 1700's; used as a medicinal herb.

Dalmatian Toadflax

Linaria dalmatica

Growth Traits: An aggressive perennial weed with an extensive root system. It is an attractive plant with erect stems that can grow up to 3 feet tall. It is also known as Butter-and-Eggs.

Leaves and Stems: The light green to bluish-green leaves are waxy, heart-shaped and clasp the stem.

Flowers: Snapdragon-like flowers are bright yellow, with an orange, bearded throat and a long spur. It flowers from late spring to fall.

Roots and Reproduction: Reproduces by seed and creeping, underground root system that can be as deep as 6 ft and spread laterally up to 10 ft. Horizontal roots produce many buds that form new plants. One plant can produce 500,000 seeds that remain viable for 10 years.

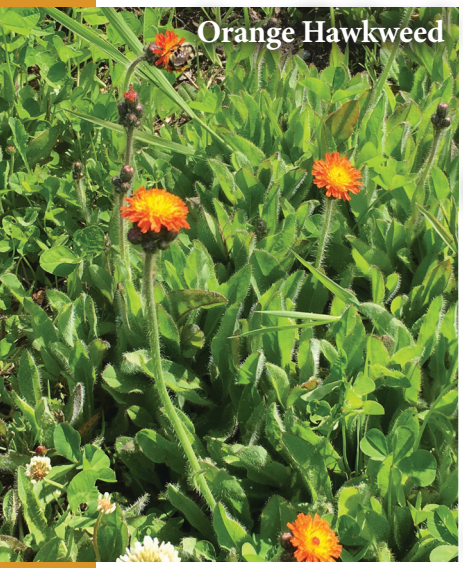
Hand pulling or digging can be done on small infestations, being sure to dig out the roots.

There are effective Biological Controls available for Dalmatian Toadflax.

Mowing to ground level during flowering will reduce seed production but does not provide control of the creeping root stocks.

Hawkweeds

Hieracium



Growth Traits: Orange and Yellow-Flowered Hawkweeds are perennials with shallow, fibrous roots, characterized by a single, sometimes leafless stem, covered with stiff, black hairs and growing to 12 inches tall.

Leaves and Stems: Basal rosette consists of narrow, spatula-shaped, hairy leaves that are 4 to 6 inches long and darker green on the upper surface than the lower surface. Orange hawkweed leaves typically have more hair than the Yellow hawkweed. Stems and leaves contain a milky juice.

Flowers: Each plant consists of 5 to 30 bright orange or yellow flower heads that are arranged in a flat-topped cluster. Petals are notched and square-edged. Flowers appear in late May to June.

Roots and Reproduction: Plants reproduce by wind-blown seed, stolons and rhizomes.

There are several species of "Yellow" hawkweed; all have yellow flowers with variable leaf types and arrangements. They are notorious for their complex and confusing classification; they interbreed freely making them difficult to distinguish from one another.

Leafy Spurge

Euphorbia esula

Growth Traits: A perennial, rhizomatous plant with stems that originate from a crown just below the soil surface. Plants from 1 to 3 feet tall.

Leaves and Stems: Blue-green leaves are hairless, narrow and alternate on the stem. They are numerous, usually drooping and attached directly to the stem in a spiral arrangement. Stems are erect, tough and woody and have many non-flowering branches.

Flowers: Inconspicuous flowers without petals develop on the tips of short branches with broad, heart-shaped bracts that occur opposite each other near the base of the flowers. They turn yellow as the plants mature.

Roots and Reproduction: Vigorous root system that can reach 20 feet. Pink buds, which develop into new shoots, form on the roots, allowing it to reproduce vegetatively as well as by seed.

As chambers of the seed capsule ripen, unequal pressures cause it to explode, throwing the seeds as far as 20 feet.

Stems and leaves contain a white, latex sap that seriously irritates the skin of people and animals; can cause blindness upon eye contact.

Myrtle Spurge

Euphorbia myrsinites

Growth Traits: Also known as donkeytail spurge, it is an attractive perennial, herbaceous plant. Mature plants are 4 – 6 inches tall and spread up to 18 inches wide.

Leaves and Stems: Succulent, blue-green leaves are waxy and arranged in close spirals around the stem. Stems grow from a prostrate woody base, are low spreading, trailing and fleshy.

Flowers: Inconspicuous yellow flowers are surrounded by showy, heart shaped yellow-green bracts. Flowering occurs in March and April.

Roots and Reproduction: Highly invasive, it usually spreads by seed, however roots fragmented by cultivation can produce new plants.

The small seeds can be projected from the plant up to 15 feet and can survive in the soil up to 8 years.

Myrtle Spurge is poisonous if digested, causing nausea, vomiting and diarrhea. ALL parts of the plant are considered poisonous.

Leaves, stems and roots exude a milky, caustic sap when broken. Skin contact with the sap causes redness, swelling and blisters.

Puncturevine

Tribulus terrestris

Growth Traits: A toxic, annual, prostrate weed that grows from a simple, woody taproot.

Leaves and Stems: Leaves are opposite on the stem, hairy and divided into 4 to 8 pairs of leaflets. The plant produces numerous stems, up to six feet long, that are much branched and arise from the crown to produce a dense mat.

Flowers: Small yellow flowers have 5 petals and are formed at the leaf axils from mid-summer until frost. The fruit develops into a woody burr that has sharp, rigid spines.

Roots and Reproduction: Spreads only by seeds. Its prostrate growth and dense root system adapts in many dry, waste-type areas.

This weed is known by many names, including Tackweed and Goathead.

The foliage of Puncturevine contains nitrate levels that are toxic enough to poison livestock.

The hard, spiny burrs injure feet, hides, mouths, eyes and digestive tracts of livestock. They can puncture bicycle tires and penetrate shoe soles.

Rush Skeletonweed

Chondrilla juncea

Growth Traits: It is an aggressive, deep-rooted, creeping perennial that grows 1 – 5 feet tall. The vertical taproot of established plants can penetrate more than 10 feet deep.

Leaves and Stems: Basal leaves resembling a dandelion form in the fall, they are lobed and point back towards the leaf base. A single flower stem forms from each rosette, as it grows, the basal leaves whither. Stems have narrow leaves that are inconspicuous, giving the plant a skeleton appearance.

Flowers: Bright yellow flowers develop in the leaf axils and on the branch tips from mid to late summer. They may be single, or in clusters from two to five. Ridged petals have small teeth across their blunt ends.

Roots and Reproduction: It spreads by lateral roots and air borne seeds. Each plant may produce up to 2,500 seeds.

The stems and leaves produce a milky, latex sap.

Do not cultivate established stands, because tillage spreads root fragments and increases the infestation. Due to its deep roots, mowing is not effective control.

A distinguishing characteristic is the downwardly bent, reddish, coarse hairs on the lower 4 to 6 inches of the stem.

St. Johnswort

Hypericum perforatum

Growth Traits: An upright perennial that typically grows 1 – 3 feet tall arising from a taproot. Also known as Klamath weed and Tipton's weed.

Leaves and Stems: Numerous leaves are borne directly on the stem; they are oblong, opposite and not over one inch long. Stems are smooth, upright, usually reddish and woody at the base.

Flowers: Yellow-orange flowers have 5 petals with many stamens and black dots along the edges. They occur in clusters at the ends of stems with 25-100 flowers per cluster.

Roots and Reproduction: Spreads by underground rhizomes, above ground creeping stems and by seed that are dispersed by wind and animals. One plant can produce up to 100,000 seeds per year that are viable for 10-30 years.

Commercially available as an antidepressant.

When held to the light, the leaves have numerous, small, transparent dots, as if from pinpricks.

Eating St. Johnswort causes light-skinned animals to become sensitive to sunlight. Reactions include blistering and hair loss and in severe cases, convulsions, staggering and coma.

Sulfur Cinquefoil

Potentilla recta

Growth Traits: A highly invasive perennial plant with a woody rootstock that grows 1 to 3 feet tall.

Leaves and Stems: Compound leaves are rough and hairy. They have 5 to 7 toothed leaflets that are 2 to 4 inches long and up to an inch wide. It has several erect stems that are stout, leafy, hairy and unbranched up to the flower clusters at the tips.

Flowers: Pale yellow, or sulfur color, rose-like flowers have 5 heart-shaped petals with a dark yellow center.

Roots and Reproduction: It has a deep taproot that is surrounded by shallow, spreading side roots that regenerate annually. Spreads by seed and vegetatively. Seeds can remain viable in the soil 4 or more years.

Before it flowers, sulfur cinquefoil can be mistaken for marijuana because the compound leaves are similarly shaped.

Livestock and wildlife avoid grazing sulfur cinquefoil because of the high tannin content of the leaves and stems.

Sulfur cinquefoil can self-pollinate and seedlings quickly mature into blooming plants.

Yellow Starthistle

Centaurea solstitialis

Growth Traits: An annual or biennial with a quick growing taproot. It grows to more than 3 feet tall; mature plants are rigid, spreading and branching from the base.

Leaves and Stems: Rosette of deeply lobed leaves form in the fall; stem leaves develop in the spring. Leaves extend down the stem, giving it a "winged" appearance. Stems and leaves are covered with woolly hairs, giving it a gray-green appearance.

Flowers: Yellow flower heads develop at the tips of the stems from late spring until fall. Sharp, straw-colored spines up to ¾ inch long radiate from the bracts in a star pattern.

Roots and Reproduction: It has deep taproots and spreads by 2 types of seed: a plumed seed that is dispersed by the wind and a plumeless seed that remains in the seed heads.

It can be toxic or lethal to horses by causing "chewing" disease.

Old plants, or last year's skeletons, have a cottony white tuft where flowers were.

Several biological agents are available: bud weevil, peacock fly and flower weevil whose larvae tunnel into the flower head and feed on developing seeds.

Diffuse Knapweed

Centaurea diffusa

Growth Traits: An annual, biennial or short-lived perennial That grows up to 40 inches tall from a long, stout taproot. It can live for several years as a rosette before flowering.

Leaves and Stems: Stems and leaves are covered with fine hairs, giving the plant a pale green, almost white appearance at times. Basal leaves are finely divided, stem leaves become smaller and less divided near the top.

Flowers: White, sometimes rose to purple, flowers occur in urn-shaped heads that grow in clusters at the ends of the branches. Flower bracts are tipped with a long, slender, yellowish spine that is fringed with smaller spines.

Roots and Reproduction: Plants may regenerate from the crown, but it reproduces primarily by seed.

The spiny thistles can damage the mouth and digestive tract of animals that attempt to feed on it.

A single flower stalk can produce 1,200 seeds that are dispersed when the plant breaks off at the base and tumbles.

The spiny bracts on this plant help distinguish it from Spotted Knapweed.

Garlic Mustard

Alliaria petiolata

Growth Traits: A biennial to short-lived perennial plant that is garlic scented and can grow to a height of around 3 feet. Growth starts early in the spring, outcompeting beneficial species.

Leaves and Stems: Basal leaves are broad with rounded tips and rounded bases (kidney shaped). Upper stem leaves are alternate and triangular. Leaf margins are coarsely toothed. Stems are generally upright and one to many can grow from a rosette.

Flowers: Are small and white with 4 petals, 4 sepals and 6 stamens. Petals are about 1/4 inch long and are twice as long as the sepals. Flowers are clustered at the top of leafy stems.

Roots and Reproduction: Roots usually have a distinct "S" or "L" shape just below the base of the stem. It reproduces by seeds that can remain viable in the soil up to 5 years.

Produces chemicals that inhibit the growth of other plants, fungi and butterfly larvae.

The new leaves and the white taproot have a strong garlic odor. The odor fades as the plant matures.

It can cross-pollinate or self-pollinate and has a high seed production rate. If a plant is cut or stepped on, many stems will form.

Hoary Alyssum

Berteroa incana

Growth Traits: Is an upright annual, biennial or short-lived perennial growing 1 – 3 feet tall. It is covered in star-shaped hairs causing it to look silvery-gray in color.

Leaves and Stems: Leaves are oblong, gray-green and covered with rough hairs. Stems are gray-green, hairy, one to three feet tall with many branches near the top.

Flowers: Clusters of white flowers bloom from the bottom up. Each flower is on a short stalk and has 4 petals with a deep cleft down the middle, giving the appearance of 8 petals.

Roots and Reproduction: Spreads by seed and has a slender taproot; seed-pods are hairy, oblong and swollen with a short beak on the end. Plants emerge early in spring and continue to flower and produce seed until frost.

It invades pastures and outcompetes native and forage plants.

It is toxic to horses if it comprises 30% or more of their diet, they become intoxicated after eating green or dried plants.

Most poisoning occurs when bare stems are mixed with alfalfa hay. It can remain toxic for up to nine months.

Hoary Cress

Lepidium draba

Growth Traits: A deep-rooted perennial that grows up to 2 feet tall and is one of the earliest weeds to emerge in the spring.

Leaves and Stems: Leaves are grayish-green to blue-green, shaped like an arrowhead and they clasp the stem. The leaves are covered with very fine, white hairs and have finely toothed edges. Stems are upright to somewhat trailing on the ground.

Flowers: White with 4 petals, these dense flower clusters give the weed a flat-topped appearance early in the season, but is lost as the stem elongates.

Roots and Reproduction: The root system consists of a vertical taproot with a mesh of lateral roots. It reproduces by root segments and by seed. Seed pods are heart shaped and contain two oval, red-brown seeds.

Hoary Cress is commonly called White Top.

If the patch is small, digging out the roots within 10 days of weed emergence can be effective if done throughout the season.

As with other plants in the Mustard family, Hoary cress contains oils that can cause gastrointestinal problems in all classes of animals.

Oxeye Daisy

Leucanthemum vulgare

Growth Traits: An aggressive, showy perennial that grows 1 to 3 feet tall with shallow, branched rhizomes. It forms dense populations and decreases plant species diversity.

Leaves and Stems: Alternate, lance-shaped leaves have coarse teeth, growing smaller up the stem. Stems range from smooth to slightly hairy, they arise from upturned rhizomes or buds on the root crown.

Flowers: Daisy-like, 1 to 2 inches in diameter, with bright yellow disk flowers encircled by white ray flowers that appear as a fringe of 20 to 30 petals that are slightly notched at their tips.

Roots and Reproduction: Spreads by seed and vegetatively. Seed dispersal occurs August to September.

Sometimes called moon daisy or dog daisy, the entire plant has a disagreeable odor when crushed.

It is difficult to distinguish from Shasta daisy, a common ornamental. Shasta daisy is more robust, with larger flower heads.

This weed reduces the grazing capacity of pastures. Dairy animals that graze on Oxeye daisy can produce milk that has an off-flavor.

Poison Hemlock

Conium maculatum

Growth Traits: An erect, tall biennial, sometimes perennial plant that can grow up to 12 feet tall. Except for its size it closely resembles wild carrot.

Leaves and Stems: A large rosette forms the first year and then flowering stems the next year. Leaves are shiny green, toothed and finely divided. Stems are hollow, hairless with purple blotches. When the leaves are crushed, it has a bad, musty smell.

Flowers: It produces many small white flowers with five petals. They occur in 4 to 8 inch umbrella shaped clusters.

Roots and Reproduction: It has a long, white taproot, which may be branched. Reproducing by seed only, it will often have regrowth in the fall with more green shoots.

Poison hemlock remains toxic for several years after being pulled.

All parts of the plant are toxic. Lower portions of the stem and root are particularly deadly, the seeds, however, are the most toxic part of the plant.

Most poisoning occurs because the leaves are mistaken for parsley, the roots for parsnip and the seeds for anise.

Kochia

Kochia scoparia

Growth Traits: An annual that germinates late in the spring and can grow to be 6 feet tall with many branches from the main stem.

Leaves and Stems: Narrow, lance-shaped leaves are alternate on the stem with soft hairs growing on the underside. Stems can be hairy and are often redtinged. They can also have light and dark green lengthwise stripes or red and green stripes.

Flowers: Flowers appear greenish because they lack petals and are small and inconspicuous, growing in the leaf axils. They are usually surrounded by clusters of hairs that are longer than the flowers. Kochia flowers from July until a killing frost.

Roots and Reproduction: It has a taproot and reproduces by seed only. Seed production occurs from July to October and one plant can produce up to 50,000 seeds. Seeds are wedge-shaped and light brown.

Kochia contains high levels of nitrates that are toxic to livestock.

Mowing will not kill the weed or stop seed production because new branches resprout from the stem.

After maturity, it breaks off at the base and tumbles in the wind, spreading seeds a great distance.

Medusahead

Taeniatherum caputmedusae

Description: Winter annual that grows 2 ft tall with open leaf sheaths covered in soft, short hairs. They are rolled while in bud and later are flat. Stems have 3-6 nodes and evenly distributed leaves. It has erect spikes with long awns and sessile spikelets; when mature, they bend into a horizontal position. Spreads by seed; can produce 240 million seeds per acre. Seeds are barbed and adhere to fur, hair and clothing.

Ventenata

Ventenata dubia

Description: Basally branched, tufted winter annual grows 30 inches tall. Leaves are on lower half of stem, has open sheaths. Leaf blades start out flat and become rolled. Erect stems have small hairs; purple-black nodes are hairless. Inflorescence is an open panicle, pyramidal in shape and up to 16" long, branches are drooping. Produces up to 35 seeds per plant; bent, twisted awns self-bury the seeds into soil.

Herbicide Recommendations For Noxious Weed Control

The following pages are provided only as a general guide for using herbicides to control noxious weeds. The size of the infestation and site conditions will determine what method of control would best suit your needs.

Recommendations are supplied with the understanding that no discrimination is intended and no endorsement by the Spokane County Noxious Weed Control Board is implied.

Whether using herbicides, mowing or cultivation; regrowth will occur and followup is key!

What Comes Next?

Long-term control of noxious weeds will improve if you can promote competition. The emphasis needs to be on encouraging desirable plants, rather than simply controlling weeds. It is critical to revegetate bare ground before weeds have a chance to become established. Noxious weeds are very competitive and typically are the first plants to take advantage of open sites such as bare soil. Steps you can take include fertilizing the area to promote existing grasses and vegetation; reseed with perennial grasses, especially if there is nothing left growing after spraying. Contact a local grass seed company for information on grass mixes that will work well in your area. Be sure to not over-graze, this will allow more weeds to come in and take over.

Blueweed

Herbicides
How Toxic Are They?

Herbicides are primarily synthetic chemicals used to bring about plant death. They must go through rigorous testing by the EPA before they can be sold. There are many products we consume or use in our everyday lives that can pose more risk to humans than exposure to herbicides.

Chemicals are assigned a Lethal Dose (LD-50) numerical value; an LD-50 is the dose or amount of a chemical that can kill 50% of the test animals when eaten or absorbed through the skin. **The lower the LD-50, the more acutely toxic the chemical.**

Chemical Name	LD50	
Gasoline	19 mg/kg	Highly Toxic
Caffeine	130 mg/kg	Moderately Toxic
Nicotine	230 mg/kg	
Tylenol	340 mg/kg	
Advil	1000 mg/kg	Low Toxicity
Aspirin	1500 mg/kg	
Apple Cider Vinegar	3310 mg/kg	
Table Salt	3320 mg/kg	
Glyphosate (Roundup)	4320 mg/kg	
Aminopyralid (Milestone)	5000 mg/kg	
Picloram (Tordon)	8200 mg/kg	Very Low Toxicity

Why are chemicals that are so effective on plant species not equally harmful to humans? Herbicides target specific biological or biochemical processes that are unique to plants. It is important to remember that all herbicides need to be handled carefully and in a manner consistent with their labeling. **Just because some herbicides are less toxic than table salt does not mean that any herbicides should be handled carelessly.**

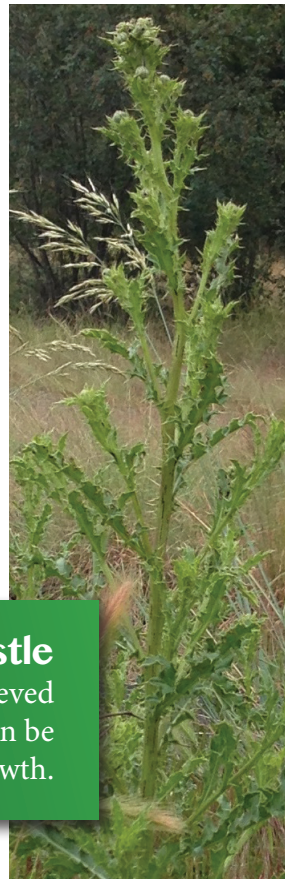
Scotch Thistle
Scotch Thistle is a biennial, digging out the rosette will eliminate that weed.

Weed Growth Stage
Influences Herbicide Activity

Because weeds vary in their growth habits, control is easier at different stages depending on the herbicide and the weed. If control does not occur during the optimum time, you may need to change the method or increase the rate (but not over the labeled rate).

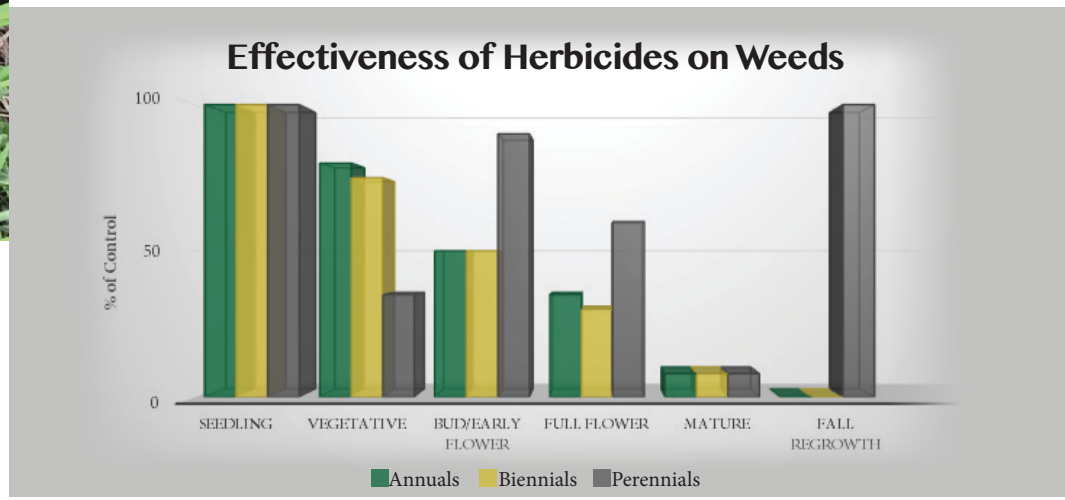
ANNUAL PLANTS complete their life cycle, from germination to seed production within one year. Kochia and Yellow Starthistle are annuals.

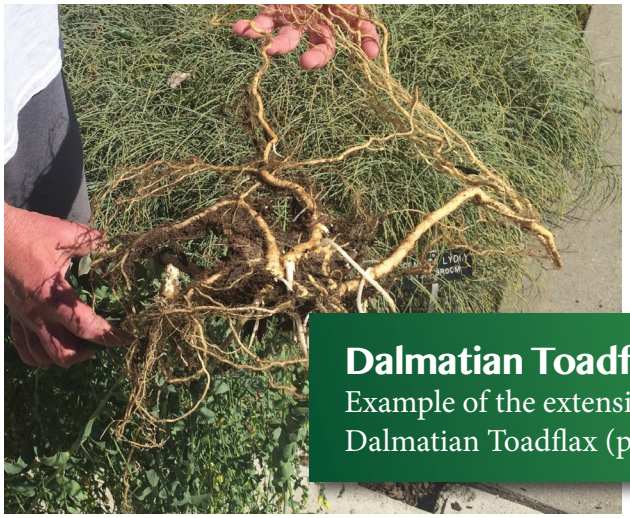
BIENNIAL PLANTS take two years to complete their life cycle. The first year the plant forms basal leaves (rosette) and a taproot; the second year it flowers, matures and dies. Scotch Thistle and Blueweed are biennial plants.



Canada Thistle
Herbicide control of Canada Thistle is best achieved in the seedling or bud stage. Fall applications can be successful if there is adequate moisture and regrowth.

PERENNIAL PLANTS live more than two years; some may live indefinitely, resprouting from vegetative plant parts. Because of these persistent, resprouting roots, rhizomes, stolons, tubers and plant fragments – perennials spread rapidly and are difficult to control. Common Bugloss, Canada Thistle and Hoary Cress are all perennials.





Dalmatian Toadflax
Example of the extensive root system in Dalmatian Toadflax (perennial weed).

Kochia

Herbicides

Always read the product label before applying any herbicide.

2,4-D - Can be purchased without a pesticide license in quantities up to one gallon. It is sold under many names and formulations – Amine 4®, Hi-Dep®, Pasture Pro®, etc. 2,4-D is a selective, foliar absorbed, translocated phenoxy herbicide used in post-emergence applications. It is effective against many annual and perennial broadleaf weeds. Plants are most susceptible when they are young and rapidly growing; it can persist in the soil for 2 – 4 weeks.

Action in plant: Mimics natural plant hormones.

Add Dicamba: **WeedMaster®, Range Star® or Rifle-D®**

Aminocyclopyrachlor – A selective herbicide that provides preemergence and/or postemergence control of broadleaf weeds, vines and brush species. Sold under the name **Method®** it is quickly taken up by the leaves, stems and roots of the plants. ***Do not apply within the root zone of desirable trees or shrubs unless injury or loss can be tolerated and do not use sprayed vegetation for composting.***

Action in plant: mimics natural plant hormones.

Aminopyralid - A selective, foliage-applied herbicide used to control broadleaf weeds in non-crop settings and is commonly known as Milestone®. This herbicide has systemic plus residual activity that makes it equally effective at multiple stages of growth. ***Do not use sprayed vegetation for composting.***

Action in plant: Mimics natural plant hormones

Add 2,4-D: **GrazonNext®** Add Metsulfuron: **Opensight®**

Chlorsulfuron - A selective broadleaf herbicide, known as Telar®, can be used preemergence or postemergence in crop and non-cropland areas.

Action in plant: Interferes with an enzyme, resulting in the rapid cessation of cell division and plant growth in both roots and shoots.

Clopyralid - A highly translocated, selective herbicide that is active primarily through the foliage of broadleaf weeds. It is not labeled for turf, but is a great broadleaf herbicide for use in pastures and non-crop settings. Use Transline® when weeds are growing amongst conifers.

Action in plant: Mimics natural plant hormones.

Add 2,4-D: **Curtail®** Add Triclopyr: **Prescott®, Confront®**

Glyphosate - Most commonly known as **Roundup®** it is a nonselective herbicide with no apparent soil activity. When applied to the foliage it translocates to the roots and rhizomes of weeds. Use caution when applying; it kills all plants that are sprayed, leaving bare ground for new weeds to establish.

Action in plant: Inhibits three amino acids and protein synthesis.

Metsulfuron - A selective, postemergence herbicide used for broadleaf weeds and brush control in pastures, rangeland and non-crop. Commonly known as **Escort®**

Action in plant: Interferes with an enzyme, resulting in the rapid cessation of cell division and plant growth in both roots and shoots.

Picloram - **Tordon®** is the trade name and is a **restricted use herbicide.** It is a highly translocated, selective herbicide that is active through the foliage and roots on broadleaf weeds and woody plants. Unmetabolized picloram in treated foliage will pass through livestock and the manure and urine can be toxic to plants. When used at the labeled rates, picloram can provide broadleaf weed control for more than one growing season.

Action in plant: Mimics natural plant hormones.

Surfactants

Surfactants are spray additives that are designed to enhance the efficacy of herbicides. Surfactants provide quick wetting and uniform coverage of the herbicide onto a plant. At the appropriate rate, certain products can help the spray penetrate hairy or waxy leaf surfaces.

Non-ionic surfactants are the most compatible with herbicides and sold under many names, including: R-11®, Induce®, Activator 90®, Sylgard 309® plus many others.

HERBICIDE RECOMMENDATIONS *for* WEED CONTROL

Trade names have been used to simplify instructions and do not constitute a guarantee or warranty of the product. Always read and follow label instruction on the products you select and use!

WEED	RECOMMENDATIONS		
	May, June *Seedling/Rosette*	July *Bolting, Bud, Bloom*	August, September *Flowering, Seed, Fall Regrowth*
Absinth Wormwood	Range Star Milestone Transline	Range Star Milestone Transline	Milestone Transline
Annual Bugloss	WeedMaster PasturePro Tordon + 2,4-D	WeedMaster Tordon + 2,4-D	WeedMaster Tordon + 2,4-D
Blueweed (Always add a surfactant to spray mix)	WeedMaster Prescott Telar	WeedMaster Prescott Tordon + 2,4-D	Tordon + 2,4-D Regrowth after mowing: WeedMaster Telar
Buffalobur	Transline Overdrive Tordon	Transline Tordon	Transline Tordon
Bull Thistle	2,4-D Range Star Prescott Milestone	Tordon + 2,4-D Range Star Milestone	Tordon + 2,4-D Fall Regrowth: 2,4-D Prescott
Canada Thistle	WeedMaster Curtail Tordon Prescott Milestone	Tordon + 2,4-D Roundup (spot spray) Telar Milestone	Tordon + 2,4-D Roundup (spot spray) Fall regrowth: Telar Milestone
Common Bugloss (Always add a surfactant to spray mix)	Pasture Pro Prescott Telar Method + Telar	Pasture Pro Prescott Tordon + 2,4-D Method + Telar	Tordon + 2,4-D Regrowth after mowing: Pasture Pro Telar Method + Telar

WEED	RECOMMENDATIONS		
	May, June *Seedling/Rosette*	July *Bolting, Bud, Bloom*	August, September *Flowering, Seed, Fall Regrowth*
Common Mullein	Escort Milestone Tordon + 2,4-D	Escort Tordon + 2,4-D Method + Telar	Tordon + 2,4-D Method + Telar
Dalmatian Toadflax (Always add a surfactant to spray mix)	2,4-D Range Star Tordon + 2,4-D Telar	Tordon + 2,4-D Tordon + Telar Telar	Fall regrowth: Tordon Telar Range Star
Field Bindweed	Hi-Dep Range Star Prescott	Hi-Dep Range Star Prescott Telar	Tordon + 2,4-D LandMaster (spot spray)
Garlic Mustard	Garlon 4 Escort + 2,4-D	Garlon 4 Escort + 2,4-D	Garlon 4 Escort + 2,4-D
Hawkweeds	2,4-D WeedMaster Curtail Prescott Milestone	Tordon +2,4-D Transline Milestone	Fall treatments of Tordon, Transline or Curtail may be effective, but research is limited.
Hoary Alyssum	2,4-D WeedMaster Prescott Opensight	WeedMaster Prescott Opensight	If there is fall regrowth after mowing: WeedMaster Opensight
Hoary Cress	2,4-D Range Star Telar Escort	Range Star Telar Escort	Fall regrowth: 2,4-D Telar Escort
Houndstongue	Method + Telar PasturePro Escort Tordon +2,4-D	Method + Telar PasturePro Escort Tordon +2,4-D	Method + Telar Tordon +2,4-D

WEED	RECOMMENDATIONS		
	May, June *Seedling/Rosette*	July *Bolting, Bud, Bloom*	August, September *Flowering, Seed, Fall Regrowth*
Knapweeds	2,4-D WeedMaster Curtail Prescott Milestone Tordon + 2,4-D	Tordon + 2,4-D Roundup (spot spray) Transline Milestone	Tordon + 2,4-D Regrowth after mowing: 2,4-D Curtail WeedMaster Milestone
Kochia	2,4-D Vista + 2,4-D MCPA	Telar Roundup (spot spray)	2,4-D Vista + 2,4-D WeedMaster
Leafy Spurge/ Myrtle Spurge	2,4-D Banvel Range Star Prescott Tordon + 2,4-D	Tordon + 2,4-D Banvel Method + Telar	Tordon + 2,4-D Method + Telar Plateau + Hasten Oil (12 oz/ac applied in Sept)
Medusahead/ Ventenata	Roundup (spot spray) Plateau	Roundup (spot spray)	Milestone Outrider Plateau
Musk Thistle	2,4-D WeedMaster Milestone Telar	Transline Escort Tordon + 2,4-D	Tordon + 2,4-D Fall Regrowth: WeedMaster Roundup (spot spray)
Oxeye Daisy	2,4-D Tordon + 2,4-D Milestone Nitrogen Fertilizer	Tordon + 2,4-D	Nitrogen Fertilizer
Poison Hemlock	2,4-D MCPA Roundup (spot spray)	2,4-D Escort	2,4-D
Puncturevine	PasturePro Range Star Method + Telar	PasturePro Method + Telar	Telar Method + Telar

For more information, please refer to our website at: SpokaneCounty.org/WeedBoard

WEED	RECOMMENDATIONS		
	May, June *Seedling/Rosette*	July *Bolting, Bud, Bloom*	August, September *Flowering, Seed, Fall Regrowth*
Purple Loosestrife	Escort Garlon Rodeo	Escort Garlon Rodeo	Garlon Rodeo
Rush Skeletonweed	2,4-D WeedMaster Prescott MCPA Milestone	Tordon + 2,4-D Milestone	Tordon + 2,4-D Fall Rosettes: 2,4-D Transline Milestone
Russian Thistle	2,4-D Prescott Curtail Milestone	Tordon + 2,4-D	Tordon + 2,4-D
Scotch Thistle	2,4-D Telar Prescott Range Star Milestone	Tordon + 2,4-D Transline Escort	Tordon + 2,4-D Fall rosettes: WeedMaster Roundup
St. Johnswort	2,4-D WeedMaster Milestone	Escort Tordon + 2,4-D	Tordon + 2,4-D
Sulfur Cinquefoil	Tordon + 2,4-D Escort Milestone	Tordon + 2,4-D Escort	Tordon + 2,4-D
Wild Four O'Clock	WeedMaster Escort Telar	WeedMaster Escort Roundup (spot spray)	Roundup (spot spray)
Yellow Starthistle	2,4-D Prescott Telar Tordon Milestone	2,4-D Telar Tordon	Fall regrowth: Telar Tordon + 2,4-D Prescott

For more information, please refer to our website at: SpokaneCounty.org/WeedBoard

MEASUREMENTS *and* CONVERSIONS

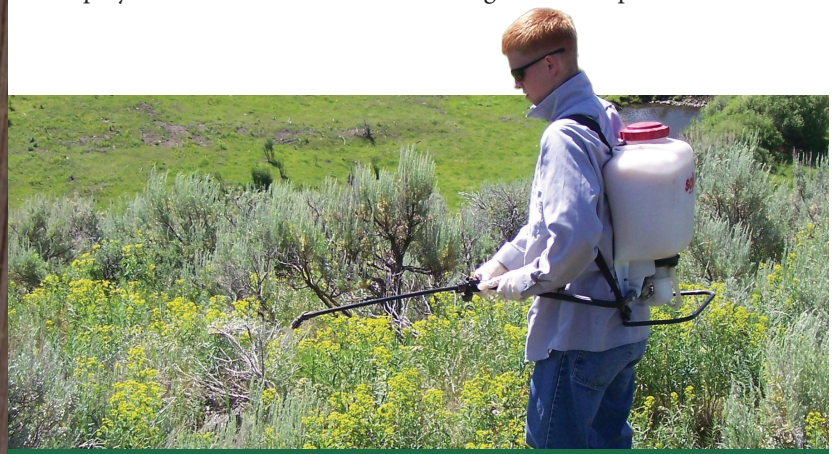
1 acre = 43,560 square feet

Amounts per Acre	=	Ounces per Gallon
½ qt/ac	=	¼ oz/gal
1 qt/ac	=	½ oz/gal
2 qt/ac	=	1 oz/gal
3 qt/ac	=	1½ oz/gal
1 pt/ac	=	¼ oz/gal
2 pt/ac	=	½ oz/gal

Backpack Calibrations
(per 1 gallon of water)

2,4-D	2 oz/gal
Hi-Dep	2 oz/gal
WeedMaster	1 oz/gal
Roundup	2 oz/gal
Curtail	1 oz/gal
Prescott	1 oz/gal
Milestone	0.1 oz/gal
Tordon	0.5 oz/gal

*Herbicide amounts are approximate. Accurate rates must be determined from the product label. Time of year and weeds to be sprayed are all factors when determining how much product to use.



WHEN BACKPACK SPRAYING, be sure to fill the backpack halfway with water before you add the herbicide. Your rate of application should be 50 gallons/acre; if you are just wetting the plant, your rate of application is approximately 50 gallons/acre. If you are soaking the plant to the point of run-off, your rate is approximately 100 gallons/acre.

Canada Thistle

Dalmation Toadflax

Common Bugloss

Spokane County
Noxious Weed Control Board

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509.477.5777

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