THE CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION

Invasive Plants





The Department of Natural Resources
Range, Agriculture and Forestry Program

Prepared by

Umatilla County Soil & Water Conservation *for*
Confederated Tribes of the Umatilla Reservation (CTUIR)
First Edition, 2014

Acknowledgments

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Photo credits to online publications: OSU, PNW, SWCD, Invasives.org, Umatilla County Extension, CTUIR, Ben Legler, USDA and above listed guides.

How to Use This Guide

PLANT TYPE		FORB
		TREE/SHRUB
		GRASS
MANAGEMENT CONTROLS		CHEMICAL
		BIOLOGICAL
		MANUAL/CULTURAL
		MECHANICAL
CAUTION		TOXIC TO ANIMALS
		TOXIC TO HUMANS
		REPORT THIS PLANT

Report plants with this symbol by contacting CTUIR
Department of Natural Resources, Range, Ag & Forestry
Program CTUIR_Invasives@ctuir.org (541)429-7244

Introduction

An invasive weed is an introduced species that causes harm to the environment, agriculture, and human health. Invasive weeds displace wildlife and native plants, lower biodiversity, decrease forage and crop production, cause injury to humans and animals, alter soil nutrients and water cycling, increase fire danger, and decrease aesthetic value. Invasive weeds threaten the "First Foods", that are essential to maintain and enhance the Tribes traditions and culture.

This guide is intended to educate CTUIR staff, community members and other stakeholders to identify invasive weeds on the Umatilla Indian Reservation (UIR). A brief description, color photographs, and recommendation for control are provided for each invasive weed listed in guide. The glossary defines technical terms that are used to describe and identify plants.

Invasive weeds listed in this guide are presently found on the reservation as well as some potential new invaders. This guide will assist with early detection of new infestations, understanding the harmful characteristics and management of invasive weeds.

With everyone working together, we can successfully reduce the threat of invasive weeds.

For questions regarding invasive weeds on the UIR, contact:

The Department of Natural Resources
Range, Agriculture and Forestry Program
541-429-7239
CTUIR_Invasives@ctuir.org

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DESCRIPTION:

- A biennial or short-lived perennial, in the Carrot family, growing 3 to 4 feet.
- Stems are hollow and hairy, especially near base.
- White flowers have 5 petals produced in umbels from late May to early July of the second year.
- Thick, tuberous roots can extend over 6 feet deep.
- Reproduction is by seed and roots. Seeds are shiny, black and elongated

HABITAT: Located in open woods, roadsides, prairies, hay fields, pastures, waste places, and disturbed areas. Prefers rich, moist soil. It is dense under trees and shrubs that have been disturbed.

IMPACTS: Competes aggressively for light, water, and nutrients and displaces surrounding vegetation. The seeds have tiny hooks that attach to fur, feathers and clothing and are responsible for seed movement.

MANAGEMENT:

- Manual/Mechanical Control: Rosettes and immature plants can be pulled or dug. Mature plants must be removed below the root crown to prevent re- sprouting. Mowing can be done before seed set.
- Chemical Control: Herbicides effective if applied shortly before blooming and one month after a pre-bloom cutting. Various herbicides are available for use.

DESCRIPTION:

- A biennial herbaceous, in the Aster family, growing between 3 to 7 feet tall with upright branched stem.
- It grows a rosette in its first year and flowering stems in its second year.
- Flower heads 1.5 to 2 inches in diameter. Bracts at base of flower heads are spine tipped. Flowers are purple or rarely white, blooming June through September.
- Leaves alternate and coarsely lobed with a spine tip. Leaf bases extend downward along prominent ridges of the stem. Upper leaf surface is rough with bristle-like spines while the undersides are covered with white woolly hairs. Reproduces by seed and not by vegetative means.

HABITAT: Primarily in disturbed areas such as pastures, roadsides, and ditch banks as well as in hayfields and logged mountain areas.

IMPACTS: May outcompete native plants, desirable wildlife and livestock forage plants.



MANAGEMENT:

- Manual/Mechanical Control: Hand-pull and dispose of flowering plants in trash to prevent seed spread. Mowing can be effective before the plants flower. If cut too early plants may re-sprout and flower again that season.
- Biological Control: Seed head Gall fly (*Urophora stylata*), Seed head weevil (*Rhinocyllus conicum*)
- Chemical Control: Use of pre-emergence herbicides will prevent seed germination. Various herbicides are available for use

DESCRIPTION:

- Herbaceous perennial, in the Aster family, 1-4 feet tall, flower heads form in clusters normally pink to purple.
- Leaves are spiny, lobed and alternate on the stem. Develops from seed or vegetative buds from the root system.
- Horizontal roots may extend 15 feet or more and vertical roots may grow 6 to 22 feet deep
- Flowers emerge mid to late spring.

HABITAT: Cropland, pastures, rangeland, roadsides and non-crop areas.

IMPACTS: Dense infestations displace desirable forbs and grasses and may decrease or limit forage and livestock production.

MANAGEMENT:

- Cultural control: Grasses and alfalfa can compete effectively with Canada thistle.
- Mechanical control: Repeated mowing can be an effective tool.
- Biological control: Crown root weevil (*Ceutorhynchus litura*), flower beetle (Brachypterolus pulicarius), stem gall fly (*Urophora cardui*) and seed head weevil (*Rhinocyllus conicus*)
- Chemical control: Various herbicides are available for use.

DESCRIPTION:

- A perennial herbaceous, in the Borage family, growing between 1 to 2 feet tall with several flowering stems.
- First season starts as a basal rosette of leaves. The following year multiple fleshy flower stems, covered with course hairs, form from a long taproot.
- Alternate stem leaves that decrease in size going up the stem.
- Blue to purple flower clusters bloom from May-October. Flower petals have five equal lobes with white throats. Each flower produces 4 nutlets with one seed each. The fiddleneck flower stems uncoil as each bud opens.

HABITAT: Grows in sandy, gravelly areas such as riparian, river bars, disturbed areas, pastures and roadsides.

IMPACTS: May outcompete native plants and desirable wildlife and livestock forage plants. The fleshy stalks can cause hay bales to mold.

MANAGEMENT:

- Manual Control: Hand-pull the entire plant including the taproot and dispose of flowering plants in trash to prevent seed spread
- Chemical Control: Use of pre-emergence herbicides in combination with good sanitation will prevent seed germination. Various herbicides are available for use.

DESCRIPTION:

- A winter annual, in the Aster family, that grows up to 3 feet tall.
- Flower heads clustered 1 to 5 on each stem. Flowers are lavender to purple and bloom from June-July. Plants may have up to 40 flower heads.
- Basal leaves are rounded and typically not lobed, and often dying back early.
- Lobed stem leaves are alternate and sessile with spiny margins.
- Seeds are barrel-shaped with brown-black bristles.

HABITAT: Grows in a wide variety of habitats including range, forest and disturbed non-croplands. Prefers southern slopes in steep canyons with deeper soils. Only found in the Pacific Northwest.

IMPACTS: It can form solid stands that reduce the quantity and quality of forage for livestock



MANAGEMENT:

- Manual Control: Hand pulling or hoeing can effectively control, but repeated treatments are required since it produces a large amount of viable seeds.
- Biological Control: No bio-controls are currently approved.
- Chemical Control: Various herbicides are available for use.

DESCRIPTION:

- A biennial that may reach 6 feet tall, a member of the Figwort family.
- The rosette leaves are large and soft. They are bluish-green and grow up to 12 inches long and 5 inches wide.
- Yellow flowers that occur in a dense spike at the top of the stem that blooms from June-August.
- One mullein plant may make over 100,000 seeds in a year. Seeds can survive almost any conditions and can last up to 100 years.

HABITAT: Found in pastures, roadsides, riparian areas and forest openings.

IMPACTS: Can displace native forbs and grasses and becomes abundant in overgrazed or disturbed habitats.



MANAGEMENT:

- Manual Control: Hand-pulling is best for small patches pulling before seed set.
- Chemical Control: Due to the woolly nature of the leaves, herbicides should be mixed with a surfactant to facilitate uptake. Various herbicides are available for use.

DESCRIPTION:

- A short-lived perennial or biennial, in the Teasel family, growing up to 6 feet
- The stems are pithy or hollow, ridged and become increasingly prickly upward
- Leaves have spines on the underside of the mid-veins. Stems have opposite leaves and branching.
- Flowers are purple to dark pink and tend to grow in bands or rings on large, egg- shaped, spiny heads up to 4 inches tall occurring singly.
- Flower heads have long, narrow, prickly bracts that curve upward and form a "cage" around the heads

HABITAT: It can be found on roadsides, floodplains, fields, pastures and idle lands. Thrives in open, sunny habitats, and will tolerate most conditions.

IMPACTS: It has a negative impact on pastureland, hay fields and other agricultural fields. Forms monocultures that can replace desirable species.

MANAGEMENT:

- Manual/Mechanical Control: Individual plants can be dug. Once the flowers start to appear, cut the plants at or right below ground level. Mowing is not as effective because plants re-grow from the root crown.
- Chemical Control: Several herbicides have been shown to work on rosettes prior to bolting. Various herbicides are available for use.

DESCRIPTION:

- Herbaceous perennial, a member of the Figwort family, growing up to 4 feet tall
- Blue green, alternate, waxy, leaves are egg-shaped and pointed on both ends and clasp the stem.
- Flowers, resembling snapdragons, are bright yellow and bloom May-September
- A single toadflax plant contains many vertical, thick-walled and somewhat woody floral stems.
- The taproot may penetrate 3 feet into the soil. Horizontal roots may grow to be several yards long, and develop adventitious buds that may form additional plants.

HABITAT: Found along roadsides, rangelands, croplands, clear cuts, disturbed areas, riparian areas and pastures.

IMPACTS: A persistent, aggressive invader that replace native grasses and other desirable perennials.



MANAGEMENT:

- Mechanical Control: Mowing is not recommended.
- Cultural Control: Seedlings don't compete well against established perennials.
- Biological Control: Stem boring weevils (*Mecinus janthinus*)
- Chemical Control: Various herbicides are available for use.

DESCRIPTION:

- A member of the Aster family, can be an annual, biennial or perennial, growing to 3 feet tall and has a long taproot.
- Numerous flower heads are generally narrow, blooming June- September. Flowers white or sometimes purplish and the flower heads have bracts with comb like spines.
- Stem leaves are stalkless and are covered with short dense hairs. Basal leaves are short stalked and often twice divided into narrow lobes.
- Usually has one main stem that branches freely and is covered in short, dense hairs.

HABITAT: Grows in a variety of habitats, riparian areas, rangeland and pastures. It also thrives in disturbed habitats.

IMPACTS: Once established it out-competes and reduces the quantity of desirable native species. It contains allelopathic chemicals, which can suppress adjacent plants and create single species stands. Some people develop a rash when handling the plants.



MANAGEMENT:

- Mechanical/Manual Control: Pulling or digging for small infestations. Mowing may delay flower production, therefore potentially decreasing seed production.
- Biological Control: Seed head gall fly, (*Urophora affinis*) and (*Urophora cuadrifasciata*), seed head weevil (*Bangasternus fausti*), Root boring beetle (*Sphenoptera jugoslavica*), Seed head weevil (*Larinus minutus*)
- Chemical Control: Various herbicides are available for use.

DESCRIPTION:

- A perennial herbaceous plant, in the Morning-glory family, with creeping and twining stems, 1-4 feet long that grow along the ground and up through other plants and structures.
- Leaves alternate and arrowhead-shaped but variable and 1/2 to 2 inches long.
- Flowers white to pink and funnel shaped up to up to 1 inch wide. Flowers April- October or until frost.
- Vertical roots can grow to 20 feet. Horizontal roots make up 70% is the root structure.
- Reproduces vegetatively from roots and seeds. Seeds can stay viable for 60 years.

HABITAT: Grows in a wide range of habitats and is drought-tolerant. It is found on roadsides and farmlands.

IMPACTS: Reduces crop yields. Intertwines and topples native species, competes for moisture, sunlight and nutrients. Decreasing habitat biodiversity.

MANAGEMENT:

- Mechanical Control: Mowing is not a good option because plants are able to reproduce from roots.
- Biological Control: The bud/leaf gall mite, (*Aceria malherbae*)
- Chemical Control: Herbicides have been relatively effective for suppression.

DESCRIPTION:

- Herbaceous biennial of the Mustard family. First year plants are clusters of 3-4 dark green, kidney shaped, scallop-edged leaves rising 2-4 inches high. The second year plants produce 1-2 flowering stems 2-4 feet tall.
- Stem leaves are alternate, stalked, triangular to heart-shaped and coarsely toothed. Crushed leaves and stems smell like garlic.
- Small white flowers composed of four petals forming a cross are produced in button-like clusters. Seed pods are long, narrow and upright.
- The root usually has an "S" or "L" shape, just below the ground.

HABITAT: Shady, moist to dry forest habitats, forest edges, floodplains, and along streams and disturbed lands. It is not tolerant of highly acidic soils and full sunlight.

IMPACTS: Has displaced vast areas occupied by native spring wildflowers. It produces allelochemicals that suppress the growth of other plants, fungi and butterfly larvae. Reduces suitable habitat for native insects, birds and mammals.

MANAGEMENT:

- Manual Control: Hand removal of plants and roots, is effective for light, scattered infestations. Bagging and disposing of plants with mature fruits is needed to avoid spreading seeds.
- Chemical Control: Various herbicides are available for use.

DESCRIPTION:

- Herbaceous biennial, in the Borage family, that grows 1-4 feet tall. Plants form rosettes in the first year and produce flowering stalks in the second year.
- Leaves are alternate, soft and velvety and 1-12 inches long and 1-3 inches wide.
- Small reddish-purple flowers with five petals form at ends of outwardly drooping stems.
- Seeds are brown burs with hooks that stick to clothes and animals.
- The single taproot of hounds tongue is thick, black and woody.

HABITAT: Prefers well drained, relatively sandy and gravelly soils, shady areas under the canopy of forests and wetter grasslands, pastures and meadows, along roadsides and in disturbed sites.

IMPACTS: Reduces quality and quantity of pasture and range. Carrier of alkaloid poison that can kill livestock.



MANAGEMENT:

- Manual/ Cultural Control: Hand pull or dig up isolated plants and small patches and remove as much of the root as possible. Re-seed disturbed or bare soil with a competitive species as soon as possible
- Mechanical Control: Mowing reduces seed production and spread. Plants cut close to the ground, may not re-grow. Do not mow plants that are already in seed as this will likely disperse the seeds.
- Chemical Control: Spot treat small patches. Various herbicides are available for use.

DESCRIPTION:

- Annual herbaceous plant, in the Amaranth family, that has a deep taproot, grows 2 5 to feet tall. Kochia stems are upright and spreading with many branches.
- Flowers are small and green, grouped in clusters on terminal spikes.
- Leaves are alternately arranged and are 1 to 2 inches long. They are narrow to lance shaped with smooth, hairy edges and may have silky hairs on leaf undersides.
- Stems are reddish, especially late in the season. Seeds are wedge shape and light brown.

HABITAT: Found on pasture, rangeland, roadsides, ditch banks, wastelands, idle lands and cultivated fields.

IMPACTS: Reduces crop yield. Inhabits agricultural land and other disturbed areas. Can be toxic to livestock. Reduces visibility along roadsides.

MANAGEMENT:

- Mechanical Control: Mowing or slashing the plants before flowering is effective in reducing seed production.
- Cultural Control: Early tillage in the spring gives good control of the Kochia seedlings.
- Chemical Control: Various herbicides are available for use.

DESCRIPTION:

- Herbaceous deep rooted perennial, in the Euphorbia family, that grows to 3 feet tall, in dense patches.
- Leaves alternate, narrow, 1-4 inches long with smooth margins. Stems are hairless and pale to blue green.
- Yellow-green flowers surrounded by a pair of heart shaped bracts.

HABITAT: Tolerates extremely dry to extremely wet soil conditions. Found along waterways and irrigation ditches, draws and sagebrush. It grows in a wide variety of soil types.

IMPACTS: Infests range, pastures and woodlands. Displaces native species. TOXIC to cattle and horses.

MANAGEMENT:

- Cultural Control: Vigorous grass growth is an important aspect of leafy spurge control.
- Biological Control: Root defoliating beetle (*Aphthona cyparissiae*). Sheep and/or goats have been used.
- Chemical Control: Proper timing of herbicide application is imperative. Various herbicides are available for use.

DESCRIPTION:

- Herbaceous perennial, in the Aster family, grows up to 3.5 feet.
- Plants have one to several upright branched stems. This is a hybrid between black and brown knapweed.
- Larger leaves are at the base of the plant compared to higher up the stem. Leaves smooth or slightly lobed or toothed margins.
- Plants bloom June to September, with bright pink to purple flowers with fringed bracts. Bracts are light to dark brown and papery.

HABITAT: Occurs in pastures, forest openings, roadsides, floodplains, agricultural fields and railroad right-of-ways. Prefers full sun, but can tolerate some shade.

IMPACTS: Invades native plant communities, reduces forage, wildlife habitat and species diversity.



MANAGEMENT:

- Mechanical Control: Mowing is not a good control method, as plants will resprout and flower.
- Biological Control: Seed head weevil (*Larinus minutis*)
- Chemical Control: Various herbicides are available for use.

DESCRIPTION:

- Herbaceous perennial, in the Euphorbia family, that grows 4-8 inches tall and approximately 18 inches wide.
- Waxy leaves arranged in spirals around fleshy blue-green stems. Stems are low spreading, trailing and fleshy. All plant parts secrete a milky, caustic sap when broken.
- Flowers are inconspicuous, yellow and are surrounded by a yellow-green bract.
- Forms colonies from a deep root system that grows from central taproot.
- It has small seeds that can be projected from plant up to 15 feet and can survive in soil for about 8 years.

HABITAT: Escaped ornamental that inhabits open areas such as fields, rangelands, disrupted areas, roadsides and waste places.

IMPACTS: Aggressively displaces native plants. Plants produce a milky sap that is considered toxic and causes skin irritations, such as redness, swelling and blisters.

MANAGEMENT:

- Manual: Using gloves, small infestations can successfully be dug or pulled. Pulling over multiple years for control. Pull plants early in the season when they are smaller and easier to pull and to prior to seed formation.
- Chemical Control: Various herbicides are available for use.

DESCRIPTION:

- Herbaceous perennial, in the Mustard family, growing to 1 to 3 feet tall but can reach 6 feet in ideal conditions.
- Stem leaves smaller and stalkless with smooth to slightly serrate edges, green to gray green waxy leaves, alternate and hairless.
- White, 4-petal spoon shaped flowers form in dense clusters. Flowers June – September.
- Multiple stems grow from a woody crown.
- Spreads by root fragments, rhizomes and seeds.

HABITAT: Meadows, riparian areas, roadsides and cropland.

IMPACTS: Rapidly forms large, dense stands that displace desirable native vegetation. Populations easily spread along waterways and can infest riparian areas and degrades nesting habitats.



MANAGEMENT:

- Manual Control: Hand pulling or digging infestations being sure to remove as much of the roots as possible because new plants will sprout from root fragments and crowns.
- Cultural Control: Planting competitive vegetation will slow the introduction and spread.
- Chemical Control: Various herbicides are available for use.

DESCRIPTION:

- Herbaceous biennial, in the Carrot family, up to 8 feet tall.
- Stems purple-spotted, hollow, with ridges.
- Bright green triangular shaped leaves are hairless and feathery with strong musty smell.
- Rounded flower clusters contain small white flowers. Fruits are grayish brown, egg shaped with longitudinal ribs. Produces up to 40,000 seeds per plant.

HABITAT: Roadsides, pastures, in open fields, and in natural areas.

IMPACTS: Infests large areas of pastures as well as open waste areas. Highly poisonous to humans and animals if ingested. Some people may get contact dermatitis from handling the plant.

MANAGEMENT:

- Manual Control: Wearing protective clothing and eye protection, digging is effective for small infestations. When digging the plants, the entire taproot should be removed to prevent regrowth. Mowing or cutting is not effective due to resprouting.
- Biological Control: European palearctic moth (*Agonopterix alstroemeriana*)
- Chemical Control: Several herbicides are available and are most effective used on seedlings or small rosettes.

DESCRIPTION:

- A summer annual, in the Caltrop Family, mat forming, tap-rooted with trailing stems up to 5 feet long.
- Stems radiate from a central point.
- Leaves opposite and oblong with up to 8 pairs of leaflets.
- Solitary yellow flowers, with five petals form in leaf axils.
- Five-sided fruits break into sections containing 2 to 3 seeds. Each fruit section (bur) has a pair of sharp spines resembling a goat head.

HABITAT: Pastures, agricultural fields, roads, railways, trails, and disturbed areas.

IMPACTS: With the deep tap root, competes aggressively for water and nutrients. Large quantities of leaves can be toxic to livestock. The sharp spines of the seed bur can injure the mouth and digestive tract or feet of animals. The sharp spines pierce bicycle tires and can injure people and pets.



MANAGEMENT:

- Manual Control: In most situations, puncturevine is best controlled by hand removal, using gloves, or by hoeing to cut the plant off at its taproot. Remove plants to prevent seed spread.
- Biological Control: Seed weevil, (*Microlarinus lareynii*)
- Chemical Control: Herbicide can be used.

DESCRIPTION:

- Herbaceous perennial, in the Primrose family, with stiff, four-sided stems, growing 2-7 feet tall.
- Leaves are opposite or whorled, lance-shaped and stalkless with rounded to heart-shaped bases and smooth edges.
- Small magenta flowers with 5-7 petals are produced on tall, showy, flower spikes from July to September. Prolific seed producer and spreads by floating seeds.

HABITAT: Prefers moist soils and shallow waters. It will adjust to varying light conditions and water levels.

IMPACTS: Degrades wetlands and diminishes wildlife habitat. Forms monocultures that crowd and shade out native wetland species. Will encroach on crop and pasture land.


MANAGEMENT:

- Manual Control: Digging, hand pulling and cutting flower spikes are the best options of control. Flower heads should be bagged to prevent seed spread.
- Biological Control: Root weevil/defoliating beetle (*Galerucella calmarienis*), leaf-eating beetle (*Nanophyes marmoratus*) defoliating beetle (*Galerucella pusilla*)
- Chemical Control: Herbicide can be used to spot treat small infestations.

DESCRIPTION:

- Herbaceous annual or biennial, in the Aster family, growing to 3.5 feet.
- Basal rosette of leaves with spiny center forms in spring, then plant blooms mid- summer through fall.
- Alternate leaves 4-8 inches long have fine hairs. Stems branched and angled not winged.
- Purple vase-shaped flowers, 3/4 to 1 inch long, are covered with stout, 1 inch long, straw-colored spines.
- Reproduction is by non-plumed seeds.

HABITAT: Fields, roadsides, pastures, over grazed rangelands, & disturbed sites.

IMPACTS: Displaces native vegetation. Dense stands of mature plants can reduce forage production for livestock and wildlife.

MANAGEMENT:

- Manual Control: Grubbing or digging can be effective for small infestations.
- Mowing is not effective due to resprouting.
- Chemical Control: Herbicide can be used to spot treat small infestations and when plant is in rosette stage.

DESCRIPTION:

- Herbaceous perennial, in the Aster family, growing to 4 feet tall. Plant begins as rosette of smooth leaves and then develops wiry flowering stems with few tiny leaves.
- Lower stems have bristly, downward pointing hairs.
- When the plant is cut it discharges milky sap.
- Yellow flowers are on terminal or axillary flower heads, and bloom early summer and continue until frost. Seeds are ribbed with white bristles to aid in wind dispersal.

HABITAT: Thrives in well drained, sandy and/or rocky soils. Disturbed areas, roadsides, pastures, cropland and rangelands.

IMPACTS: Outcompetes native species for nutrients and water, displaces desirable species in rangeland and pastures. Reduces crop yield.



MANAGEMENT:

- Manual Control: Clip and bag plants prior to seed set. Hand pulling and digging will increase sprouting due to the extensive root system.
- Biological Control: Rust fungus (*Puccinia chondrillina*) and Bud gall mite (*Eriophyes chondrillae*)
- Chemical Control: Herbicide can be used

DESCRIPTION:

- Herbaceous perennial, in the Aster family, that grows to 4 feet tall.
- Plants form dense colonies due to an extensive root system.
- Lower gray green leaves are deeply lobed, 2-4 inches long; upper leaves are toothed or entire. Stems are upright branched and hairy.
- Plants bloom from summer to fall producing small, cone-shaped. Many pink to lavender flowers at each branch tip. Bracts below the flower are rounded with papery margins.
- Reproduction is by seeds and vegetative root buds.

HABITAT: Found growing in pastures, hayfields, grain fields, and roadsides. It prefers clay type soils and a more arid environment.

IMPACTS: The plant is poisonous to horses. Its allelopathic, forming dense stands displacing native plants reducing forage for livestock and biodiversity for wildlife.




MANAGEMENT:

- Manual/Mechanical Control: Frequent hand pulling over several years may be successful. Mowing and tilling followed by planting competitive vegetation.
- Chemical Control: Herbicide can be used.

DESCRIPTION:

- Branched biennial, in the Aster family, with stems that can grow up to 8 feet tall and 6 feet wide.
- Pink to lavender flowers in mid-summer. The globe-shaped flower heads are borne in groups of 2 or 3 on branch tips.
- Flower heads are up to 2 inches wide, with long, stiff, needle-like bracts at the base.
- The large rosette eliminates competing plants by shading. Leaves are up to 2 feet long and 1 foot wide, are covered with sharp yellow spines and have a gray-green appearance
- Stems have wings that extend to the base of the flower heads.
- Seeds are smooth, slender, and plumed.

HABITAT: Grows in cultivated fields, pastures, forest edges and rangelands. It may also be found alongside streams and rivers.

IMPACTS: A problem in rangeland. Infestations reduce forage production. Dense stands of the large, spiny plants exclude animals from grazing and access to water.



MANAGEMENT:

- Manual/Mechanical Control: Small areas can be dug effectively, if completed before going to seed. Mowing has limited effectiveness for controlling Scotch thistle and usually only prevents seed production.
- Chemical Control: Various herbicides can be used.

DESCRIPTION:

- Annual, in the Aster family, that grows 4 inches to 4 feet tall. It has rigid branches and leaves with spreading to stiff hairs. Leaves and flower head bracts spine-tipped.
- Numerous small flower heads of yellow ray and disk flowers. Blooms late June- fall. Bracts at the base of the flower head are partially covered by upper leaves.
- Leaves and stems are rough to the touch and have a sticky resin. The upper leaves are linear and spine-tipped and may be bearing axillary leaf bunches.
- Stems are rigid and freely branching, growing up to 4 feet tall.
- Seeds are achenes and about 0.08 inches long.

HABITAT: It grows on roadsides, disturbed areas, rangeland, cropland, seasonal wetlands, grasslands and cultivated fields.

IMPACTS: An agricultural pest in the Columbia Basin forming dense stands. Limits forage production on range and pasture land.

MANAGEMENT:

- Manual Control: Using gloves, hand pull small patches in the spring when still green and soft.
- Chemical Control: Herbicide can be used.

DESCRIPTION:

- Herbaceous biennial or perennial that grows to 3 feet tall.
- Plants are multi-stemmed growing from the crown. No wings on upper stems.
- Blooms from midsummer to fall with purple flowers. Tips of flower head bracts are black, giving the heads a spotted appearance.
- Alternate gray green pinnately divided leaves.

HABITAT: Fields, pastures, rangeland, disturbed sites. Adapted to well-drained, light to coarse-textured soils that receive summer rainfall, is not tolerant of shade. Prefers areas that receive 12 to 30 in annual precipitation.

IMPACTS: Reduces or displaces desirable plant species, reduces livestock and wildlife forage. Invades disturbed areas and degrades desirable plant communities. The sap of spotted knapweed can cause skin irritation.



MANAGEMENT:

- Manual/Mechanical Control: Early detection and persistent hand pulling can control small patches. Mowing as needed so plants don't go to seed.
- Biological Control: Seedhead weevils (*Larinus obtuses*, *Bangasternus fausti* & *Larinus minutus*), root/stem boring beetle (*Agrilus hyperici*), seed head gall fly (*Urophora quadrifasiata*)
- Chemical Control: Herbicide can be used

DESCRIPTION:

- Herbaceous perennial, in the Hypericum family, that grows 1-3 feet tall.
- Stems are erect, many-branched, somewhat 2-ridged, rust-colored and woody at the base.
- Leaves are opposite, oblong, less than 1 inch long and dots (perforations) show when the leaves are looked at through a light.
- Plants bloom from June to July. Flowers are yellow, star like, with occasional small black dots around the margins.
- Woody taproot with lateral roots that produce new plants.

HABITAT: Pastures, rangeland, prairies, roadsides and other disturbed areas

IMPACTS: Toxic to cattle, sheep and horses. It replaces native plant communities and forage vegetation. Contact dermatitis and photosensitivity for animals and humans.


MANAGEMENT:

- Manual/Mechanical Control: Pulling for small sites using gloves. Repeated pulling will be necessary to ensure removal of the whole plant and roots. Mowing is a limited option and must be repeated.
- Cultural Control: A combination proper range management and encouragement of beneficial plants species will prevent new infestations and re-infestations.
- Biological Control: Klamath weed beetles, (*Chrysolina quadrigemina*) and (*Chrysolina hyperici*)
- Chemical Control: Herbicide can be used

DESCRIPTION:

- Herbaceous perennial, in the Rose family, that grows to 2 feet tall, with one or more erect hairy stems.
- Stems have perpendicular hairs that make them different than most other cinquefoils.
- Leaves are palmately compound with five to seven toothed leaflets.
- Flowers consist of five pale to sulfur yellow heart-shaped petals during May-June.
- Woody taproot with branching roots producing new shoots.

HABITAT: Meadows, pastures, open forest, roadsides, natural areas and disturbed areas.

IMPACTS: Can form monocultures over large areas of pastures, rangeland, roadsides, natural areas and abandoned fields. Outcompetes native plants.



MANAGEMENT:

- Manual Control: Mowing is not effective and roots will send up new shoots. For small infestations, hand pulling or digging is also effective if care is taken to remove the root crown.
- Chemical Control: Herbicide can be used.

DESCRIPTION:

- Herbaceous biennial or short-lived perennial, in the Aster family, reaching 2-4 feet tall.
- Stems are erect and branched near the top. The stems and leaf stalks are often purplish.
- Leaves are dark green, 2-8 inches long and pinnately lobed.
- Multiple yellow flower heads bloom from midsummer to fall.

HABITAT: Full sun or partial shade in pastures, forest clear cuts, roadsides and other disturbed areas.

IMPACTS: Reduces pasture productivity and crowds out desirable vegetation. Extremely poisonous to livestock.

MANAGEMENT:

- Manual/Mechanical Control: Small infestations can be controlled by pulling the plant including the roots. Wear gloves. Seal pulled plants in a plastic bag and put them in the trash.
- Cultural Control: Good pasture management techniques will help to prevent or reduce infestations. Seed and/or plant areas with non-invasive plants to provide competition and suppress seed germination of tansy ragwort.
- Biological Control: root/defoliating flea beetle (*Longitarsus jacobaeae*)
- Chemical Control: Herbicide can be used

DESCRIPTION:

- Taprooted, upright biennial or short lived perennial, in the Borage family, 1-3 feet tall
- Inflorescences are long and narrow and have many flowers. Flowers have a deeply cleft, 5 parted calyx. Petals are blue, fused at the base with 5 unequal lobes, stamens are hot pink. Blooms June-September
- Rosette leaves are simple and oblanceolate, while stem leaves are alternate and linear in shape. Stem leaves are sessile and become smaller as they move up the stem. Leaves and stems are covered with stiff hairs that have swollen bases.
- Spreads by seeds. Fruits are 4 nutlets, each nutlet contains one seed.

HABITAT: Gravel bars, roadsides, rangeland, pastures and disturbed sites.

IMPACTS: Degrades rangelands, pastures and non-cropland areas. Crowds out native and beneficial grazing plants. Can be toxic to horses and cattle.

MANAGEMENT:

- Manual/Mechanical Control: Pulling or digging small patches, bagging and removing plants. Mowing plants throughout the growing season is effective.
- Chemical Control: Herbicide can be used. Best used in spring when plants are small.

DESCRIPTION:

- Herbaceous, deep-taprooted perennial, in the Mustard family, growing up to 2 feet tall. Alternate blue-green, arrowhead shaped, clasping, leaves to 4 inches long and 1.5 inches wide on erect on a hairy stem.
- White to cream colored 4-petaled ¼ inch flowers grow in flat to rounded inflorescences April-June
- Seed capsules are heart shaped to ovate with two, reddish brown seeds separated by a constriction.
- Spreads by seeds and long horizontal roots that produce up to 400 new shoots.

HABITAT: Establish rapidly in moist sites. Open sunny fields, pastures, rangeland, and disturbed sites on many soil types.

IMPACTS: Decreases rangeland health. It damages wildlife habitat by crowding out beneficial plant species. Mildly toxic to livestock.



MANAGEMENT:

- Manual/Mechanical Control: Hand pull small infestations. Mowing followed by an herbicide application on regrowth.
- Chemical Control: Herbicide can be used.

DESCRIPTION:

- Perennial, in the Iris family, that grows 3-5 feet tall. Large plant clumps are formed from lateral growth of rhizomes.
- Leaves overlap one another at the base and are long, flattened and sword-like.
- Multiple yellow flowers are produced per stalk April-August.
- The fruit capsules are large, 3-angled and up to 4 in. long with ¼ inch disk-like, corky seeds.

HABITAT: Riparian areas, open water, and irrigation ditches; prefers silty, sandy or rocky soils.

IMPACTS: Displaces native vegetation riparian vegetation used by waterfowl and fish. Severely restricts water flow in streams. All parts of the plant may be moderately to severely poisonous to livestock. Contact with its resins can cause skin irritation in humans.



MANAGEMENT:

- Manual Control: Pulling or digging the entire plant. Requires heavy tools to remove rhizomes. Care should be used to protect the skin from resins that can cause irritation. Follow up for new plants.
- Cultural Control: Don't burn, as seeds germinate and grow well after being burned. Also readily resprouts from rhizomes after burning.
- Chemical Control: Herbicide can be used but caution must be used around water.

DESCRIPTION:

- Herbaceous winter annual, of the Aster family, growing 1.5-3 feet tall
- Stems rigid, covered with thin white hairs, winged, and many branched.
- Basal leaves are deeply lobed and dull green. Alternate stem leaves, developing in spring, are up to 4 inches long, both are covered in woolly hairs
- Flowers are yellow with long, yellowish sharp spines in a star like pattern. Have two types of seeds, outer seeds, dark brown without bristles and inner seeds, glossy, white or light brown with white bristles on one end.

HABITAT: Rangeland, pastures, CRP, abandoned cropland, roadsides, & disturbed areas

IMPACTS: Displaces native plants, decreases domestic and wildlife forage and plant diversity. Yellow starthistle may deplete soil moisture in grasslands, reduce land value and recreational opportunities. This plant is poisonous to livestock.



MANAGEMENT:

- Manual/Mechanical Control: Hand pulling, with gloves, is effective on small infestations. Mowing is only effective if timed correctly.
- Biological Control: Bud weevil (*Bangasternus orientalis*), Hairy weevil (*Eustenopus villosus*), flower weevil (*Larinus curtus*), peacock fly larvae (*Chaetorellia australis* and *Chaetorellia succinea*) and Gall-fly, (*Urophora sirunaseva*). They all attack the flower/seed head and directly or indirectly reduce seed production
- Chemical Control: Herbicide can be used on actively growing plants before flowering.

DESCRIPTION:

- Also known as downy brome, a winter annual, but will germinate in the spring, in the Grass family, about 1 foot tall, but ranges from 6 to 19 inches
- Leaves emerge dark green with a hint of purple.
- Blooms from May to June. Flower spikes drooping to one side, with long, 3/8 to 5/8 inch awns. All parts of the plant are covered by soft hairs.
- Seed heads often dry to light brown or reddish color. Seeds are covered with bristles and stick to fur, feathers and clothing. Seeds are viable for 11 years.
- Primary roots, about 8 inches long, lateral roots are much longer

HABITAT: Arid to semi-arid, 6-20 inch rainfall areas, almost any soil, native grasslands, cropland, rangeland, pastures and degraded land.

IMPACTS: Reduces soil moisture in crops. Crowds out native plants, generates massive fuels, causing extreme wildfire hazards.



MANAGEMENT:

- Manual/Mechanical Control: Hand pull small patches. Mowing and disking before it produces seed.
- Cultural Control: Once cheatgrass has been removed, plant the area with competitive desirable species.
- Chemical Control: Herbicide can be used.

DESCRIPTION:

- Winter annual, in the Grass family, vegetatively similar to wheat in the seedling stage. Plants have upright, hollow stems that branch at the base, growing to 2.5 feet tall.
- It has a narrow, non-spreading spike of flowers with the appearance of a series of joints being stacked upon top of each other. Each joint has 2 to 6 small flowers.
- Leaves are deep blue-green, alternately arranged with long hairs on margins and sheaths. Leaf blades are flat and 1/8 to 1/4 inch wide.
- Seed heads are cylindrical and narrow with 5-10 joints that break apart to spread seed during the summer months.

HABITAT: Grows well in 10-20 inch annual rainfall areas. Found mostly in wheat fields, but it survives along roadsides, rangeland, waste areas, alfalfa fields, and pastures. It is found in most of the wheat producing areas of the Pacific Northwest.

IMPACTS: A serious weed in winter wheat and other cereal crops. Reduces wheat yield and quality.

MANAGEMENT:

- Cultural Control: Crop rotations with non-grass species, planting spring crops.
- Chemical: Selected hybrid wheat varieties and a selective chemical have been successful.

DESCRIPTION:

- Winter annual, in the Grass family, growing 6-24 inches tall with very few leaves.
- Florets have long, 1-4 inch, awns that can twist when mature. Leaves are narrow 1/8 inch and rolled.
- Flowers are in spikes with two spikelets per node and two florets per spikelet.
- Flowers early in the spring and has viable seeds in June-July.
- The spikes do not break apart as they mature and instead the florets fall away leaving long bracts (glumes). The spikelets are barbed and catch on clothing or animal fur, further spreading the seeds.

HABITAT: Sagebrush steppe, grasslands, rangeland and disturbed sites.

IMPACTS: Out-competes native and rangeland plants. Diminishes wildlife habitat. Creates fuel for wildfires. Changes the ecology of rangelands. Not palatable to livestock.



MANAGEMENT:

- Mechanical Control: Susceptible to tillage prior to flowering.
- Cultural Control: Burning consumes standing vegetation and reduces seed levels. Avoid inadvertent seed dispersal. Livestock should not be moved from infested pastures to fields free of medusahead.
- Chemical Control: Herbicide can be used

DESCRIPTION:

- Cool season, winter annual, in the Grass family, up to 18 inches tall, germinates in fall and completes growth in the spring-summer.
- Seed heads are in a slender panicle up to 8 inches in length. Seeds have 5/16 to 3/8 inch awns
- Narrow leaf blades up to 6 inches long are folded and hairless.
- Shallow fibrous root system.

HABITAT: Sagebrush steppe to grasslands. It shows a preference for disturbed sites in range conditions.

IMPACTS: Reduces winter wheat yield. Considered a poor forage grass and replaces desirable forages.


MANANGEMENT:

- Cultural Control: Heavy livestock grazing in early spring and fall.
- Manual/Mechanical Control: Pulling, mowing, disking and deep cultivation will limit growth.
- Chemical Control: Herbicide can be used

DESCRIPTION:

- Perennial cool season grass, 2-3 feet high, hairless erect stem.
- Leaf is conspicuous "M"- or "W"-shaped constriction, blade is about 1/4" wide.
- Open flower panicle, blooming in June and July.
- Reproduces vegetatively through horizontal rhizomes.

HABITAT: Grows in open areas such as grasslands, roadsides, riverbanks and forest edges.

IMPACTS: Smooth brome has been widely planted as a forage and in CRP and has escaped to native grasslands.

MANAGEMENT:

- Mechanical Control: A single, well-timed, low mowing early in the spring may be an effective control. Repeated mowing will deplete the rhizome system.
- Chemical Control: Herbicide can be used.

DESCRIPTION:

- Perennial, cool-season, loosely tufted, in the Grass family.
- Culms are erect, from 3 to 5 feet tall.
- Leaf blades, from 3/8 to 3/4 inches wide, are flat and rough to the touch.
- Fibrous root system with bulbous fragments.
- Seed heads are narrow panicles 6 to 10 inches long with long, twisted, angled, exposed lawns.

HABITAT: Meadows, fields, open ground, waste places, and roadsides

IMPACTS: Changes the native grass and forb composition by replacing desirable species.

MANAGEMENT:

- Cultural/Mechanical Control: Late spring prescribed burns will decrease stands as well as mowing, neither have shown great success.
- Chemical Control: Herbicide can be used

DESCRIPTION:

- Winter annual grass, in the Grass family, that germinates in the late fall and produces seed heads June-August.
- Grows to 6–18 inches tall and is shallowly rooted.
- Early Season (May–June) the plant is bright green. Nodes are dark red or black. Ligules are membranous and less than 1 inch.
- Late Season (June–August) plants are silvery-green, then turn tan. Stem are wiry and hollow with few leaves. Awns are bent when dry.
- Inflorescences are in open panicles up to 8 in long. Spikelets have 2-3 florets.
- Leaf blades are pubescent.

HABITAT: Roadsides, hay, pasture, range and CRP fields. South facing hillsides with shallow, rocky or clay/clay-loam soils.

IMPACTS: Highly invasive in alfalfa, winter wheat, pasture and rangeland.

MANAGEMENT: Chemical: Herbicide can be used

DESCRIPTION:

- A deciduous shrub, in the Pea family, growing up to 12 feet high and forming thickets.
- The leaves are gland dotted and hairy, with smooth margins and are made up of 13 to 25 leaflets
- The petaled flowers are purplish blue in dense upright clusters. Flowers in June.
- The fruits are pea-like pods short and glandular containing 1-2 seed pods.
- A nitrogen fixing legume.

HABITAT: Commonly found along riparian areas

IMPACTS: Grows densely and almost eliminates other plants in the stand. Limits recreational uses along waterways. Negatively impacting willow dependent wildlife.

MANAGEMENT:

- Mechanical/Cultural Control: Has limited success, cutting plants may result in resprouting stems.
- Chemical Control: Various herbicides are available for use

DESCRIPTION:

- A large, vigorous, thicket-forming woody shrub, in the Rose family, with sharp spines covering the stems
- Small, white to pinkish flowers with five petals produce fruits in late summer.
- Main stem leaves, toothed and usually in groups of 5 leaflets. Trailing stems usually have leaflets in groups of three.
- Up to 15 feet tall; canes to 40 feet long. Canes root at the tips, creating daughter plants.
- Main plants have large, deep, woody root balls that sprout at nodes.

HABITAT: Grows in pastures, forest areas, degraded riparian areas, and seeps.

IMPACTS: Out-competes native vegetation and prevent the establishment of native plants. Dense, impenetrable blackberry thickets can block access of larger wildlife to water and other resources.

MANAGEMENT:

- Mechanical/Cultural Control: Digging, mowing, and/or livestock grazing. Cutting followed by digging up roots is much more effective than cutting alone
- Chemical Control: Various herbicides are available for use

DESCRIPTION:

- A rapidly growing deciduous tree, in the Quassia family, with smooth grey bark, growing up to 80 feet tall and 3 feet in diameter.
- Leaves are compound, ranging from 1-4 feet long with up to 30 leaflets. Each leaflet has glandular notches at the base
- Female trees have clusters of winged papery samaras in June that persist into winter.
- The tree has an unpleasant odor.
- New shoots sprout from the roots of adult trees.

HABITAT: Adapted to a wide variety of soil conditions, including rocky areas, fields, residential areas and forest openings. Grows well in adverse conditions.

IMPACTS: Forms dense thickets that cause damage to sewers and other structures. A vigorous growing tree and prolific seeder that establishes dense stands that replace natives. Has strong allelopathic effects on other plants. Seeds and bark can cause allergic reactions.

MANAGEMENT:

- Mechanical Control: Cut larger top growth to ground level in spring or early summer; follow up treatment cutting new shoots as they appear.
- Chemical Control: Various herbicides are available for use. Methods include foliar application, basal bark spray, cut-stump; injection, application of herbicide to cut areas.

DESCRIPITION:

- Large deciduous shrub or small tree, in the Oleaster family, up to 25' tall. Dark smooth or sometime shredded looking bark. Twigs are thorn tipped with silvery scales.
- Alternate, distinctive silver-gray lance shaped leaves.
- Yellow fragrant flowers are borne either individually or in small clusters in the leaf axils, blooming in late spring.
- Dry, olive-like, hard; seeds remain viable in the soil for three years.
- Roots can grow as deep as 40 feet and is capable of fixing nitrogen in the soil.

HABITAT: Prefers areas where the water table is near the surface, such as riparian area. Roadsides, sub-irrigated pastures and grasslands. Prefers full sun. Very adaptable to infertile, dry and sandy soils.

IMPACTS: Infestations threaten native vegetation and wildlife habitat in riparian and grasslands. Degrades wetlands and irrigated agricultural areas.



MANAGEMENT:

- Manual: Hand pulling/digging can remove most effectively.
- Chemical/Mechanical Control: Various herbicides are available for use. Cut-stump or basal bark spray treatment

GLOSSARY

Achene: small dry 1-seeded fruit

Alternate: leaves that grow singly along a stem

Annual: a plant that completes its lifecycle in one year

Adventitious bud: the bud occurring elsewhere on the plant (such as on trunks, roots, or leaves)

Allelopathy: a biological phenomenon by which an organism produces one or more biochemicals that influence the growth, survival, and reproduction of other organisms

Awn: slender bristle, usually associated with the seed heads of grasses

Axil: the point where a leaf attaches to the stem

Basal: positioned at or arising from the base

Biennial: a plant that completes its lifecycle in two years

Bract: a small, leaf like structure found at the base of a flower

Bud: an undeveloped shoot or flower

Calyx: the sepals of a flower, typically forming a whorl that encloses the petals and forms a protective layer around a flower in bud.

Capsule: a dry mature fruit of 2 or more chambers usually containing many seeds

Compound: a leaf composed of two or more leaflets

Deciduous: woody plants that shed their leaves before the winter or dry season

Disk flower: a regular flower of the composite family (compare ray flower)

Floret: an individual flower within a dense cluster, as a grass flower

Forb: herbaceous flowering that isn't a grass

Herbaceous: non-woody plant with stems dying back at the end of the growing season

Inflorescences: a group or cluster of flowers arranged on a stem that is composed of a main branch or a complicated arrangement of branches.

Involucre: the base of a flower head
Ligule: a thin membranous or hair-like appendage at the leaf collar

Lobed: a leaf edge that cuts deeply toward the base or midvein

Mesic: moist (neither very wet or very dry)

Midrib: the central rib or vein of a leaf or other organ

Nutlet: small nut; one section of larger fruit

Oblanceolate: having a rounded tip and tapering at base

Opposite: a pair of leaves that grow from the same node, directly across from each other

Ovate: egg shaped

Ovate-lanceolate: having a form intermediate between ovate and lanceolate

Palmate: a leaf whose lobes spread like fingers from the palm

Panicle: any loose, diversely branching flower cluster

Pappus: a downy, bristly, or other tuft like appendage of the achene of certain plants, as the dandelion and the thistle.

Perennial: a plant that lives for more than 2 years

Petiole: a stalk that supports the blade of a leaf

Pinnately: a compound leaf with leaflets arranged on opposite sides of a common stalk

Plume: a light hairy or feathery appendage on a fruit or seed serving in wind dispersal

Pubescent: covered with hairs

Ray flower: the marginal flower in a head of a composite, often strap-like

Rhizome: a creeping underground stem

Rosette: a circular cluster of leaves

Sepal: the parts of the calyx of a flower, enclosing the petals and typically green and leaf like.

Sessile: lack of leafstalk

Samara: a dry enclosed winged fruit

Raceme: unbranched flower having short floral stalks

Spike: the seed head of a grass where the flowers or seeds are attached directly to a central long unbranched stalk

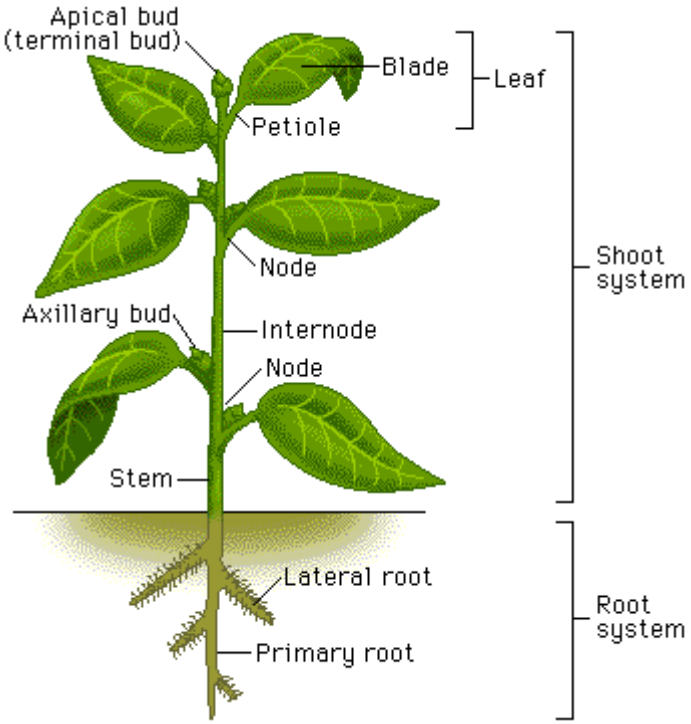
Taproot: an enlarged, vertical main root

Tuberous: bearing tuber (like a potato)

Umbel: flat or rounded flower cluster in which stalks radiate from same point, like an umbrella

Vegetative: pertaining to the non-floral parts of the plant

Whorled: three or more leaves arranged in a circle at a node


Apical bud
(terminal bud)
Blade
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Petiole
Node
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system
Axillary bud
Internode
Node
Stem
Lateral root
Root
system
Primary root