

Common noxious weeds / invasive plants to watch for and remove in GLV

What is a noxious weed?

A *noxious weed* is an invasive plant species that has been officially designated as harmful to agriculture, the environment, or animal or human health, often due to its invasive nature and ability to out-compete native vegetation. Alberta's Weed Control Act states that noxious weeds must be controlled. (Alberta also maintains a list of *prohibited noxious weeds* that are either not currently found in Alberta, or are found in small numbers in only a few locations, but would pose a serious threat if they became established. For more information, refer to <https://www.alberta.ca/provincially-regulated-weeds>.)

What is an invasive plant species?

An *invasive plant species* is a non-native plant species that has been introduced—either intentionally or accidentally—to a new environment, and has the ability to spread aggressively and potentially cause harm to the environment, the economy, and animal or human health. Invasives compete directly with native species (and often out-compete them) for resources like light, water, and soil nutrients. Over time, this disrupts natural eco-systems and potentially leads to loss of biodiversity. Once established, invasive plant species require a significant amount of time (multiple seasons), labour, and money to manage. Some are almost impossible to eradicate.

Invasive plant species are successful for a variety of reasons. They may, for example:

- produce large quantities of seed that is easily distributed over great distances by wind, birds, and insects
- have aggressive and/or dense root systems that spread long distances from a single plant, or that smother the root systems of surrounding vegetation
- thrive in disturbed soil and/or poor soil and poor growing conditions

How can we control noxious weeds / invasive plant species?

Effective management / control methods include:

- **Hand-pulling and digging** is a suitable control method for small infestations and plants that reproduce mainly by seed, or for plants with shallow root systems.
- **Herbicides** can be effective, but many invasive plants are resistant to herbicides, so professional advice and application is often necessary. Selecting and applying herbicides requires understanding the plant's main means of reproduction and spread, as well as knowing the stage in its life cycle when it will be most vulnerable to the action and effects of herbicide.

Less effective and potentially problematic management / control methods include:

- **Mowing** can slow down some kinds of invasive plants, but generally does not kill them, and may actually promote increased root growth and spread in creeping-type invasives.
- **Cultivating / tilling** (mechanically turning over and cutting) invasive species to disturb the roots requires accurate timing or it can spread infestations through seeds. For invasives that reproduce mainly by roots, cultivating may actually make the infestation worse by creating root fragments that can sprout new plants.

Disposing of noxious weeds / invasive plants

Noxious weeds / invasive plants (all parts, including flower heads, seeds, horizontal root runners, and root fragments) must be disposed of by securely double-bagging and placing in the landfill. They must not be composted, because the reproductive parts of invasive plants can retain their ability to reproduce for many years.

Bellflower, Creeping (*Campanula rapunculoides*)



Native to Europe, creeping bellflower (also called creeping campanula) is a creeping perennial with purple-blue, bell-shaped flowers.

Leaves are heart-shaped, with toothed edges and pointed tips. Erect flower stems grow 2-3 feet tall. Roots are thick, deep, and creeping. Up to 15,000 seeds are produced per plant.

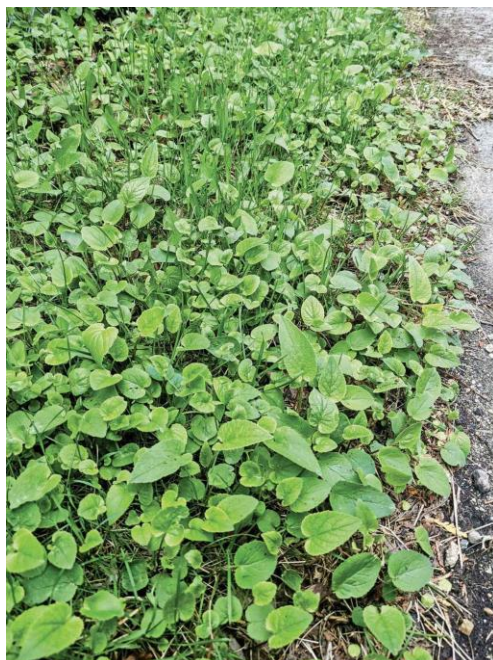
Creeping bellflower prefers well-drained soils and tolerates drought. It grows in all light conditions from full sun to deep shade. It is a common lawn weed and is extremely difficult to eradicate.

Creeping bellflower reproduces equally well by seed and by deep, creeping roots.

Hand-pulling and cutting flower spikes before they bloom can be an option for preventing seed production, however, the plant will continue to re-sprout from its creeping root system.

Digging out the as much of the root system as possible can be successful, but requires several years' effort. The roots grow very deep, and also spread horizontally.

Smothering with tarps or cardboard can help in large patches, but can take several seasons to be effective.



Broadleaf herbicides can be effective with repeated applications, but creeping bellflower is resistant to many herbicides and is extremely difficult to get rid of.

Mowing will prevent flowering, but may actually encourage leaf and root growth and spread, as shown at left.

Cultivation / tilling is not a control option as root fragments quickly create new plants.

Clematis, Yellow (*Clematis tangutica*)



Native to Asia, yellow clematis is a perennial vine that grows rapidly either along the ground or by climbing and covering shrubs, trees, and fences.

Flowers are lemon-yellow with four petals, bell-shaped at first, but flattening out as the petals spread. Leaves are long, narrow, and pointed, with coarsely toothed edges and several lobes. New growth is green and vine-like, while old growth becomes tough and woody. Yellow clematis has a long, deep taproot. Abundant seed develops from each flower. Long silky tails allow each seed to be dispersed over long distances by the wind.



Yellow clematis is tolerant of cold, drought, nutrient-poor soils, and partial shade. It thrives in full sun in open woodlands, grassy areas, and gravelly areas. It quickly covers and chokes out shrubs, trees, and plants, and can completely cover fences and open areas.

Yellow clematis reproduces by seed and by stem pieces.

Repeated hand pulling before seeds set can provide effective control, especially for small infestations.

Digging out the as much of the root system as possible can be successful, but requires several years' effort because of deep tap roots.

Herbicides may be effective, particularly in combination with repeated hand pulling and digging out.

Mowing is not possible because of the plant's vine-like growth habit.

Cultivation / tilling is not a control option as stem pieces create new plants, and the vines climb and out-shade any competing vegetation.



Daisy, Ox-eye (*Leucanthemum vulgare*)



Native to Europe, ox-eye daisy is a perennial with solitary, daisy-like flowers.

Flowers have 20-30 white petals, slightly notched at the tips, and a large yellow centre. Lower leaves are spoon-shaped with lobed or toothed edges and long leaf stalks. Upper leaves are narrow and become progressively smaller upward on the stem. Flower stems are smooth, grooved, and stiff, and can grow 2 to 3 feet tall. Ox-eye daisy has shallow, fibrous, creeping roots. One flower can produce more than 500 seeds, and up to 26,000 seeds are produced by a single plant.

Ox-eye daisy thrives in disturbed areas and nutrient-poor soils. It tolerates frost and drought conditions, and seeds remain viable even after passing through the digestive tract of an animal.

Ox-eye daisy reproduces primarily by seed, but also by shallow creeping roots.

Repeated **hand pulling** before seeds are produced can be effective, but needs to be repeated over several seasons because seeds remain viable in the soil for a very long time.

Digging to remove as much of the root system as possible out roots can be effective, but requires several years' effort.

Repeated **herbicide** application can be effective.

Repeated **mowing** will prevent flower and seed production, but stimulates re-sprouting of stems and flowers. It also encourages leaf and root growth and spread.

Intense and repeated **cultivation / tilling** can be effective because the root system is comparatively shallow.



Thistle, Canada (*Cirsium arvense*)



An introduced plant from Europe, Canada thistle (also known as creeping thistle) is an aggressive perennial that forms dense colonies with separate male and female plants.

Urn-shaped purple to pink flowers form in clusters at the ends of stems. Lower leaves are 2 to 6 inches long, with edges that can vary from smooth with no spines to irregularly lobed with sharp spines. Leaves decrease in size upward along the stems. Stems are hollow, woody, and upright, branching near the top, and growing from 1 to 5 feet tall. Creeping roots spread laterally 15 to 20 feet per year, with new shoots produced at intervals along the root. Plants also develop deep vertical tap roots that can reach depths of 6 to 10 feet. This allows Canada thistle to access water and nutrient reserves far below the roots of most native plants. Seeds form in feathery tufts from the flowers and are dispersed by the wind. A single female flower head produces as many as 45 seeds. One plant produces about 700 seeds.



Canada thistle thrives in sunny, well-drained, disturbed soil. It tolerates drought and a variety of soil types, but does not germinate or survive in water-logged soil or deep shade.

Canada thistle spreads primarily by sprouting from an extensive root system, but also by seed. Because most of the biomass of Canada thistle is below ground, killing the roots is the only effective control method.

Repeated **hand pulling and digging** can help to weaken the root system, however, this can take several seasons of effort.

Certain **herbicides** can be effective, depending on the action of the herbicide and timing of application. Some only control top growth, but do not affect the roots. Herbicides work best on very young thistle plants.

Mowing or cutting at specific times during the growing season may help to suppress Canada thistle, but will not eradicate it. Occasional mowing actually stimulates re-sprouting of the plant. Leaving the cut stems where they fall on the ground creates a mulch “incubator” that stimulates re-growth.

Cultivation / tilling of mature plants is not an option, as Canada thistle is highly resistant to cutting, and small root pieces rapidly develop into new plants. Cultivating also does not reach the deeper roots.



Toadflax, Yellow (*Linaria vulgaris*)



Native to Europe and Asia, yellow toadflax (also called common toadflax or butter-and-eggs) is a colony-forming perennial plant with dense spikes of lemon-yellow flowers.

Toadflax flowers look like small snapdragons with a long spur at the bottom of each orange-throated flower. Leaves are long, narrow, soft, and numerous. Stems are erect and stiff, ranging in length from 6 to 24 inches. Mature plants may have as many as 25 stems. Toadflax has creeping roots that can extend horizontally about 10 feet, and vertically as much as 6 feet. They produce new shoots every few inches along the horizontal roots. Seeds are disc-shaped and winged, which helps them to disperse in the wind. Seed production per stem is prolific (~5,000 seeds per stem), however germination rates tend to be quite low.

Yellow toadflax thrives in sandy-gravelly soils but tolerates a wide range of conditions. It is typically found in open, disturbed sites, where it can quickly displace desirable grasses. Plants growing in dry conditions are stunted in size, but persistent.

Yellow toadflax spreads primarily by roots and once present, establishes dense patches that are difficult to control and very difficult to eradicate. The use of multiple control methods and several years' effort is often required.

Repeated **hand pulling and digging**, if thorough, can be effective in soft soils where the roots can be removed easily.

Some spot-treatment **herbicides** and chemicals are effective when applied just as flowers are starting to appear, however, many toadflax populations are herbicide resistant.



Mowing will decrease flowering and seed production but will not eliminate established patches because the extensive root system remains.

Cultivating / tilling in the early summer and repeated every 3 to 4 weeks throughout the growing season may be successful in controlling yellow toadflax, but will probably not eradicate it.