DIFFUSE & SPOTTED KNAPWEED

(Centaurea diffusa Lam., Centaura maculosa Lam.)

INTRODUCTION

Infestations of diffuse and spotted knapweed are causing severe environmental deterioration to BC's Southern Interior grasslands, forests and rangelands. Infestations degrade livestock habitat and reduce forage production, decrease recreational enjoyment and result in an undetermined loss of wildlife habitat.

Knapweed is generally unpalatable to livestock, and spines on the flower heads of diffuse knapweed may cause injury to the mouth and digestive tract of grazing animals. On agricultural land, the presence knapweed can cause serious reductions in yields, crop value, and may even significantly devalue the land itself. Other losses include soil erosion and reductions in wildlife populations due to the decrease in available forage.

Both diffuse and spotted knapweed were introduced from Eurasia in the early 1900's, likely as contaminants of alfalfa seed. They now occupy over 100,000 acres of grassland, forest and rangeland in the province. Both species are legally classified as Provincially Noxious in British Columbia.

IDENTIFICATION

- Tap-rooted biennial to short lived perennial
- Leaves form a flat rosette in the first year
- Divided leaves are greyish green and hairy
- White, pink or purple flowers

While diffuse and spotted knapweed are similar looking plants, spotted knapweed can be distinguished by its black-fringed bracts on the seed heads, giving the plant its 'spotted' appearance.

BIOLOGY

Diffuse knapweed and spotted knapweed can vary their lifespan. Plants that complete their juvenile growth by the fall, and over winter as rosettes, bolt in spring. Plants that have not finished the juvenile stage by the end of fall remain as rosettes through the second year and bolt during the third year. Flower buds are formed in early June and flowering occurs from July to October. Both diffuse and spotted knapweed are prolific seed producers, producing respectively up to 900 and 400 seeds per plant, under dry land conditions. Seed is commonly spread by wildlife, domestic animals and movement of infested hay and soil as well as plants caught in the undercarriage of vehicles and machinery. Diffuse knapweed plants are also spread by the wind, as mature plant blow around in a tumbleweed fashion.

INTEGRATED MANAGEMENT

The most effective method of control for the knapweeds is to prevent establishment through proper land management and grazing. The healthier the natural plant community, the less susceptible it will be to knapweed invasion. Small infestations should be physically of chemically controlled immediately to prevent further infestation. Areas free of knapweed should be monitored annually and all plants found should be destroyed immediately. On large sites biological control should be considered.

Since diffuse and spotted knapweed reproduce entirely by seed, the key to controlling existing infestations is to eliminate new seed production and deplete the existing seed bank. Weed management plans must promote re-population by native plants or other desirable species. Continued monitoring and follow-up treatments should be conducted annually to eliminate any re-infestation of knapweed.

PREVENTION

- Maintain grasslands in a healthy, vigorous condition to ensure a productive plant community; competitive perennial grasses and forbs utilize water, nutrients and space that would otherwise be readily available to knapweed.
- Regularly patrol your property for knapweed plants and immediately treat new infestations.
- Cooperate with adjacent landowners and encourage them to control knapweed and other weeds. Immediately revegetate disturbed, bare soils with a suitable seed mix that provides dense, early colonization to prevent weed invasion.
- Clean your vehicles and machinery of plant material and soil before leaving a knapweed infestation.
- Check seed for contaminants and use only certified seed.

PHYSICAL CONTROL

Small infestation may be hand pulled to prevent seed production. Plants must be pulled rigorously. Plan to pull when soil moisture remains high enough to remove the entire taproot with ease. Mowing or cutting may also be used for controlling knapweed. Generally for light infestations, hand cutting or mowing should be done in the early flower stage; plants are less likely to re-sprout if allowed to bolt before cutting. Cutting must be repeated over several years to deplete the seed bank. If seeds have developed, removed plants must be burned or deeply buried. Fire is not an effective control for knapweed.

For further information on invasive plants in the Okanagan-Similkameen, go to: www.oasiss.ca
To learn about invasive plants elsewhere in BC, go to: www.weedsbc.ca or www.bcinvasives.ca

For more information about the Okanagan-Similkameen Invasive Plant Program please contact the Regional District at 250-492-0237 or toll free at 1-877-610-3737.

BIOLOGICAL CONTROL

In recent years, notable reductions in diffuse and spotted knapweed infestations have been observed, due to the damage caused by the *Larinus minutus* and *Larinus obtusus* beetles. These small beetles feed on young leaves and flowers during the spring. Mating occurs in May and June, coinciding with the budding stage of knapweed. Beetles lay eggs on flower buds and the resulting insect larvae consume the entire contents of the flower heads, thereby reducing seed output.

Other effective bioagents also attack the root of the knapweed, weakening the plants competitive vigour and stunting plant growth. In particular, the weevil *Cyphocleonus achates* is showing promising results. During the larval stage in the winter, this agent tunnels through and feeds on the root reserves of knapweed until pupation the following spring. When the mature large grey adults emerge in the summer they also feed on the foliage.

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