Whitman County Extension
Weeds

Washington State University
WHITMAN COUNTY EXTENSION

JULY 2007

STEVE'S Weed of the Month

Spotted Knapweed & Diffuse Knapweed

Spotted Knapweed is a **Class B Weed.** In regions where a Class B species is already abundant, control is decided at the local level, with containment as the primary goal.

Knapweeds were accidentally introduced from Eurasia in the early 1900's, probably as a contaminant of alfalfa seed. Spotted knapweed and diffuse knapweed are similar in their biology, distribution and control mechanisms.

Spotted knapweed (*Centaurea maculosa* Lam.) is a biennial or short-lived perennial that reproduces from seed (its primary means of spread) and forms a new shoot each year from a stout taproot. The shoots are branched and generally grow 1 to 3 feet tall. Its leaves are pale green, alternate and deeply divided at the base. Flowers, ranging in color from pink to light purple (occasionally white), appear at the stem ends. Floral bracts have a short central spine and soft fringe at the margin, with stiff dark or "spotty" tips. Spotted knapweed flower heads are not prickly to the touch and are usually larger than those of diffuse knapweed. Flower heads open soon after they mature, releasing seeds when the plant is stirred by the wind. Seeds stay viable in the soil for 5 or more years. Flowering occurs throughout summer and into fall, as long as moisture and temperatures permit. Spotted knapweed prefers well-drained, light-textured soils. Although it will grow in moist areas, it does not compete well with vigorously growing grasses.

Diffuse knapweed (*Centaurea diffuse* Lam.) is a short-lived perennial, a biennial, or occasionally an annual that reproduces and spreads solely from seed. The plant has a long, fibrous taproot. Diffuse knapweed is generally shorter than spotted knapweed and develops a single shoot that grows 1 to 2 feet tall and is branched toward the top. Stems have fine short hairs, giving the plant a gray appearance. Rosette and lower leaves are finely divided, while leaves become smaller toward the top

of the shoot and are narrow and elliptical in shape. Diffuse knapweed produces white, sometimes pink or purple flowers in flowerheads arranged independently or in clusters at branch ends. Floral bracts are tipped and bordered with slender spines that are sharp to touch. The terminal spine is longer than that of spotted knapweed, reaching about 1/3 inch long. Flowering typically starts in June and July. This pervasive species prefers dry, sunny locations and will establish along roadsides, in waste areas and pastures.

Management

Control: Spotted and diffuse knapweed can be similarly managed. An effective strategy for controlling knapweed is to suppress infestations by chemical or mechanical means, then re-seed with desirable grasses. For small populations, pull or dig plants and remove as much root as possible. Monitor the site afterward for plants growing from root fragments and from the seed bank. Burning, cultivation, and fertilization typically are not effective unless combined with other methods of control.

Chemical Control: Chemicals are effective in reducing weed infestations; however, application can be cost prohibitive if large acreages are infested, and retreatment is often necessary due in part to new seedlings germinating from large soil seed banks. Picloram (Tordon®), dicamba (Banvel®), clopyralid (Transline®), clopyralid plus 2,4-D (Curtail®) or aminopyralid (Milestone®) can be used to control knapweed infestations. ***A careful follow-up program is necessary to control missed plants and seedlings. Many attempts to control knapweed have failed because follow-up treatments were not applied.*** The optimum application time is when the plant is in the rosette growth stage in the fall or in the bolt to bloom stage in the spring (when the plant is actively growing).

Rosette

More information can be found in the PNW Weed Management Handbook

Use pesticides with care. Apply them only to plants, animals, or sites listed on the label. When mixing and applying pesticides, follow all label precautions to protect yourself and others around you. It is a violation of the law to disregard label directions. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

Biological control is another option. Many insects are being evaluated and used as bio-control agents for spotted and diffuse knapweeds. Flowerhead gall flies *Urophora affinis* and *U. quadrifasciata* cause plants to produce fewer viable seeds and abort terminal or lateral flowers. Root-feeding insects may cause greater damage to knapweed populations than seed-feeding ones. Larvae of the diffuse knapweed root-boring beetle, *Sphenoptera jugoslavica,* feed in the roots of diffuse knapweed. Larvae of the sulfur knapweed moth, *Agapeta zoegana,* and the knapweed root weevil, *Cyphocleonus achates,* feed in the roots of both knapweed species. The seed-feeding insects include the seed-head moth, *Metzneria paucipunctella,* and seed-eating weevils, *Larinus obtusus* and *L.*

minutus. It is doubtful whether a single organism could exert sufficient pressure on the plant population to effect any significant control, but used as a complex of bio-agents, the results would like ly be enhanced.

N Poritz photos

Urophora affins *U. guadriscata*

Flowerhead Gall Flies

Sphenoptera jugoslavia

Root Boring Weevil

Agapeta zoegana

Sulfur Knapweed Moth Larvae

Cyphocleonus achates

Root Weevil

Larinus obtusus

Larinus minutus

Seed-eating Weevils

Sheep and goats will feed on diffuse and spotted knapweed, and long-term grazing has been found to control knapweed.

Questions: contact Steve Van Vleet or by phone, (509) 397-6290