

STEVE'S Weed of the Month

Yellow Starthistle

Also Known As: St. Barnaby's thistle, golden star thistle, yellow centaury, yellow cockspur

Yellow Starthistle 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.

Yellow Starthistle (*Centaurea solstitialis* L.), native to Eurasia, was introduced to the western United States as early as the 1860's. This noxious species is a winter annual that reproduces only by seed. In its early rosette stage, yellow starthistle has deeply lobed leaves. As the seasons progress, the leaves become more rounded and the plants bolt. Ascending the stem, leaves become shorter and narrower with pointed tips. Mature plants are gray-green in color and grow to a height of one to three feet. The stem is rigid, branching, and covered with fine, woolly hairs. Yellow flower heads develop singly at the ends of the branched stems. Flower head bracts bear stiff, sharp thorns up to $\frac{3}{4}$ inch long. While the nutritional content of yellow starthistle is relatively high during the growing season, it declines as the plant matures. Because of the weed's sharp spines, livestock avoid grazing areas heavily infested with yellow starthistle. If horses ingest the weed, they may develop a fatal condition known as "chewing disease." This disease makes it impossible for the horse to swallow, causing death from dehydration and starvation. Yellow starthistle is an invasive competitor that can crowd out grasses where soil moisture is limited or where forage has been weakened by poor grazing practices. This adaptive plant will grow in many soil types and is often found along roadsides and in disturbed soil.



Yellow starthistle reproduces only by seeds—which it does in abundance. More than 150,000 seeds per plant may be produced in a single season. The seeds are of two types: plumed and plumeless. While neither seed type is highly windborne (unplumed seeds not at all), once the plumed seeds reach maturity they are dispersed by wind gusts or other means. Plumeless seeds, which are produced by the outer circle of the floret associated with the bract, tend to remain in the seed head until it falls apart. This provides the plant a second period and method of seed dispersal. Besides being dispersed by wind gusts, yellow starthistle seed is also commonly transported in contaminated seed and feed. It is also spread by livestock, farm equipment, vehicles, animals, birds, and man. A large percentage of yellow starthistle seeds tend to be viable, and many of those will remain alive but dormant in the soil for several years, germinating when conditions are favorable.

Control Methods

Cultural Control: For small infestations, hand pulling plants before seed production is an effective control method. (Viable seed is produced by yellow starthistle once 5% of its flower buds have yellow flowers visible.) For rangeland infestations, improved grazing practices can reduce the spread of yellow starthistle by encouraging desirable grasses to compete with and deter the noxious species.

Mechanical Control: Early summer tillage will control yellow starthistle if it results in the weed's roots being detached from its shoots. Tillage can be effectively repeated during the same season if done before seed production. Mowing is another control alternative, but it is not feasible on rough terrain (which is also the case with tillage). The effectiveness of mowing depends on its timing and the plant's development. Mowing too early may actually extend the life cycle of yellow starthistle, while mowing too late (after the plant produces viable seeds) has no real impact. To be effective, mowing of yellow starthistle should occur at the early flowering stage, before viable seeds are produced.



Rosette

Chemical Control: Herbicides applied in the early rosette to bolting stage can effectively control yellow starthistle. Among effective chemicals are 2,4-D, picloram (Tordon®) and clopyralid (Transline® or Stinger®).

**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: Realistically, biocontrol agents should not be viewed as a means to eradicate a target weed. Instead, their main goal is usually to stress the plant and reduce its dominance so that a more desirable species can move in. Therefore, while several biocontrol agents have been identified and used to combat yellow starthistle, they should be considered merely a tool to be used as part of an integrated management plan. Biological control agents for yellow starthistle include the hairy weevil *Eustenopus villosus*, peacock flies *Chaetorellia australis* and *Chaetorellia succinea*, gall fly *Urophora sirunaseva*, seed-head weevil *Bangasternus orientalis* and flower weevil *Larinus curtus*. These insects attack the flower heads of yellow starthistle and produce larvae that develop within the seed-head and feed on the seeds. The seed-head weevil (*Bangasternus orientalis*) was successfully established in Washington state, where it was found to reduce yellow starthistle seed production by about 60%. In separate studies, the false peacock fly (*Chaetorellia succinea*) and the hairy weevil (*Eustenopus villosus*) were also found to significantly impact seed production.



Eustenopus villosus



Bangasternus orientalis



Larinus curtus

Cattle, sheep, and goats have been used to graze yellow starthistle infestations. Grazing is most effective in controlling yellow starthistle if it occurs when the stems of the plant have bolted but before the spiny seed heads develop. Cattle and sheep tend to avoid starthistle after its spines appear, whereas goats will continue to graze the plant even during flowering.

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