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Managing Purple and Iberian Starthistles

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Purple starthistle (*Centaurea calcitrapa* L.) was first introduced into California from Europe in the early twentieth century, and has since become a major weed on rangelands in the San Francisco Bay area. Iberian starthistle (*Centaurea iberica*), also from Europe, spread abundantly in some counties of California during the early 1950s. These two similar weeds are now found infesting land and devastating native species throughout the western United States. Both purple and Iberian starthistles are considered noxious weeds in the state of Nevada.

Identification and Habitat

A mature purple starthistle is one to four feet tall, has a stout taproot, and a branched stem. The stems and leaves are covered with cobweb-like hairs that become smoothed out with maturity. The lower leaves are deeply divided into oblong-linear segments, and the upper leaves are narrow and undivided. The bottoms of the leaves are lightly pitted with tiny, clear globules. The rosette leaves at the base of the plant are deeply divided, with a circle of spines in the center of older rosettes.

The flowers are lavender to deep purple with numerous heads three-quarters to one inch long. The bracts of the flower head are spine-tipped, with one to three pairs of lateral prickles near the spine's base (Fig.1). The seed is about one-eighth inch long, has no bristles, and is straw-colored with dark brown spots.

Iberian starthistles look much like purple starthistles; consequently, mature seed heads are needed to distinguish between them. Iberian starthistle seeds have a plume of flattened bristles, about half as long as the seed, at one end. Its flowers tend to be a lighter purple than those of the purple starthistle, and the head is normally more round (Fig. 1).

Purple and Iberian starthistles are biennials, but may behave as annuals or short-lived perennials in some environments. They each grow as a rosette during the first year, and then flower and produce seeds during the second year. Purple starthistle is more abundant on fertile sites, while Iberian starthistle establishes along streambeds or wet areas.

Figure 1. Purple starthistle flower (left) and the more round Iberian starthistle flower (right).

Impact

Purple and Iberian starthistles reproduce rapidly by seeds. They are not safe for animal feed, and they may replace worthwhile forage species. They are capable of adapting to diverse climatic conditions, and are very competitive. This aggressiveness causes problems for existing desirable exotic and native species. The sharp spines cause domestic and wild animals to avoid foraging these and nearby plants and restrict access for people in recreational areas. These noxious weeds infest range, pasture, and roadsides and invade and destroy areas of native vegetation.

Management

Prevention: It is important to be aware of purple and Iberian starthistles so that action can be taken immediately after an infestation is identified. Preventing infestations entails avoiding distribution of seeds into uninfected areas. Regular inspection of equipment, hay, livestock, and other possible sources for the transfer of seeds will reduce its

spread. It is imperative to examine and wash contaminated equipment and clothes after being in areas of known infestations and before moving to

Figure 2. Iberian starthistle plant.

uninfested areas. These precautions will make it much easier to preclude the weeds from other areas before they become established and problematic.

Physical Control: Grubbing or digging may control minor infestations, and is most effective in the control of young rosettes or plants that have bolted, but not produced a seed head. Cutting the plants at least two inches below the soil surface early in the growing season is more effective than cutting the stalk after the flowers open. Older plants with flowers most likely contain viable seed, so it is important to remove and destroy these plants when cut. Even when the cut is made at the crown, re-growth is possible, and thus follow-up treatments are necessary.

Mowing of purple or Iberian starthistles is ineffective and can make the problem worse. Rosettes are too low to be mowed, and mowing older plants spreads starthistle by throwing seed heads. When done early, mowing encourages development of multiple stems from one root base. Each stem may then grow more prostrate and produce flowers and seed low to the ground, often below the mower height. Since mowing does not appear to be effective, do not mow purple and Iberian starthistle.

Biological Control: There are no biological controls presently for purple or Iberian starthistle. Two species of *Bangasternus*, seed head weevils, introduced for the yellow starthistle and diffuse knapweed reportedly utilize purple starthistle in Europe, but have not been effectively used for control of these thistles in the United States.

Chemical Control: Herbicides are most effective when applied in the spring. This is when the plants are in the sensitive seedling or rosette stage, are actively growing, and when soil moisture is high. Glyphosate, 2,4-D, dicamba, and picloram are effective, but are sometimes only a temporary control. A single application of any of these herbicides will probably not eradicate the weed, particularly in widespread infestations, therefore repeated applications are recommended. A full application of clopyralid may also be effective.

Eradicating these noxious weeds will not be achieved through any single management method. A combination of several management techniques is recommended based upon the infestation level and environmental conditions.

References

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Photographs courtesy *Weeds of the West*.