

Yellow Starthistle – 15 million acres and counting

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Yellow Starthistle is a plant of Old World origin that arrived in California in the early 1800's. It's believed that it made its way to California in contaminated alfalfa seed from Europe. It is one of California's worst noxious weeds, infesting parks, rangelands, pastures, hay fields, orchards, vineyards, canal banks, roadsides, and other disturbed areas. Since its introduction, yellow starthistle has spread steadily and now infests nearly 15 million acres throughout the state. Disturbances created by cultivation, poorly timed mowing, road building and maintenance, or overgrazing favor this rapid colonizer. It forms dense infestations and rapidly depletes soil moisture, thus preventing the establishment of other species. It is also poisonous to horses, causing a nervous disorder called "chewing disease" (nigropallidal encephalomalacia), which is fatal once symptoms develop. Horses are the only animal known to be affected in this manner and should not be allowed to graze on yellow starthistle.



Too often, people don't recognize yellow starthistle until late summer when the surrounding fields are a glow from its bright yellow flowers. By this time, control strategies are often limited and not effective. To have a chance at controlling this invasive weed, landowners must be proactive and learn how to recognize this plant early in the spring and attack it when it's most susceptible.



Yellow Starthistle seedling

To develop a successful control program it is necessary to understand yellow starthistle's biology and identify its weaknesses. Yellow starthistle is a long-lived winter annual whose seeds germinate from fall through spring, which corresponds to the normal rainy season in California. After germination, the plant initially allocates most of its resources to root growth with very little above ground growth. By late spring, roots can extend 3-5 feet into the soil, while the above ground portion consists of nothing more than a few leaves. It is this growth strategy that allows yellow starthistle to out-compete shallow-rooted annual species during the drier summer months when moisture availability is limited. It also helps explain why yellow starthistle survives well into the summer, long after other annual species have dried up. Although the seedling and rosette stage is one of the most difficult to identify, it is important to recognize, as some control activities should occur during this period. One of the best ways to scout for new plants is to look beneath the dried skeletons of the previous year's growth. When untouched, these skeletons can persist for 2-3 years and serve as great visual markers for finding new seedlings.

As temperatures begin to warm in the spring, plants go through a rapid phase of development called bolting. Usually by May or June plants bolt (produce erect stems), sending up tall, highly branched stalks that will then produce spiny, yellow flower heads and broad canopies. The stems of the mature plant are ridged, and the entire plant is covered with soft hairs. By late summer, plants will produce yellow flowers atop spiny bases. Seed output can be as high as 30,000 seeds per plant, with about 95% of the seed being viable soon after dispersal. Most seeds germinate within a year of dispersal, but some can remain viable in the soil for more than 3 years.

Controlling yellow starthistle requires a systematic and persistent effort over several years. The approach taken should vary according to the size and density of the infestation, terrain, tools or equipment *available, and planned use or objective for the site.*



Yellow Starthistle bolting

Hand Pulling

Hand pulling is very effective for managing small populations and should be timed so that it occurs before flowering. The best time to hand pull is in late spring during the bolting stage after the last spring rain and before the ground dries up.

Mowing



Yellow Starthistle rosette stage

Mowing is effective for managing yellow starthistle stands, provided it is well-timed and repeated once or twice per season. Mowing during the early flowering stage (i.e., with about 5 percent of the flower heads in bloom) reduces canopy size, seed production, and plant density. Generally, follow-up mowings are necessary and should be done once flowering resumes, approximately four weeks later. All mowing should be completed before seeds mature. It is important to note that mowing early during the rosette stage can increase yellow starthistle stands by reducing competition from resident vegetation.

Chemical

There are many herbicides available for use on yellow starthistle. For small populations, three chemicals stand out as being the least costly and most effective. Glyphosate which is sold under the name Roundup® is a non-selective herbicide that is effective at killing actively growing weeds and has no soil activity. It is important to wait until grasses have completed their cycle and have gone to seed before spraying. This is usually in early summer after yellow starthistle has bolted but before it has flowered. Triclopyr which is the active ingredient in Ortho Brush-B-Gon® also provides excellent control of yellow starthistle and is a selective herbicide that only kills broadleaf plants. It doesn't have any soil activity, so timing should coincide with bolting, after the last spring rains and potential germination. Another chemical that works exceptionally well on yellow starthistle is clopyralid. Sold under the name Yellow

Starthistle Killer® or Transline®, this is a selective herbicide that only kills broadleaf plants. This chemical works by not only killing actively growing plants, but also prevents seeds in the soil from germinating. The best time to apply is during the rosette stage, January through March. For larger infestations another product that provides excellent control is aminopyralid. Sold under the name Milestone®, this product has similar properties to the aforementioned clopyralid and is applied during the same timeframe. Both clopyralid and aminopyralid provide about 3-6 months of activity in the soil, so it is advisable to apply these products during the winter months from January – March. Transline® and Milestone® are registered as agricultural chemicals and require an Operator Identification Number from the County Agricultural Commissioner.

Contact the University of California Cooperative Extension Central Sierra at <http://cecentralsierra.ucanr.edu> with your agricultural questions. To speak with a Certified Master Gardener: Calaveras (209) 754-2880, Tuolumne (209) 533-5912, Amador (209) 223-6838, El Dorado (530) 621-5512. Information for this article was collected from the University of California Division of Agriculture and Natural Resources. To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products which are not mentioned.