Holocarpha virgata (Gray) Keck

Virgate tarweed

Family: Asteraceae
Range: Very common grassland species in California.
Habitat: Grasslands, woodlands, fields, pastures, rangeland, and roadsides.
Origin: Native to California.
Impacts: Virgate tarweed is usually not considered a weed in natural areas. Birds and mammals consume the seeds, and the pollen is an important food source for bees. However, mature virgate tarweed is unpalatable to livestock, and populations can increase to an undesirable density in grazed pastures and rangeland. Its population density may increase following late spring rainfall after annual grasses have matured.

Virgate tarweed is a 3 to 4 ft tall, very aromatic native annual covered with a sticky resin. It is a winter annual that lasts into late summer. Plants germinate in fall and winter, and overwinter as rosettes until flower stems develop in spring. Stem leaves are tipped with a very distinctive sessile open pit resin gland. Main stems are branched well above the base. Lower stem leaves are opposite or alternate, whereas upper stem leaves can appear whorled and lay close to the stem.

Virgate tarweed flowers in late summer. The flowerheads are yellow, about 0.25 inch long, and appear sessile on the stems. Flowers consist of 9 to 25 yellow disk flowers with black anthers surrounded by 3 to 7 yellow ray flowers. All flowers and seeds lack a pappus. Plants reproduce only by seed (achenes). Most achenes fall near the parent plant or disperse short distances with wind, rain, and animals. Little is known of the seed longevity, but it is expected that the seeds can persist for a few years in the soil.

NON-CHEMICAL CONTROL

Mechanical (pulling, cutting, disking)	Mowing pasture to a height of 4 inches just before flowering in July or August can greatly reduce the population that year and the density of virgate tarweed the following year. Tillage was also shown to be effective in late spring when the soil was dry.
Cultural	Livestock will use tarweed as forage in winter and early spring while plants are young and succulent. However, plants become less palatable as they increase in height and resin content. By late season, livestock rarely use virgate tarweed as forage, and grazing would not be an effective control strategy. It would be expected that a late season (summer) prescribed burn before the plant develops viable seed would be effective for control, but would have to be repeated a couple of years in a row. In one study, fall application of nitrogen fertilizer (ammonium sulfate) reduced tarweed density the following season. This was thought to be due to an increase in soil moisture usage by other plants in the following spring, increasing their competitive effect on virgate tarweed.
Biological	Virgate tarweed is a native species so a biological control effort is not desirable.

CHEMICAL CONTROL

There is little information on the control of virgate tarweed, as it is a native species that is only a problem in rangelands.

The following specific use information is based on reports by researchers and land managers. Other trade names may be available, and other compounds also are labeled for this weed. Directions for use may vary between brands; see label before use. Herbicides are listed by mode of action and then alphabetically. The order of herbicide listing is not reflective of the order of efficacy or preference.

GROWTH REGULATORS	
2,4-D Several names	**Rate:** 3 pt product/acre (1.4 lb a.e./acre) **Timing:** Postemergence, when plants are in rosette stage in winter or early spring (before late April). Application during cool weather allows for the use of ester formulations of 2,4-D, which may have better absorption into the glandular leaves. Early applications are much more effective compared to applications made after bolting. **Remarks:** 2,4-D is a broadleaf-selective herbicide and has no soil activity. It can be a restricted use herbicide in some areas. This treatment has been shown to give the most effective control in the absence of other studies. Although no information is provided, a relative of virgate tarweed, *Hemizonia pungens*, is listed on the *Clarity* (dicamba) label as susceptible to that herbicide. It is not known if *Clarity* will also control virgate tarweed.
Aminocyclopyrachlor + chlorsulfuron *Perspective*	**Rate:** 1.25 to 1.75 oz product/acre **Timing:** Preemergence or early postemergence before bolting. **Remarks:** Trials have shown this product to give very good control of virgate tarweed. *Perspective* provides broad-spectrum control of many broadleaf species. Although generally safe to grasses, it may suppress or injure certain annual and perennial grass species. Do not treat in the root zone of desirable trees and shrubs. Do not apply more than 11 oz product/acre per year. At this high rate, cool-season grasses will be damaged, including bluebunch wheatgrass. Not yet labeled for grazing lands. Add an adjuvant to the spray solution. This product is not approved for use in California and some counties of Colorado (San Luis Valley).
Aminopyralid *Milestone*	**Rate:** 5 to 7 oz product/acre (1.25 to 1.75 oz a.e./acre) **Timing:** Preemergence or early postemergence before bolting. **Remarks:** Although there are few experimental results indicating that aminopyralid can control virgate tarweed, anecdotal information suggests that it will be effective when applied to young plants.
BRANCHED-CHAIN AMINO ACID INHIBITORS	
Chlorsulfuron *Telar*	**Rate:** 1 to 2.6 oz product/acre (0.75 to 1.95 oz a.i./acre) **Timing:** Preemergence or postemergence to plants in rosette stage. **Remarks:** Although there are few experimental results indicating that chlorsulfuron can control virgate tarweed, anecdotal information suggests that it will be effective when applied to young plants. In addition, it is listed on the label for control of another tarweed, *Hemizonia pungens*. Use a surfactant for postemergence applications.

RECOMMENDED CITATION: DiTomaso, J.M., G.B. Kyser et al. 2013. *Weed Control in Natural Areas in the Western United States*. Weed Research and Information Center, University of California. 544 pp.