

# CURLYCUP GUMWEED

*Grindelia squarrosa* (Pursh) Dunal

Plant Symbol = GRSQ

**Common Names:** Tarweed; resinweed; rosinweed

**Scientific Names:** None

## Description

**General:** Composite family (Asteraceae). Curlycup gumweed is a short-lived perennial, or biennial forb averaging 1 to 3 feet high. Numerous branching stems bear alternately arranged leaves, typically 1 to 4 inches long with entire to serrate or even somewhat lobed margins. The flower heads are radiate with 25 to 40 yellow rays and a yellow center. The involucral bracts are squarrose-reflexed, or strongly rolled back, and highly resinous. The fruit is a 2.5 to 3 mm long achene bearing 2 to 3 pappus awns (Welsh et al., 2003). Flowering occurs in mid- to late-summer, typically beginning in July and continuing through August and into September. Occasional plants will be seen with flowers persisting into November.

There are currently three varieties recognized by the PLANTS database, including var. *quasiperennis*, var. *serrulata*, and var. *squarrosa*. Variety *quasiperennis* is a true short-lived perennial with largely entire leaf margins. The other two varieties, both biennials, can be separated by their leaf width to length ratio, with var. *squarrosa* having upper stem leaves 2 to 4 times longer than broad, and oblong in outline, and var. *serrulata* having upper stem leaves much narrower, 5 to 8 times longer than broad, and narrowly oblong in outline (Welsh et al., 2003).

**Distribution:** Curlycup gumweed is native throughout North America with the exception of the southeastern states. For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

**Habitat:** Curlycup gumweed inhabits a variety of arid plant communities including sagebrush steppe, desert grasslands, prairies and mountain shrub chaparral (Walsh, 1993). It is very commonly found in disturbed roadsides, open fields and in poorly managed pastures and rangelands.

## Adaptation

Curlycup gumweed is adapted to disturbed sites receiving 10 to 20 inches mean annual precipitation. This species is most commonly found in rocky, gravelly soils of disturbed roadsides, but can be found in heavier silty clay loam soils to sandy loams. Curlycup gumweed is adapted to neutral to moderately saline conditions. It is very commonly found growing in sites occupied by non-native grasses such as cheatgrass (*Bromus tectorum*) and crested wheatgrass (*Agropyron cristatum*).



Figure 1. Curlycup gumweed growing in a disturbed roadside.



Figure 2. Close-up of curlycup gumweed flower head showing strongly reflexed involucral bracts.

## Uses

### *Pollinators:*

This species is highly attractive to native bees. ARS Bee Research Laboratory records indicate visitations by species from over 40 genera of native bees (Ikerd, 2016). Its drought tolerance and late-season flowering make it especially valuable for CRP and other range plantings in the arid west where late-blooming forbs are limited.

Curlycup gumweed is also readily visited by European honeybees; however, honey produced from this species has an inferior flavor and can lower the grade (Dalby, 1999). The pollen is considered more valuable than the nectar, as bees visit the plants late in the season to build pollen reserves for winter (Dalby, 1999).

### *Wildlife:*

Curlycup gumweed has been observed being consumed by sage-grouse. Twenty-eight percent of monitored sage-grouse chicks between 5 and 8 weeks of age were reported eating curlycup gumweed in central Montana. Curlycup gumweed made up 3 percent by volume of crop contents. It was used by 39 percent of 9 to 12 week old chicks and made up 4 percent of crop contents. It was not used by chicks younger than 5 weeks old (Peterson, 1970).

### *Livestock:*

Curlycup gumweed offers little forage value and is largely unpalatable to cattle, sheep, and horses, though sheep will occasionally crop flower heads in the absence of other forage (Johnson and Nichols, 1970). Tannins, volatile oils, resins, bitter alkaloids, and glucosides give curlycup gumweed an unpleasant taste (Bare, 1979). Cattle, sheep, and goats will occasionally graze Curlycup gumweed in its rosette stage of growth.

## Ethnobotany

The resin of curlycup gumweed contains many medicinally beneficial compounds. Native Americans used this species for a variety of ailments. A decoction of root was used for liver trouble. (McClintock, 1909), and a paste made from flowering tops was applied to skin diseases, scabs and sores (Hart, 1992).

## Status

*Threatened or Endangered:* No.

*Wetland Indicator:* Curlycup gumweed is considered to be a Facultative Upland (FACU) species (usually occurs in non-wetlands (estimated probability 67%-99%), but occasionally found in wetlands (estimated probability 1%-33%) or Obligate Upland (UPL) species (occurs in wetlands in another region, but occur almost always (estimated probability >99%) under natural conditions in non-wetlands in the region specified).

### *Weedy or Invasive:*

Although this species is native to North America, it can have weedy or invasive characteristics under improper management (Stubbendieck et al, 1994; Whitson et al., 1996). It has become a problematic weed in Eastern Europe (Sirbu and Oprea, 2008). Please consult with your local NRCS Field Office, Cooperative Extension Service office, state natural resource, or state agriculture department regarding its status and use.

Please consult the PLANTS Web site (<http://plants.usda.gov/>) and your state's Department of Natural Resources for this plant's current status (e.g., threatened or endangered species, state noxious status, and wetland indicator values).

## Planting Guidelines

Tests conducted at Aberdeen Plant Materials Center indicate there are approximately 400,000 seeds/lb and 39 lbs/bushel. Based on a seeding rate of 50 pure live seeds (PLS) per foot, the full stand seeding rate is 5 lbs/ac. Seeding rate should be adjusted to match the desired percentage within a seed mixture.

McDonough (1975) showed that curlycup gumweed exhibited seed germination polymorphism. Disc achenes (those from the center of the flower) germinated more rapidly and attained higher final germination percentages than did ray achenes (those from the outer, petal-like flowers). It is believed that this allows germination and emergence to occur during different seasons, and subsequently affects the time required for completion of the growth cycle.

## Management

Due to its low moisture requirements and limited palatability, curlycup gumweed increases under drought conditions in irrigated pasture as well as under poor grazing management practices, and is often associated with pastures and range that have been over grazed. Curlycup gumweed should be used as a minor component of pollinator and restoration seed mixtures.

Management strategies should be based on the key species in the established plant community. Grazing should be deferred on seeded lands for at least two growing seasons to allow for full stand establishment (Ogle et al., 2011).

### **Pests and Potential Problems**

Curlycup gumweed has been shown to have the capacity to serve as a host plant of the Colorado red node virus of bean (Thomas, 1949). It may also have the ability to accumulate selenium from the soil and become toxic to livestock (SDSU, 2016).

### **Environmental Concerns**

Curlycup gumweed is native to western North America. It will spread under favorable conditions but does not pose any environmental concern to native plant communities under proper management. Due to its ability to readily occupy disturbed sites, it has been associated with other rangeland weeds (Whitson et al., 1996).

### **Control**

Early season treatments (June) with broadleaf selective herbicides such as metsulfuron, 2,4-D, or dicamba produced better than 95% control of curlycup gumweed, while later treatments (August) yielded slightly lower results (Ferrell and Whitson, 1987).

Contact your local agricultural extension specialist or county weed specialist to learn what works best in your area and how to use it safely. Always read label and safety instructions for each control method. Trade names and control measures appear in this document only to provide specific information. USDA NRCS does not guarantee or warranty the products and control methods named, and other products may be equally effective.

### **Seeds and Plant Production**

Small scale production fields and wildland collections can be made by beating the seeds off the plant into a bin or bag, or by clipping the flower heads. Seed is cleaned by running the collected material through a hammer mill followed by sieving and air-screening. Seed often contains small grubs. Placing the seed in a freezer for 24 hours may help eliminate seed eating insects.

Nuzzo (1978) used a 10 week moist stratification for propagating curlycup gumweed. She reported first germination occurred after 3 days and peak germination occurred after 14 days. Plants were ready to transplant into the field after 10 weeks.

Two similar species, *Grindelia camporum* and *G. stricta*, are grown for seed production in California. Both have very sticky vegetation like curlycup gumweed. Fields are direct combined; however the gum must be scraped off of the combine and machine parts every so often to keep it working effectively. The seeds separate from the seed head quite readily. Deer are very fond of the young vegetation and may pose a problem in production settings (Emily Allen, Hedgerow Farms Personal communication 2016).

### **Cultivars, Improved, and Selected Materials (and area of origin)**

Limited quantities of wildland collected seed may be available from commercial sources. There are currently no commercial releases of curlycup gumweed; however multiple accessions are currently under investigation at Aberdeen Plant Materials Center for potential release. Seed sources should be selected based on the local climate, resistance to local pests, and intended use. Consult with your local land grant university, local extension or local USDA NRCS office for recommendations for use in your area.

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