

GRINDELIA CAMPORUM* E. GREENE VAR. *CAMPORUM

COMMON NAME: GREAT VALLEY GUMWEED

FAMILY: ASTERACEAE

GROWTH FORM: PERENNIAL HERB



PLANTING

During January 2003, seeds were hand-sown onto mounded planting beds, and a thin layer of soil was then raked over them. The seeds germinated readily without any form of pre-treatment. The first seed harvest from the plants was made during October 2003. The Tranquillity area has a semi-arid climate with low mean annual precipitation. However, the 2002-03 growing season was a favorable year for plant establishment at the nursery. Total precipitation received during the 2002-03 hydrologic year (1 August 2002 through 31 July 2003), 17.6 cm, was 80.2% of the 30-year mean¹, and precipitation received during April and May of 2003 was above average (California Irrigation Management Information System, Station #105). If *G. camporum* seeds had been sown in a year with precipitation that was far below average, establishment may not have been as successful.

PHENOLOGY

G. camporum germinates from seed or produces a basal rosette from underground rhizomes between February and April. Peak flowering time for this species is from July to August. Fruits begin to mature in mid-September and can typically be collected through October. During winter, the aboveground growth dies back, but plants will re-grow from underground rhizomes during the following spring.

SEED HARVESTING

Seeds are mature and ready for collection when the disk flowers have dried and turned brown, and the seeds can be easily separated from the receptacle. Plants typically have multiple flowers and each flower will mature (i.e., produce

seeds) at a different time. Therefore, seed collection on multiple dates is ideal in order to capture both early and late maturing seeds. Seed heads can be clipped off plants or mature seeds can be shaken or rubbed off the seed head by hand into a collecting bag or envelope. Harvested plant material is transported to a warehouse and allowed to air dry, before seed processing.

SEED PROCESSING METHODS

If entire seed heads have been collected, we rub the harvested plant material over a screen or sieve to release seeds from the receptacle. Following this, seeds can be separated from chaff using sieves of different mesh size or an air screen cleaner such as a Clipper Office Tester (made by the A.T. Ferrell company). An air separator (Seed Tech Systems, LLC.) can be used to remove additional lightweight chaff.

CULTIVATION OVERVIEW

Several *G. camporum* individuals derived from two wild source populations have been established in the nursery since 2003, and have produced seed nearly every year. The species has spread a short distance from its original planted area through seed dispersal.

During the 2006-07 growing season when only 7.01 cm (2.76 in) of rain were received between 1 October 2006 and 31 September 2007, very few *G. camporum* individuals reached flowering stage.

RESEARCH ON GRINDELIA CAMPORUM

The species has been identified as a potential commercial crop because the resin produced on its stems, leaves, and involucre may have industrial applications (Hofmann and McLaughlin, 1986). The germination requirements, salinity tolerance, and resin production of *G. camporum* have been studied in order to determine the possibility of cultivating the species on arid lands and/or saline soils (see references below). *G. camporum* was utilized in a study that evaluated the potential for activated charcoal to protect native seeds from the effects of pre-emergent herbicides (Lair et al., 2006).

ADDITIONAL INFORMATION ABOUT GRINDELIA CAMPORUM VAR. CAMPORUM:

Internet Resources

Species profile from the Ladybird Johnson Wildflower Center at the University of Texas:
http://www.wildflower.org/plants/result.php?id_plant=GRCA

Species profile from the Ransom Seed Laboratory:
http://www.ransomseedlab.com/genus/g/grindelia_camporum.htm

Species profile on Plants for a Future Database:
<http://www.pfaf.org/database/plants.php?Grindelia+camporum>

Seed photos from the Rancho Santa Ana Botanic Garden:
<http://www.hazmac.biz/070122/070122GrindeliaCamporum.html>

Fact Sheet from Purdue University Center for New Crops and Plant Products:
<http://www.hort.purdue.edu/newcrop/cropfactsheets/grindelia.htm>

¹ The annual and monthly means were calculated using 30 years of precipitation data (1976-2006) from four weather stations (Cooperative Station ID #'s 43083, 45118, 45119, 45120) located in the western San Joaquin Valley.

Literature

Hoffmann, J. J., and S. P. McLaughlin. 1986. *Grindelia camporum*: potential cash crop for the arid southwest. *Economic Botany* 40: 162-169.

Lair, K., N. Ritter, and A. Howard. 2006. Use of activated charcoal to protect native seeds from herbicides (California). *Ecological Restoration* 24:122-124.

McLaughlin, S. P., and J. D. Linker. 1987. Agronomic studies on gumweed: seed germination, planting density, planting dates, and biomass and resin production. *Field Crops Research* 15: 357-367.

Ravetta, D.A., S.P. McLaughlin, and J.W. O'Leary. 1997. Evaluation of salt tolerance and resin production in coastal and Central Valley accessions of *Grindelia* species (Asteraceae). *Madroño* 44: 74-88.

Zafar, S. I., W. H. Shah, and Z. U. Rehman. 1994. Studies on achene germination, transplantability, salinity tolerance, and cultivation of gumweed (*Grindelia camporum*) in hot and semi-arid conditions. *Field Crops Research* 37: 77-84.

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PHOTOS



G. camporum in cultivation at the native plant nursery.





G. camporum in cultivation at the native plant nursery.



G. camporum seeds. Scale shown is millimeters.



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