

AMSINCKIA VERNICOSA* HOOK. & ARN.*COMMON NAME: FORKED FIDDLENECK, GREEN FIDDLENECK****FAMILY: BORAGINACEAE****GROWTH FORM: ANNUAL HERB****PLANTING**

Ideally, seeds of this species would be planted during October, before the winter monsoonal period of November through March. However, we have planted the species as late as December. Seeds were hand-sown onto mounded planting beds, and a thin layer of soil was then raked over them. The seeds germinate readily without any form of pre-treatment. We have cultivated both *A. vernicosa* var. *vernicosa* and *A. vernicosa* var. *furcata* at the nursery.

PHENOLOGY

When growing in the San Joaquin Valley, *A. vernicosa* germinates as early as mid-January, and will begin flowering in mid-March. Seeds begin to ripen by mid-April and can be collected through May. We have not observed any differences in phenology between the two varieties of *A. vernicosa*.

SEED HARVESTING

When mature and ready for collection, seeds will be shiny and light to dark brown in color with a mottled appearance. Seeds (fruits) are nutlets and mature from the bottom of the inflorescence upward. Therefore, seeds located at the bottom of the inflorescence will be mature and ready for collection while seeds at the top of the inflorescence are still immature. Seed collection on multiple dates would be ideal, to collect both early and late-maturing seed. If one waits for the last of the seeds to mature, many of the seeds at the bottom of the inflorescence will have already dropped. Plants typically have multiple inflorescences that will contain seeds at varying stages of maturity. We would selectively harvest inflorescences with mature seeds by clipping them off the plants. When collecting plants by hand, gloves are necessary to protect skin from the plants' sharp, bristly hairs. We would transport the harvested plant material to a warehouse and spread it out on tarpaulins to air dry, before seed processing. We would set up a few electric fans to

facilitate drying and turn the plant material at least once a day.

SEED PROCESSING METHODS

Using a hammer mill, raw plant material is reduced into a coarse but uniform mixture of seeds and associated chaff (e.g., pieces of stems, leaves, floral structures). Seeds can then be separated from chaff using either a Clipper Office Tester or Clipper Eclipse (both made by the A.T. Ferrell Company). An air separator (Seed Tech Systems, LLC.) can be used to remove additional lightweight chaff. For relatively small seed lots or in the absence of the equipment mentioned, plant material can be broken up by rubbing it over a screen or sieve. Wire mesh sieves with various screen sizes can then be used to separate seeds from chaff.

Seeds per gram (*A. var. vernicosa*) = 158¹

Seeds per gram (*A. var. furcata*) = 406²

Based on the above measurements, seeds of *A. vernicosa* var. *vernicosa* were on average more than twice as large as seeds of *A. vernicosa* var. *furcata*. However, we can't be certain that this difference in seed size would be consistent over different years. It is possible that water received from a single sprinkler irrigation event could have contributed to the larger seed size of the nursery-grown *A. vernicosa* var. *vernicosa* plants.

CULTIVATION OVERVIEW

A. vernicosa was sown in the nursery for four consecutive years and we were able to collect seed during three of the years. During the 2006-07 growing season, which was characterized by below average precipitation, only a few individuals survived to maturity and a seed harvest was not made. Due to its bristly nature, this species is not susceptible to browsing by herbivores. We have not observed any differences in growth requirements or ease of cultivation for the two varieties of *A. vernicosa*.

With the exception of one dry growing season, *A. vernicosa* performed well at the nursery; it germinated readily, grew vigorously, and reliably produced seed. However, weed control was an important factor in our success with cultivating *A. vernicosa*. The dominant weed species at the nursery germinate so densely and grow so aggressively that in the absence of weed control, they would have significantly hindered the growth of the planted natives. The use of irrigation in response to seasonally low rainfall was also a contributing factor in our success with cultivating *A. vernicosa*.

¹ This figure (n = 5; standard deviation = 5) is derived from a seed lot that was harvested from the native plant nursery in 2008.

² This figure (n = 5; standard deviation = 5) is derived from a seed lot harvested in 2008 from a wild population.

**ADDITIONAL INFORMATION ABOUT *AMSINCKIA*
VERNICOSA:**

Internet Resources

California Native Plant Society's Inventory of Rare and Endangered Plants:
http://northcoastcnps.org/cgi-bin/inv/inventory.cgi/Go?_id=amsinckia_vernicosa_var_furcata&sort=DEFAULT&search=amsinckia%20vernica

Literature

- Ray, P.M. and H.F. Chisaki. 1957. Studies on *Amsinckia*. I. A Synopsis of the Genus, with a Study of Heterostyly in it. *American Journal of Botany* 44: 529-536.
- Ray, P.M. and H.F. Chisaki. 1957. Studies on *Amsinckia*. II. Relationships Among the Primitive Species. *American Journal of Botany* 44: 537-544.
- Ray, P.M. and H.F. Chisaki. 1957. Studies on *Amsinckia*. III. Aneuploid Diversification in the Muricatae. *American Journal of Botany* 44: 545-554.

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PHOTOS





A. vernicosa var. *furcata* seeds. Scale shown is millimeters.



A. vernicosa var. *vernicosa* seeds. Scale shown is millimeters.



Seeds of both *A. vernicosa* varieties. *A. vernicosa* var. *furcata* seeds are on the left, *A. vernicosa* var. *vernicosa* seeds are on the right. Scale shown is millimeters.