

***MONOLOPIA STRICTA* CRUM****COMMON NAME: CRUM'S MONOLOPIA****FAMILY: ASTERACEAE****GROWTH FORM: ANNUAL HERB***M. stricta* at the native plant nursery during March 2006.**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.

**PHENOLOGY**

When growing in the San Joaquin Valley, *M. stricta* germinates as early as mid-January, and will begin flowering during March. Seeds can be collected throughout the month of April and sometimes during early May.

**SEED HARVESTING**

When seeds are mature and ready for collection, they will be clearly displayed on plants, in a cup-like structure that is known as the involucre. Mature seeds are retained on plants for at least one week, though rain or wind could facilitate early dispersal. If only a portion of the seeds on a plant have matured, we gently shake or rub the seeds off plants into a collecting bag or envelope. If all of the seeds on a plant have matured, we simply collect the whole plant. It is ideal to minimize the amount of soil that is collected along with the plants; soil particles that are of a similar size and weight as the seeds can be very difficult to remove during seed processing. We would transport the harvested plant material to a warehouse and spread it out on tarpaulins to air dry, before seed processing.

**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 = 1857<sup>1</sup>

**CULTIVATION OVERVIEW**

*M. stricta* was sown in the nursery for six consecutive years and we were able to harvest seed during four of the years. During the 2006-07 growing season, when total precipitation received, 7.1 cm (2.8 in), was approximately one-third of the 30-year annual mean, *M. stricta* seeds planted in the nursery did not germinate at all.

*M. stricta* is highly susceptible to browsing by jackrabbits and desert cottontails, particularly in years with minimal winter and spring rainfall, when plant growth at and around the nursery is reduced. If plants are not protected from herbivorous wildlife, the potential for seed harvest will be reduced. During one growing season, we applied a rabbit repellent product around the plants, but it was not effective in preventing herbivory. During another growing season, we planted the species within a fenced herbivore enclosure, thus protecting the plants from browsing. Though building an enclosure provided a solution for a relatively small population of nursery-grown plants, this approach would not likely be practical for a large seed increase field. It would also not likely be feasible to protect *M. stricta* from herbivory if the species were to be seeded at a restoration site.

With the exception of one dry growing season and problems with herbivory, *M. stricta* performed well at the nursery (i.e., the seeds germinated readily and when plants escaped browsing, they were robust and reliably produced seed). However, weed control was an important factor in our success with cultivating *M. stricta*. 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 *M. stricta*.

**PREPARED BY**

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**PHOTOS**

<sup>1</sup> This figure (n = 5; standard deviation = 79) is derived from a seed lot harvested in 2008 from a wild population.



*M. stricta* at the native plant nursery during February 2006.



*M. stricta* in cultivation at the native plant nursery during April 2006. *Phacelia ciliata* (Great Valley phacelia) is pictured on the left; *Phacelia tanacetifolia* (tansy-leaved phacelia) is pictured on the right.

*M. stricta* at the native plant nursery during March 2009.



*M. stricta* at an area of remnant native habitat near Tranquillity, Fresno County. *Atriplex spinifera* (spiny saltbush) is also pictured.



*M. stricta* at the native plant nursery during March 2009.



*M. stricta* seeds. Scale shown is millimeters.\