MALACOTHRIX COULTERI HARV. & A. GRAY

COMMON NAME: SNAKE'S HEAD
FAMILY: ASTERACEAE
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.

PHENOLOGY

When growing in the San Joaquin Valley, *M. coulteri* typically germinates during January or February and begins flowering by mid-March. Fruits will begin to mature by the end of March, and peak seed collection time is from mid-April to early May.

SEED HARVESTING

Seeds are ready for collection when they are 'fluffy' in appearance (due to an attached pappus), and are easily released from the receptacle. Seeds become dispersed almost immediately after they mature, particularly under windy conditions. Seeds mature continuously over a period of several weeks, so seed collection on multiple dates is ideal. To collect seeds, we would: 1) shake or hand strip them into a collecting bag or envelope; or 2) vacuum them from plants using a shop vacuum and gas-powered generator.

SEED PROCESSING METHODS

If seeds are collected by hand or with a vacuum, very little seed processing will be required. If needed, an air separator (also known as a winnower) can be used to separate seeds from chaff (e.g., pieces of stems, leaves, floral structures). The seeds will likely be more lightweight than the chaff and therefore a "reverse winnowing" process can be used. This method works well for wind-dispersed seeds of the family Asteraceae.

For this species, a screen or sieve is not very effective for separating seeds from chaff. The presence of an attached pappus that is wider in diameter than the seed will cause the seed to lodge in a screen, rather than passing through. If a screen is selected to accommodate the diameter of the pappus, the perforations in the screen will be so large that a significant amount of chaff will pass through the screen along with the seed.

CULTIVATION OVERVIEW

M. coulteri was sown in the nursery for six years, and we were able to collect seed during three of the years. It can be difficult to effectively collect seeds, due to the continuous maturation of the seeds over a several week period and the rapid dispersal of mature seeds.

M. coulteri 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. We have effectively protected other species from browsing by planting them within a fenced herbivore exclosure. Though building an exclosure 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. coulteri* from herbivory if the species were to be seeded at a restoration site.

With the exception of its susceptibility to herbivory, *M. coulteri* 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. coulteri*. 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. coulteri.*

A horticultural entry included in the Jepson Manual recommends that *M. coulteri* requires excellent drainage, and does best in full or nearly full sun (Hickman, 1993). The soils at the nursery are Tranquillity clay with poor drainage, but *M. coulteri* individuals growing at the nursery appeared healthy.

REFERENCES

Hickman, J. C. (editor). 1993. The Jepson manual: higher plants of California. University of California Press, Berkeley.

ADDITIONAL INFORMATION ABOUT MALACOTHRIX COULTERI:

Internet Resources

Species profile from the Ladybird Johnson Wildflower Center at the University of Texas: http://www.wildflower.org/plants/result.php?id_plant=MACO3

Seed photos from the Rancho Santa Ana Botanic Garden: http://www.hazmac.biz/050606/050606MalacothrixCoulteri.html

Literature

Brooks, M.L. 2000. Competition between alien annual grasses and native annual plants in the Mojave Desert. American Midland Naturalist 144: 92-108.

Williams, E.W. 1957. The genus *Malacothrix* (Compositae). American Midland Naturalist 58: 494-512.

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PHOTOS

M. coulteri bearing mature seeds. *Daucus pusillus* (American wild carrot) is also pictured.

M. coulteri seeds. Scale shown is millimeters.