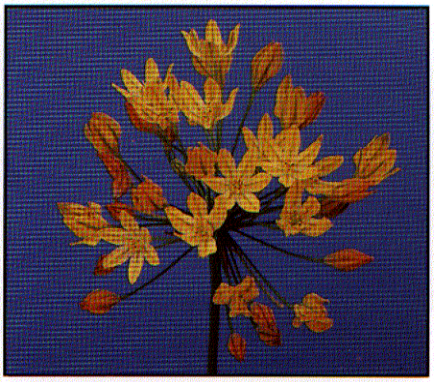
Triteleia laxa

T. hyacinthini



T. ixioides

A group of bulbous wildflowers native to the state, brodiaea are seldom seen in California gardens, largely because they are difficult to propagate. Tissue culture and seed propagation may be solutions and discourage plundering of native wild stands.

Propagating a wildflower for garden use

Anton M. Kofranek

The brodiaea group of bulbous plants, native to California, are seldom seen in gardens although they appear to be excellent candidates for naturalization there. There are three genera in the group, with several species in each genus; the genera are *Brodiaea*, *Dichelostemma*, and *Triteleia*. The species vary in their growth habits, flower color, and season of bloom. The blooming season is also controlled by geographical location; those in the valleys bloom before those in the cool high foothills. There also appear to be ecotypes that vary within each species at different locations

Tissue cultivars

Experimentation with this group offers a challenge. It is difficult not to plunder a region of its wildflower heritage for the sake of obtaining enough bulbs to conduct the experiment. In one of our studies, we are attempting to find ways to propagate bulbs (corms) in massive numbers. We are presently experimenting with tissue cultures from various plant organs to this end. We have had some success by taking a portion of stem just below the inflorescence as the tissue to be cultured. This portion can be taken when the flower is in full bloom and can be sterilized easily before the tissue is placed on a sterile medium.

Corms are more likely candidates for tissue culture, because cells divide readily in corm tissue. They have two disadvantages, however: plants have to be dug to obtain the corms, and the corms are not easy to surface-sterilize. Nevertheless, propagation by this means may eventually lead to the production of large numbers of desirable species that may find their way into California nurseries and gardens. It is hoped that this will discourage the plunder of native wild stands.

More efficient propagation

A more common method of increasing species is by seed germination and cormel production. We conducted experiments on seed germination of *Brodiaea congesta* and on the increase of cormel production of *Triteleia laxa*.

Seed of *B. congesta* were sown in moist soil or stored dry at 33° and 45°F for 4 or 10 weeks. Almost 100 percent germinated after 10 weeks at 45°F, but germination was only 55 percent at 33°F. Seeds held in moist soil at 45°F for 4 weeks had only 70 percent sprouting. The sprouting of those kept dry at 45° was only 30 percent (control). Seeds of other species were gathered in the late spring of 1986, and these will be used in further germination studies.

We noticed that, in the wild, corms dug deep in the soil usually had few cormels and were small. We planted corms of equal size at depths of 0, 2, 4, 6, and 8 inches to determine what effect planting depth has on cormel propagation. Initial experiments showed that planting at a 4-inch depth resulted in the largest cormels (7.2 grams per cormel), and surface planting resulted in the smallest (2.37 grams per cormel).

These experiments are all part of propagation studies to find more efficient ways of producing corms and cormels.

A grant by the Elvenia J. Slosson Endowment made it possible to design an experiment to simulate garden conditions. Four raised beds were built in 1985 to house corms for several years in sandy or clay soils. The purpose of this experiment is to determine which soils are better for naturalization of several species and whether constant summer watering might be harmful. Two beds, clay and sand, will lie fallow all summer, and two other beds, clay and sand, will have a crop of summer annuals planted after the brodiaea become dormant. Equal quantities of corms have been planted at given distances. They will be dug up after the second summer to determine how the various species fared: did they increase in size, did they multiply in number, or did they succumb to summer irrigations? The species planted in October 1985 were *Triteleia laxa*, *T. hyacinthini*, *T. ixioides*, *T. pulchella*, *T. coronaria*, and *Dichelostemma ida-maia* Other species will be planted again in following seasons as they became available. We are presently searching for additional species for the trial.

The author and an assistant check a bed of brodiaea established at UC Davis to find more efficient ways of propagating the wildflower species for use in landscaping.

We are also working on the keeping life of the species as they bloom, to determine the best way to handle the cut flowers for better vase life.

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Rapid retrieval of home grounds information

County farm advisors get many calls from urban and suburban clients asking for information on gardening and other subjects. Many of the questions are outside the expertise of the advisor or master gardener answering the call, however, requiring referral to another person or a "call-back."

Working with Slosson Fund support, Fresno County Farm Advisor Pamela M. Elam-Wenzel set out to develop a system by which any advisor could provide current, concise information quickly, preferably while still on the phone with the client.

The result of her efforts was a "Horto Flip File" that allows for rapid retrieval of horticultural facts and management techniques. Compiled from University of California publications and other appropriate references, and indexed for easy access, the color-coded 5x8 cards fit into a small metal desk file that is easily expanded or corrected to accommodate new data. Subjects included in the file are berries, subtropicals, grapes, vegetables, trees, shrubs and flowers, weed control, and appropriate subtopics. Cards are illustrated to show what a disease or insect problem looks like.

The Horto Flip File makes it possible for one farm advisor to handle all public service calls.

More than 50 counties have requested a copy of the Horto Flip File. Elam-Wenzel is now investigating putting the information and indexing system on a computer so that more data c ı be recorded and easily retrieved.