

PROBLEM

Some plants have contractile roots that pull the bulb down into the soil. *Oxalis* (sour sob) does this, but the published work is on American species and it would be of interest to know how the local weed species (*Oxalis pes caprae*) behaves before designing eradication programmes.

INFORMATION

1. *Oxalis* does not grow like the text book daffodil. Make sure you understand its production of an underground shoot with feeder roots and the position of the contractile root.
2. An interesting point is that in the American study of *Oxalis cernua* the contractile root pulled bulbs down into the soil when they were too shallow and grew sideways to distribute new bulbs horizontally if bulbs were deep in soil. By planting bulbs at different depths (1 cm – 20 cm), you could examine this for *O. pes caprae* the weed species in WA.
3. If you want to measure the rate of movement you need to be able to examine some bulbs without disturbing them. Use a deep box of soil with a sheet of glass against one side or cut large plastic pots in half and glue them to sheets of glass. Fill with soil and plant bulbs at required depth next to the glass. Cover glass with black plastic.
4. Examine bulbs at intervals of about three days. When does the shoot emerge? When does the contractile root develop? When does it contract? At what angle does it form?
5. Vegetative reproduction appears to be less vigorous in the shade than in the full sun. Can you show this experimentally?
6. Other native or introduced weeds that might be worth examining include Guildford grass or belladonna lilies for which you might start with both seeds and bulbs. Destroy weeds at the end of your experiment.

DESIGN OF EXPERIMENT

1. Are you going to use bulbs of one particular size or compare burial rate/final depth of bulbs of different size classes?
2. How does the final burial depth and switch over from vertical to horizontal contractile roots compare with depth of bulbs in the field?

REFERENCES

- Esau, K. (1977) *Anatomy of Seed Plants* (2nd ed.) (Wiley : New York). Chp. 14)
- Leopold, C.A. and P.E. Kriedemann (1975). *Plant Growth and Development* 2nd Ed. (McGraw Hill : New York) (pg. 214 on contractile roots is not too heavy).
- Peirce, J.R. (1973). Sour sob (*Oxalis pes caprae* L.) in Western Australia. Its life history, distribution, morphological variation and weed potential. Department of Agriculture, W.A. Technical Bulletin No. 20.

