

11. The seeds of life

Discussion topics and information

Where does seed come from?

Seed comes from the ripe fruit of a plant, eg the stone of a peach or the pips in a watermelon. In Eucalypts, a fine, reddish-coloured seed is released from the fruit (gum nut) after it has ripened and turned brown. In Acacias, the seed is usually black and a lot larger, released from a seed pod similar to a pea pod.

In our natural areas, the seed released into the environment allows the regeneration of the bush. Some seed grows soon after being dropped, whilst other species may stay in the soil for many years awaiting the right set of conditions for germination. Revegetation is an important component of environmental management but before this can occur, seed must first be collected and propagated to provide us with the plants needed for revegetation.

What is meant by 'local provenance'?

Labelling packets of collected seed with the location of where seed has come from, can be referred to as labelling the provenance, or origin of that seed. All revegetation projects should have a focus on using seed collected as close as possible to where the revegetation is being undertaken. This is commonly referred to as local provenance. Using seed of 'local provenance' ensures that the seed collected will hold the genetic material of a plant which is specifically adapted and successful to local conditions, eg, soil, rainfall and temperature. To ensure our revegetation is successful it is in our best interests to use local seeds to ensure healthy, well adapted plant stock.

Which factors determine how fertile seed will be?

The viability of seed will be affected by several environmental factors, one of which is a lack of effective pollination. Depending on the plant, low

seed fertility can be an indication of insufficient insect or bird pollination, to ensure a good crop of viable seed in the future. In a bushland area, low seed viability can result in less bush regeneration and fewer resources for future pollinators. Further pollinator decline is the result, leading to fewer viable seeds being produced the following year. Both plant and pollinator start to seriously diminish and natural ecosystem function is lost. This is often the case after a major disturbance which removes a large proportion of either the plant or the pollinator, such as a bushfire, disease, introduced predator or land clearance. The plant and the pollinator cannot live exclusively of one another!

Lesson ideas

- Pick some of the fruits from a *Eucalyptus* or the pods from an *Acacia* and lay them out for observation on some white paper in a sunny spot in the classroom. As they dry out, the fruit will open and the seeds will spill onto the paper. Give the fruits a little shake after they are dry and the seed will easily fall out. This drying process will take a couple of weeks. This will follow well from activity 9 as it represents the final stage in a plant's flowering cycle.
- Collect the seed into jars or zip-lock bags and label the species of plant and the provenance of the seed. Ensure students understand the concept of local provenance and its importance for revegetation projects.
- Perform a seed viability experiment using collected native seed or obtain some seed from OCWMB. Packets of any commercial seed will suffice for this activity.
- Select a few species and plant 20 seeds of each in a propagation tray and label accordingly. Place in a nursery area and keep moist.
- Record germination by counting the number of seedlings to emerge over about 10 weeks and calculate, as a percentage, the total number planted.

Lesson ideas, cont

- The following can provide a basic guide for rating seed viability:
 - 0-20% is poor
 - 21% - 40% is fair
 - 41% - 60% is good
 - 61% - 80% is very good
 - 81% - 100% is excellent
- From the results of this seed viability test, students will be able to calculate the number of seeds plant per pot or tube to ensure germination.
- If using the seed of indigenous plants, as an extension to this activity, older/advanced students can then do some research into the plants tested for the seed viability, and find out about the major pollinators of these plants. Alternatively they may visit the area from where the seed was taken from and look for factors which may positively or negatively impact germination success. Factors may include the level of pollinator disturbance from humans visiting the area, eg birds deterred by humans walking dogs; adjacent landholders using insecticide; trees too sparse and far apart to allow wind pollination.

Recommended resources

Bonney Neville (2003), *What Seed is That?* Finsbury Press

Dashorst and Jessop (1990), *Plants of the Adelaide Plains and Hills*. Botanic Gardens of Adelaide and State Herbarium

DEH (2002), *Common Wildflowers of the Mount Lofty Ranges*. DEH

Nicolle Dean (1997), *The Eucalypts of South Australia*. Lane Print Group

Prescott Ann (1988), *It's Blue with Five Petals*. Lutheran Publishing House

<http://www.flora.sa.gov.au/factsheets.html>
Excellent fact sheets on SA's Acacia species. Navigate site to learn about the distribution of individual species.

<http://www.anbg.gov.au>
Website of the Australian National Botanical Gardens in Canberra with lots of excellent information on a wide range of Australian native plants.