

Seed collecting in the Goldfields of Western Australia

A good supply of seed is a requirement of any revegetation programme and this booklet outlines various techniques for collecting seed in the Goldfields of Western Australia for use in nursery propagation and direct seeding.

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Why collect seed locally?

Locally collected seed has many advantages over seed from distant sources. Whether you collect it yourself or pay someone to collect it for you, it is usually best to obtain seed from an area near where the plants will be grown.

Each different area has its own combination of climate, soils and vegetation. Plants already growing in the area have adapted to local conditions and should perform better than those from another area, e.g. Saltbush growing in the Goldfields where annual rainfall is 250mm will be more drought tolerant than the same species growing in the Wheatbelt where rainfall is 400mm.

The aim of most revegetation programmes in the Goldfields is to establish a range of vegetation which blends with the surrounding natural environment.

By collecting seed from plants growing nearby, you will be establishing a similar range of species in the rehabilitated area. Purchasing seed from commercial suppliers can be expensive, and some savings can be made by collecting your own.

Identifying plants

A good reference book is essential to identify the plants you are collecting from. There are many of these available, but two of particular relevance to the Goldfields are:

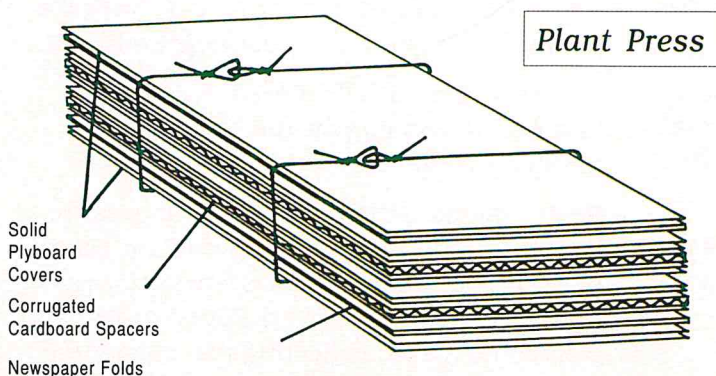
- *Arid Shrubland Plants of Western Australia* by A.A. Mitchell & D.G. Wilcox, and,
- *Field Guide to Eucalypts Vol 2, South-western and Southern Australia*, by M.I.H. Brooker and D.A. Kleinig.

When you are unsure of the identity of a plant, collect at least two specimens, keeping one for your own reference and using the other to get the plant identified.

Your reference specimen should be pressed and dried and mounted on a sheet of card. Specimens can be identified at the Western Australian Herbarium in South Perth, or visit the Goldfields Reference Herbarium in Kalgoorlie. (Contact the GLRG.)

Your specimens should ideally show the leaves, branches, flowers and fruits of the plant. They can be pressed between two sheets of absorbant paper (eg newspaper) under some heavy books or in a plant press.

A plant press can easily be made from two pieces of plywood, held together with straps or rope. Cardboard spacers allow air to circulate and assist drying.





Acacia seed pods

What do you collect?

Seeds come in a variety of forms depending on the type of plant. The following is a guide for the plants most commonly used in Goldfields rehabilitation programmes:

Saltbushes - The saltbushes (*Atriplex* species) bear papery fruits towards the end of the branches. These fruits, which contain the seeds, become dry and straw coloured when they are ripe. One very important point to note with saltbushes is that they have male and female bushes, and only the females have seeds.

Bluebushes - The bluebushes and sagobush (*Maireana*) also have fruits which become dry and papery when ripe. Colours range from golden to brown and black.

Eucalypts - Gumnuts should be collected when they become dry and woody, but before they open and shed a mixture of seed and chaff. Trees may retain their seeds for a number of seasons, building up a large store.

Wattles and Cassias - The wattles (*Acacia*) and cassias (*Senna*) bear their seeds in pods which dry and often split open when mature, releasing hard, black seeds. It is best to pick these just before the pods open.

These are some of the more common forms of seeds, but keep an eye out for others as well. For example, Sheoaks (*Casuarina*) have woody cones, *Hakeas* have woody nuts, *Pittosporum* has orange fleshy fruit, and

Everlastings (*Helipterum*) and Mulla Mullas (*Ptilotus*) hold their seeds in the flowers.

Seed should be collected from a number of healthy plants. Seeds on isolated plants may be self pollinated, which often results in low quality seed. Collecting from several plants increases the genetic diversity of the seeds. Aim to collect from plants heavily laden in seed as this makes for efficient collection.

How do you collect it?

Techniques for collecting seed vary from very simple hand collection to the use of commercial machinery, depending on the quantity required. There is also plenty of scope for trying out your own inventive ideas. Basic equipment would include:

- paper, hessian or cloth bags in a variety of sizes (not plastic - it makes fresh seed sweat);
- ground sheet;
- buckets;
- gloves;
- notebook and pen;
- long handled secateurs;
- long handled pruners.

A collecting bag can be made by sewing a wire hoop into the opening of a hessian bag. The opening should be large enough to accommodate whole branches of shrubs.

Seed from most saltbushes and bluebushes can be stripped from the plants by hand or shaken into buckets or bags. Alternatively, place a groundsheet under the bush and shake or beat the branches. Take care not to damage the plant.

Vacuum harvesters can be used to collect large quantities of dry seed which has already fallen, but this will also collect leaves, weed seeds and other rubbish.

Bunches of pods or nuts can be snipped off with secateurs, or long handled pruners for taller trees. Use caution if you are climbing trees. Small branches may be cut, but take care to do the minimum damage to the plant.

The best time to collect seed is extremely variable, depending on the plant species, locality and the seasons.

Keep a watch on what is happening in the bush around you (go for a picnic!) or contact other Environmental Officers in your area (eg. the GLRG). In areas destined to be cleared do a seed collecting run before and after the timber is felled.

Seed viability

Seed viability is a measure of what percentage of the seed will germinate. Not all the seed you collect will germinate - in some cases there may be no seed inside the fruits, or the seed may be dead or too old.

Some species, for example *Acacia*, produce 'hard' seeds which are dormant until they receive some trigger (eg. scarifying or hot water treatment). These seeds will appear to be dead, until the dormancy is broken.

Knowing the viability of your seed is very important when deciding on seeding rates. If your seed is only 20% viable instead of 40% you would need to double the seeding rate.

When you purchase seed you should request a statement on its viability. This should also say when the test was conducted, as viability generally declines as the seed gets older.

A rough germination test can be conducted quite simply. Place 50 or 100 seeds on a piece of absorbant paper in a flat dish. Put this in a warm, well lit area; keep the paper moist and count the number of seeds which germinate over two or three weeks.

Cleaning and storing seed

When you collect seed, it usually contains a certain amount of unwanted material, including nuts, pods, leaves, twigs, insects and 'foreign' seeds. Some, or all of this extra material will need to be removed before the seed is stored.

There are many methods of cleaning seed - sieving, winnowing or simply picking out the larger twigs and sticks. Cleaning becomes more important when you use mechanical seeders, as sticks and debris can cause blockages in the equipment.

Hard nuts such as *Eucalyptus*, *Casuarina* or *Hakea* can be left to dry and shed their seeds in open plastic trays in a warm, dry area. Any remaining seed can then be shaken out and the empty nuts removed.

Acacia pods can be broken open when dry and the seeds rubbed out. A useful piece of equipment is a piece of ribbed, rubber car mat attached to a wooden block and the rest of the mat laid on a table.

The pods are rubbed between the block and

the mat, crushing the pods and releasing the seeds. The pieces of pod can then be removed by sieving. Some of the vacuum harvesters will also break open the pods, or a thresher can be used for larger quantities.

The conditions of storage will have a large effect on the length of time it will remain viable. The area should be cool, dry, and free from insects and mice. Plastic rubbish bins or buckets with lids make good storage containers for larger quantities of seed.

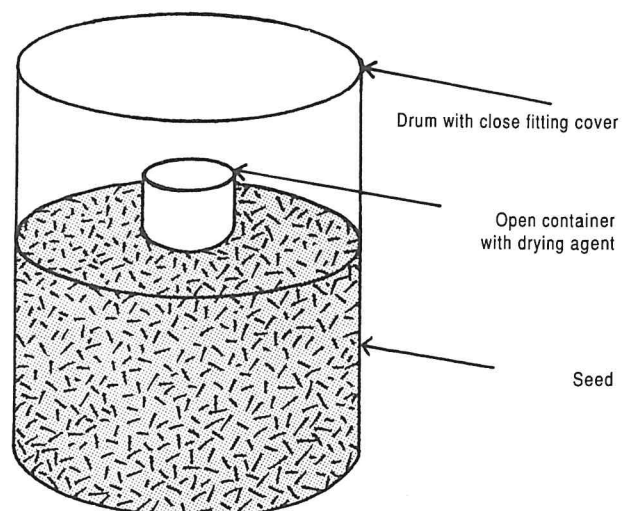
Smaller quantities can be stored in paper or cloth bags in an airconditioned office. All seed must be dry before storing. Some types of seeds will remain viable for a number of years (eg. *Acacia*) while others will not last more than 12 months even with the best of storage conditions (eg. some *Maireana*).

Seeds such as Saltbushes and Bluebushes will need to be carefully dried before storing. Do this by spreading them out on the floor in a dry shed, and turning them every day. Excess leaves and twigs should be removed to aid drying.

Containers of drying agents, such as calcium chloride can be used in the storage containers to keep the seeds dry.

Insects and mice can be a problem with storing seed and they will need to be controlled. Dusting with an insecticide powder is a good idea. Ensure the seeds are dry before storing to reduce the likelihood of fungal attack. A fungicide/insecticide may still be required for some seeds.

Storing seed with a drying agent



Licences

A licence from the Department of Conservation and Land Management (CALM) is required before collecting native seed. There are three types of licences which differ in where you are allowed to pick and whether you can sell the seed.

1. Scientific and other prescribed purposes - for collection from Crown land where the seed is not for sale. Crown land includes the pastoral leases in the Goldfields and reserves such as water, rail or road reserves. This is the type of licence required by most environmental officers or other people employed on the minesite.
2. Commercial purposes - for collection from crown land where the seed is to be sold. This licence is the type needed by consultants or contract collectors.
3. Commercial producers - for collection from private land for sale.

A licence is only issued to an individual, which means that every person collecting needs their own, appropriate, licence.

Each licence specifically excludes the taking of material from rare or endangered species, unless permission is granted by the Minister for the Environment.

It is also necessary to obtain the permission of the owner or occupier of the land before collection, for example, the leaseholder of pastoral property or the Water Authority for water reserves.

It is the policy of Westrail and the Main Roads Department not to allow picking in their reserves. Collection from national parks and nature reserves is generally not allowed, unless for approved scientific purposes.

Applications for licences can be made at CALM offices. For more information, contact

**Administrative Officer, Flora,
Department of CALM
Telephone: (09) 367 0422.**

Other collectors

Seed collection can be a time consuming exercise, so it may pay to get other people to collect for you. Make use of other employees on site if they are having a quiet time.

Many schools, service clubs or community groups are interested in seed collecting as a fund raising exercise. Local aboriginal and conservation groups may also be interested in contract collection.

Seed records

It is a good idea to keep a record of each seed lot which you collect. The information recorded should include:

- species
- where it was collected
- when collected
- site characteristics eg. soil type, associated species
- where the seed was used
- amount of seed remaining in stock
- any other special comments

This information will be very useful in interpreting differences in planting results, and selecting species for particular sites.



This publication was produced by the **Goldfields Land Rehabilitation Group.**

The aims of the GLRG are:

1. to provide a source of expertise and resources for land rehabilitation in the Goldfields of Western Australia;
2. to provide information and education to the public on revegetation and environmental management in the Goldfields; and
3. to identify areas where rehabilitation knowledge is limited and research will be beneficial.

The GLRG can be contacted by writing to:

**Goldfields Land
Rehabilitation Group (GLRG),
PO Box 2412,
Boulder WA 6432.**

Publications in this series are:

- Rehabilitation of Mine Waste Dumps
- Managing Hypersaline Water
- Topsoil Handling and Management
- Seed Collecting.