



## Glossary

Accredited- Free from Phytophthora cinnamomi as per Department of Agriculture guidelines and testing.

Autumn feed gap- at the end of summer, there is very little dry pasture feed in the paddocks for the farmers are planting special fodder reserves to provide fresh feed for this time of the year while also making use of otherwise for this time of year while also making use of otherwise unproductive land, such as salt affected or deep sand areas.

Automatic watering system- see 'watering system'

Catchment- an area of land from which rainfall flows into one river system.

Catchment group- a group of landholders who live in a catchment area and are working together to rectify their land degradation problems.

Chaff- Material which is mixed in with the seeds in the pods of many species.

Dieback- see Phytophthora cinnamoni

Dryacide- amorphous silica which, when mixed in with seeds in storage, will dehydrate any insects which may be present. Due to its toxicity it should be handled by an adult and care must be taken to avoid breathing the dust.

Enclosure- a fenced in area to protect you shadehouse and seedlings from vandals. Approximately 9m long x 3.66m wide depending on how many seedlings your school is intending to grow. It is advisable to make the enclosure longer rather than wider as 3.66m is the width of the shadecloth required to shade the seedlings during the summer months. Also, construct your enclosure and shade house to allow for further expansion. It is essential that the ground in the closure is paved or covered with black plastic and blue metal- bare ground or grass is not acceptable. Don't forget a gate!

Erosion- see Soil erosion

Equipment- this includes the enclosure, automatic watering system with timer, benches, pots, wire racks for shadehouse Option A, appropriate potting mix, seed shakers, hacksaw blades with all the sharp edges ground off, watering can with Hortico sprinkler bar, facilities to wash and sterilize used pots, facility to wash hands and hacksaw blades, hose with a gentle rose.

Remember that the shadehouse, benches, enclosure and watering system must be in place and seeds ordered by November. Potting mix, pots and racks must be ordered through the MT office by the 30<sup>th</sup> of September. All used pots must be washed and sterilised.



Fodder- Many farmers are now planting fodder reserves to help bridge the autumn feed-gap. This could include the planting of tagasaste on deep sands to stabilise an area prone to wind erosion or the planting salt-tolerant shrubs and grasses on salt affected sites. There is a wide range of fodder available from trees and shrubs and research continues in this area.

Fodder reserve- see fodder

Fungicide- fungicides are available under many trade names. At the time of writing, Mott is using Fongarid for the initial treatment of the newly sown seeds. Some fungicides kill any pathogens which may be in the potting mix to prevent damping off, others will treat Fungi on the leaves and stems. They are best handled by an adult wearing rubber gloves and a mask and with regard for the safety instructions on the pack. At the time of printing, research into fungal control with native seedlings is proceeding. We will inform all MTP participants of our findings as soon as they come to hand.

Fungal disease- can occur in many forms, it is best to keep an eye out for any diseases and treat them as they occur using recommended products. The main causes of fungal disease is watering too late in the day once the weather turns cooler, keeping the seedlings too damp, Shaded or crowded and allowing seedlings to dry out.

Germination- is when you see the first signs of life in your pots. It is vital not to let the pot's surfaces dry out in this time. The time between seedling and germination varies from species to species. A general guide is given in the text under various genres, i.e. Acacia, Eucalyptus...

Ground ripping- see ripping

Groundwater salinity- see salt

Groundwater- water moving through and stored in subsurface soil layers.

Groundwater table- (see also Salinity Control) originally, with the native vegetation cover, the groundwater table was kept down below the earth's surface due to transpiration (the process whereby trees take up moisture and nutrients from the soil, acting as giant water pumps).

After clearing, the groundwater was not being taken up by vegetation, so the groundwater table began to rise, bringing stored salts to the surface in solution. The moisture evaporated, leaving salts on the soil surface.

Hardening off- Take your shade cloth off on a cool day in March. This helps to get the seedlings accustomed to strong sunlight and shade cloth also helps prevent some fungal diseases which can occur in cool moist conditions.

Hortico sprinkler bar- Delivers a fine, gentle sprinkler of water. It is recommended for use after seed has been sown to drench them with fungicide.



Hygiene- it is vital to adopt good hygiene practises, which are designed to reduce and eliminate the spread of dieback (*Phytophthora cinnamon*). Basic hygiene measure are always:

- (a) Washing hands before handling potting mix, tools and seedlings.
- (b) Washing and sterilising pots and racks before reuse.
- (c) Using only accredited (pasteurized and/or fumigated) potting mix.
- (d) Never placing seedlings, hose roses or any propagation equipment on the ground.

LCD- A Land Conservation District is an area represented by a group of people, mostly farmers, who want to do something about the land degradation in their area, not necessarily belonging to the same catchment. There are over 100 in Western Australia alone.

LCDC- Land Conservation District Committee. A committee with representatives from the district working together towards solving their common problems. Members may be anyone from the community including farmers, local councillors, government officials and local business people.

Micro sprays- these sprayers deliver tiny droplets of water to the seedlings. A fine mist is easily blown away by the winds, and large droplets of water tend to splash seeds and potting mix out of the pots.

Middle storey species- usually up to 4 or 5 metres tall and as bushy as possible.

Multipurpose planting- It is advisable to pan your plantings to be as multifunctional as possible. For example, a planting may function as a windbreak and wildlife corridor, while also using water in recharge areas and doubling as timber belts or for Eucalyptus oil production. Plantings should always be to a whole farm and/or catchment plan wherever possible and be implemented along with appropriate bank and laneway designs.

Overseed- putting more seeds in each pot than you will possibly need, it is better to overseed than having to depend on each and every seed germinating- you could end up short on the number of seedlings you require.

Pathogens- disease causing agents e.g. fungus, bacteria, virus.

Planting times- it is best to organise your planting to coincide with the beginning of the winter rains. Our aim is Arbore Day (usually the Friday to West Week in June) but we do realise that it can be difficult to co-ordinate. The main criteria are that the site has been prepared, there has been some rain and plenty of rain still expected.

Pots- We recommend the use of the 50mm square, 125mm deep air pruning pots available through the Men of the Trees if ordered by the 30<sup>th</sup> of September. These pots not only give a good deep root system, but also prevent the seedlings from becoming root bound while in the pots, thus ensuring them a good start in our semi-arid conditions.

Potting mix- Men of the Trees (MOTT) has spent many years developing a suitable potting mix for propagating a wide range of native species. We recommend you use the Mott mix which is



accredited. If problems occur at any time, the uniformity of the mix throughout the Million Trees Project can speed up finding solutions! Cost- \$5 per bag, including appropriate slow release fertiliser. One bag will fill 100 of the pots available through MOTT> Please place orders by the 30<sup>th</sup> of September with MTP office.

Phytophthors cinnamomi- a soil or water-borne fungal disease which attacks the root systems of many species. Commonly known in Western Australia as Jarrah Dieback, because forestry and tourism have spread it throughout our Eucalyptus marginata forests, killing thousands of trees.

Pricking out- transporting seedlings. See the chapter on pricking in this handbook for full instructions.

Productive species- can be anything from fodder plants, to plants whose foliage is used for dyes or floral arrangements. They can be fruit and nut bearing species or species planted for timber or bee forage. There is an endless range of uses for trees and shrubs- sometimes the whole plant must be sacrificed, sometimes parts of the plant can be “harvested” for profit, leaving the plant to produce again the following year. There needs to be more research into the subject, many are taking this on board at the moment. It is essential however, to ensure the species you choose are not only very diverse, but also suit the soil typed and climate conditions of the planting site.

Recharge area- is any elevated area where excess of rainwater enters the subsurface landscape due to over clearing of vegetation. This water is discharged into low-lying areas which can cause groundwater to rise, usually leading to salt problems.

Remnant bush- areas of native bush still remaining after many years of clearing. Areas of remnant bush have usually been grazed over the years and therefore are not always a representation of the original vegetation. Many farmers and LCDCs are now protecting their remaining bush, and very often are replanting understorey species as well as linking up areas of remnants to allow for the movement of wildlife (wildlife corridor).

Ripping-involves pulling a deep wedge through the soil to shatter the subsurface soil, providing the young root system with plenty of fissures to follow, enabling them to find water and take hold. Ripping should be carried out in the summer when the ground is dry. The optimum depth is to one metre. The more depth, the faster the seedlings will grow and the better they will survive. When ripping it is important to avoid bringing the subsoil to the surface. See Preparation.

Saline- high in salt content.

Salt- Every month, an area the size of Rottnest Island becomes too salty to farm. Salt are deposited with the rainfall and are also stored deep in the soil profile due to geological history. There is between 1000 and 2000 tonnes beneath each hectare of land in WA (a hectare is about a football oval).



With the extensive clearing of the native vegetation, the groundwater table began to rise bringing the salt closer to the surface. Evaporation removes the moisture from the soil, leaving behind the salts.

Salt Scald- is where the soil surface has become too saline to support much vegetation. The first signs are the appearance of barley grass which is an indicator of an excess of water. Once the topsoil become very salty, the barley grass gives way to bare patches of ground which can have a fine white crust or be quite black and smelly.

Often certain salt tolerate species will survive if the area is fenced off to protect the seedlings from animals. It is best to delay fencing until the full extent of the problem is known from drilling surveys so the fence will not have to be shifted.

Salinity control- is essentially using up water higher in the landscape to prevent discharge in the lower parts of the landscape.

When planting close to a salty area, it is advisable to install groundwater monitoring bores to check on the salinity of the groundwater before choosing the planting site or species. Usually an area of visible salt will be fenced off; these bores help to find the ideal spot to locate the fence.

Another method is to plant the scalded area with variety of saltbushes and salt tolerant grasses. This gives a vegetative cover providing a mulching effect, which prevents the accumulation of salt in the topsoil.

Saltbush- there is a wide variety of saltbushes which grow on severely salt-affected ground where most other species will not grow. Most of these can also be used as fodder provided there is sufficient fresh water for the animals.

Seeding- Each species will need to be seed by a different date as they all grow at different rates. It will be necessary to sow several species just before the school holidays and some immediately when school starts again. A general guide is given along with the species selection chart. If you are growing species not on our list, please do not hesitate to call the Men of the Trees' Nursery (09) 250 1888 and ask for help.

Seeds-It is vital to know the purpose of the planting so that seeds of the appropriate species can be acquired in plenty of time – remember that quite a few species must be seeded before the summer holidays. For some plantings, such as wildlife corridors, it may suit the rural participant to collect local seeds and pass them on their urban school. In some cases, the urban students may be able to participate in the seed collecting too. Otherwise, it is the responsibility of the group to liaise regarding species required and the acquisition of the seeds. Seeds are not available from Men of the Trees.



Scarify- to break the hard outer coat of some species. This is done by pouring boiling water over the seeds or gently rubbing the seeds with fine sandpaper. NOT ALL SPECIES REQUIRE THIS TREATMENT! Please see the instructions for each species.

Shade cloth- always use 50% grade black shade cloth for propagating native seedlings. The newly seeded pots are placed under the shade cloth (on trestles), and the shade cloth is removed on a cool day in March to harden the seedlings off before planting.

Shade house- It is essential that the shed house is in place by November so that seedlings can take place according to schedule. The shade house should be sited so that there is no shading from any side from November to June. Your local Service Club, Men of the Trees member or the Million Trees Project co-ordinator can give you advice out the positioning if necessary.

Shade cloth should be affixed such that it can be removed in March to enable hardening off of the seedlings.

There are two recommended designs of shade houses, both of which should have an enclosure and an automatic watering system with timer. The following designs are calculated on shade house with the capacity to grow 4000 seedlings. You may like to increase the length of the enclosure and benches to accommodate extra seedlings for sale to raise funds. The enclosure: should be 3.66m wide (the width of the shade cloth) and 9m long, longer if you wish. Cost of a cyclone fence with a gate at one end, approximately \$400,--. The enclosure will also need to be paved with paving slabs or covered with black plastic under blue metal. Cost of paving slabs will be approximately \$116,--, plastic and blue metal will be slightly cheaper. The site works needed to level the area will vary.

Materials for this design consist of 62m of piping, 1 sheet of 5mm x 5mm galvanised mesh, 9mm of 50% shade cloth (more may be required to be fixed on some sides of the enclosure so that the young seedlings do not get an direct 'sunlight'), and enough wire to affix the shade cloth. Approximate cost -\$600.00 Note that this cost does not include assembly.

Shaker-usually a small plastic bottle with several small holes drilled in the lid. The size of the hole will vary according to the size to the seed.

Silica gel- Found in small sachets in pill bottles. Fresh seeds can contain moisture and tend to sweat in a container. The silica gel absorbs the moisture and prevents the seeds going mouldy. The silica must be clearly labelled and stored in glass (NOT plastic) in a cool, dark place.

Soil- potting mix is NOT SOIL. Soil is in the paddock where we plant our seedlings. See soil Types.

Soil erosion- Western Australia is losing thousands of tonnes of topsoil each year to soil erosion. This can be due to wind and/or water. Considering that it can take 1000 years to form 1mm of topsoil, we must take every step possible to halt this erosion process. It is possible to lose up to 1-2cm of topsoil in a single storm!



Soil salinity- see Salt

Soil types- There are many different soil types: sand; loam/sand; sand/loam; sand-clay/loam; sandy-clay/loam; sandy clay; clay; heavy clay. Be sure you have an idea of the soil types you will be planting in before you choose your species. Many species are very versatile, but for example, species adapted to deep sands will usually not thrive in heavy clays.

Sowing- see Seeding.

Sprinklers- ensure that your sprinklers cover the entire area required. It is also vital that the droplets are neither too big nor too small. See 'watering' for further information.

Sterilised- absolutely clean. Pots and instruments can have loose soil brushed or washed off and then be soaked in a solution of one part bleach to nine parts of water, or boiled. There is a pot boiler at the 'Men of the Trees' Nursery which can be used for \$1.—per 1000 pots\_ prior notice must be given, please speak to Nursery Manager on (09) 250 1888.

Larger items like wheelbarrows and trailers must be scrubbed, rinsed and sterilized before use. Potting mix is pasteurised, either by steam or fumigation- both these procedures must be carried out by experts.

Tobacco mosaic virus- a virus which can kill even healthy plants and can spread uncontrollably through a nursery. Therefore it is very important to keep tobacco products away from your nursery, smokers must be especially careful to wash their hand well.

Topsoil- the thin layer of the Earth's surface which we use to grow our crops. The quality of the topsoil depends on its humus and mineral content. It can take 1000 years to form 100 of topsoil.

Tree planting program- Usually the rural participants will decide on the purpose of the planting, the site and species required. We encourage all plantings to be to a whole farm and preferably to a whole catchment plan. This way each planting will complement the next one.

Tree species- must be carefully selected according to the purpose of the planting and hopefully will include some understorey species as well. If you require any help in choosing species, please contact Claire on (09) 250 1888 to put you on to the right avenues.

Understorey species- low shrubby species which grow low to the ground, usually bushy and less than one metre tall.

Upper storey species- can be quite tall, but must be in proportion to the other two strata so that there are no gaps. If in a windbreak, it is essential that you check that the species is suitable, i.e. will not drop limbs easily and is tall enough to protect a significant area of land.



Watering system- it is essential to have an automatic watering system with a timer to prevent any disasters over the summer holidays. A Watering system with uprights and sprayers is preferable to one suspended over the seedlings as the latter will drip and can splash potting mix and seeds out of the pots. Watering timers will vary according to water pressure and time of the year. It is important that the pots do not become too soggy or too dry- you will need to gauge this yourselves. Please ensure the use of good quality water i.e. salt-free and not “heavy” especially on young seedlings. This system must be independent of the school’s main watering system.

Waterlogging- Occurs when the soil has inadequate drainage. It can be identified by water remaining on the surface in pools and can be the result of a rising water table or damage to soil structure from over clearing and compaction of the soil structure from over stocking of hoofed animals. Areas in this condition need to be mounded before planting to allow drainage around the seedlings root system.

Weed control- at the planting site: is an essential part of the site preparation. Weeds grow faster than seedlings and will rob them of the moisture and nutrients they will require to become established.

Over a large planting, it is not feasible to mulch and hand weed. Therefore it may be necessary for the country participants to organise the spraying of an herbicide. It is important to incorporate knock-down and residual elements in the spray. Please contact your local Department of Agriculture for the latest recommended sprays and doses. Post-planting control of grass weeds is also possible.

Wildlife corridor- this is a belt of trees and shrubs which link up existing pockets of remnant bush or roadside reserves. It is important that these belts are wide enough and sufficient understorey species as well as tree species. Often these wildlife corridors consist of seedlings of locally collected seeds. These corridors can also act as windbreak if correctly placed as well as using up water in recharge areas. They can also provide bee forage and nectar and seeds for small birds.

Windbreaks- an effective windbreak should be placed at a 90 degree angle to the most damaging winds and still let 60% of the winds through it, but at a slower speed. An ideal windbreak design is 3-4 rows with the smaller species being planted on the windward side.

A windbreak can also act as a wildlife corridor (extra rows would be better for this), Provide bee forage and many other products as well. Located appropriately in the landscape, it can also use water higher up in the catchment to prevent it adding to recharge lower in the catchment.

Care must be taken at the end of a windbreak and at gateways so that the wind does not sweep around and cause more problems than there were to start with, by concentrating wind power at these points.

A good windbreak design will be planned as part of a whole farm and/or catchment plan.

Whole catchment plan- This is where all (or most) of the landholders in a catchment get together to tackle common land use problems and decide on ways of solving them as a community. Each



landholder will then carry out the appropriate implementation on their own properties, working together wherever possible as far hiring machinery etc. are concerned.

Whole farm plan- This is where the landholder has put down long-term plans for the entire property onto a map. Firstly existing degradation hazards and soil types are mapped. Sites in danger of becoming saline are marked for appropriate site investigations with groundwater observation bores. Then proposed solutions drawn in such as bank design, changing fence lines according to the capability of the land, and proposed revegetation. It may take 10 to 20 years to implement a plan and changes can always be made in line with new developments, but it gives the landholder something to work towards .All plantings should fit into a long-term plan for the property to ensure that every tree planting is in the most effective place.