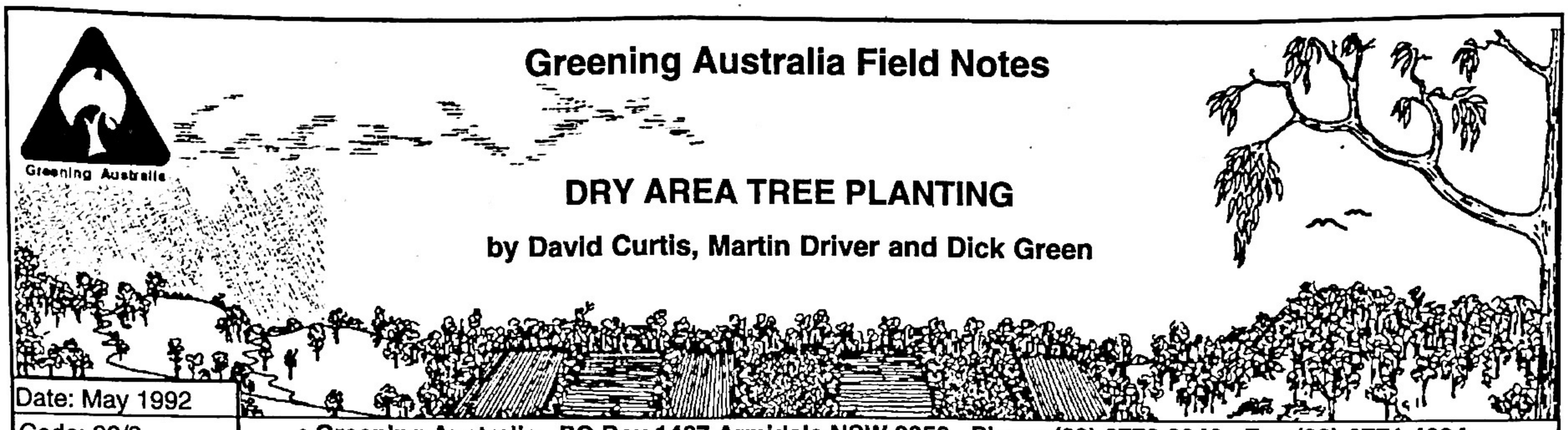
Greening Australia Field Notes



DRY AREA TREE PLANTING

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1. Introduction

Tree planting in dry areas has its own set of problems. These notes have been compiled to help those wanting to plant trees on the western plains of N.S.W. They will also be relevant to those in the higher rainfall areas like the western slopes.

2. Species choice and nursery stock

Choose species which require little watering. The best way to do this is to follow the natural distribution of the native species and species associations by looking at where plants occur in the landscape and their association with other plant species. Look at soil type/texture, local hydrology (run-on/run-off etc), remnants or stumps, patterning, and relate to other vegetated sites in the area.

Planting the local species from seeds which have been collected from as near as possible to the planting site is the safest way of ensuring that the trees you plant will survive in the long-term.

eg. Around Walgett the species could include:

Eucalyptus camaldulensis	(river red gum) - run-on areas
Eucalyptus microtheca	(coolibah) - run-on areas
Geijera parviflora	(wilga)
Acacia salicina	(cooba)
Pittosporum phylliraeoides	(butterbush)
Callitris glaucophylla	(white cypress pine)
Casuarina luehmannii	(bull oak)

"Plants of Western N.S.W." is very useful for local species of trees. Trees for Dry Country edited by Hall and others is quite useful for other species, though this book is now out of print and would have to be borrowed from a library. Plants grown from seeds are more able to cope with dry conditions than those grown from cuttings due to better root development This means that you should be a bit wary about some nursery stock as quite a lot are propagated from cuttings.

3. Planting design

Be careful on spacing the trees - spacing and placing is important for long-term survival. The drier the area, the further apart should be the trees. Observe the spacing of naturally growing trees in the area. This will give you an idea how far apart you should be planting. On average trees would be planted 7 - 15*m* apart in drier areas. Different species have different requirements in this regard. Sometimes you can plant in clusters in hollows where the moisture is higher.

Consider random planting rather than in parallel lines. Where the soil is not uniform (type/ texture or site specific hydrology) consider niche planting of species and density to suit the specific site, eg. widely plant on a sand rise (*Callitris* etc.), and plant more closely on loams (allowing for dominants to take over), and plant river red gum or cooba where there may be seasonal inundation - again mimick local conditions.

4. Site preparation

Rip 6-9 months before planting, to store moisture in the soil. Deep fracturing is important. To achieve this, rip dry to shatter soil to depth but crush down again so as not to dry the soil to depth. Keep weed-free over 'wet' period and up to planting. For isolated trees in difficult sites Jim Webb used a small stick of gelignite in a bored hole to get deep fracturing. This method is not recommended for most soils in the north.

5. Planting

Plant in niches. Look at the land surface and plant in little hollows, gullies or near rocks - anywhere the moisture can gather. Use the local site to your advantage and pick areas most amenable to planting. Mimick rather than fight nature. In the dry country you can create your own niche by hollowing out an area with a grader blade (about 3m wide) and lining it with plastic buried just below the surface. This will gather moisture and feed it into the plant.

6. When to plant

Plant when the soil is as its moistest butwhen waterlogging is not going to be a problem (ie. run-on areas). The amount of rain is often less important than the amount of evaporation. Winter may not get as much rain, but because evaporation is lower, soil moisture storage may be better.

At Broken Hill it was found that it was best to plant in April to June. On the north-west plains an autumn planting could be better than spring. You will have to make the judgement yourself based on what you know of your own rainfall and soil moisture patterns. Wait for a little rain before you plant.

If frosts are a problem use tree guards. We have found the cheapest is the humble milk carton, held in place with two 60cm long stakes (about 1 x 1 cm square) or a length of hooped/bent fencing wire. Cartons will give ample protection against frosts and hares and will shade the tree to some extent in the first summer. Grow-tubes are very good also, although much more expensive.

7. Weed control and maintenance

Weeds should be eliminated from the site to be planted well in advance of the planting so that moisture can build up in the soil (say six to nine months in advance). Evaporation and evapotransporation by weeds is critical. The easiest way is probably to spray using a knockdown herbicide like Roundup®, or to cultivate. After planting, weeds should be kept away also. This can be done using herbicides or by using a good mulch. Mulch will also keep in moisture. We have found that sawdust mulch is quite good. The important thing about a mulch is that is doesn't break down too quickly (as hay will). Some people effectively use newspaper held down in each corner and dished out so any water flows into the centre where the tree is. Others don't like it because no water can get through it. In the drier areas weed reinvasion after initial control may not be as big a problem as the higher rainfall districts, nevertheless it is very important to take into account. The improvement in tree growth where weeds are well controlled can be impressive.

Don't cultivate near trees. The trees have two root surfaces, one shallow and the other deep. Cultivation will damage the shallow roots and prevent them taking up sufficient moisture.

With tree planting you need to 'farm for moisture' using the same principles as a farmer would when putting in a crop. If you do this it is possible to plant trees, even in dry places, without having to water them. This means adopting methods (like ripping and prespraying well in advance) which store soil moisture, and choosing species that will handle the conditions.

8. References

Establishment Techniques for Farm Trees
Trees on Farms Brochure Nº 2

Plants of Western New South Wales
G.M. Cunningham, W.E. Mulham, P.L. Milthorpe and J.H. Leigh (1993)

The Use of Trees and Shrubs in the Dry Country of N.S.W.
N. Hall, R.W. Boden and others.
Forestry and Timber Bureau, Canberra (1972)

Acknowledgements:

We would like to thank Jim Webb for his assistance in preparing this field note. Jim worked with North Broken Hill Pty. Ltd. and has done extensive tree planting on mine rehabilitation sites around Broken Hill, where the rainfall is only about 200mm/year. In their plantings they never watered and the principles he designed have been incorporated in this field note.

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