SUMMARY OF SANDALWOOD DEMONSTRATION
IAN PULBROOKS PROPERTY
CANNA/SHIRE OF MORAWA

Three sites were selected in April 1989 on the property of Ian Pulbrook, Canna. The sites selected were an upland site lowland site, and a broad drainage line site. The lowland site was chained in 1968/69 but no crop was ever taken off the area. Therefore the regenerating vegetation was, at the time of planting about 20 years old. The upland site was cleared in 1974/75 and two crops of wheat taken off the land (1975 and 1976). The area was then allowed to revert back to native vegetation. The hosts then are about 12 years old at the time of planting. The drainage line site is similar to the upland site. Due to the position in the landscape, the sites have different soils and vegetation complexes.

Upland Site: Area 1 ha. This site is on top of a ridge. Soils are decomposed granites with a dolerite extrusion in one section. Colour is light red/brown and texture gritty. Vegetation is predominantly open, *A acuminata* (jam), with few *E horistes*. Very little groundcover exists with few sedges on one end. Few annual forbs emerge during winter.

Lowland Site: Area 1 ha. This site is a broad flat with deeper red loams. Vegetation is York gum (*E loxophleba*), and dense acacia shrub land (*A acuminata* & *A prainii*), with few *Melaleuca uncinata*. There is no groundcover.

Drainage Line: Area 1 ha. Soils here are deep sandy loams. Vegetation is predominantly *M uncinata*, *A coolgardiensis* with few *E ewartiana*.

The plan also included using a separate provenance at each site. These provenances are:

1. Upland Site; Seed collected from L. North's property (Pintharuka).

2. Lowland Site; Seed collected from nearby Barnong station and V.C.L.

3. Drainage Line; Nanga Shark Bay provenance.

Seed for the upland and lowland sites were cracked prior to planting. The Nanga seed was not treated. The upland and lowland sites were planted in late April 1989 by loosening the top soil inserting 3 seeds and firming the seed site by foot.

The Nanga seed was not planted until 1990 when only the few available seed were planted. The bulk of the seed was planted in 1991. There was no germinants until Spring 1992 and no measurements have been taken yet.

Rainfall: The rainfall over the period is as follows -

1989	266.5 mm
1990	384.5 mm
1991	308.5 mm
1992	376.5 mm (to end of November).

1989- the year of establishment was a below average year (Average approximately 325 mm). This may account for the considerable mortality after germination in that year. Further planting carried out by Mr Pulbrook in 1990 appears to be much more successful although no counts have been done.

Rainfall

Results	Upland		Lowland	
	Actual	%Site	Actual	%Site
Number of Sites	35		145	
Survivors after 1st Winter	28	80	116	80
Survivors at 12 months	22	63	93	64
Survivors at 2 years	18	51	86	59
Survivors at 3 years	18	51	87	60
Average Heights at 3 years	56 cm		21.5 cm	

Discussion: Germination initially was very good. Nearly 95% of lowland sites and 89% of upland sites germinated but by the time of recording on 12 December 1989, many germinants had died. Whether the cause of death is lack of moisture or lack of attachment is unknown. Further mortalities occurred over the following two summers with a current stand of 51% upland and 60% lowland sites. This appears to have stabilised now with no change in numbers over the last 12 months. There has been a few mortalities but these seem to have been replaced by new germinants.

There is a marked difference in heights between the two groups. This may be related to soil type but it may well be related to the density of the host vegetation. The lowland site is quite dense therefore there is more, denser, shading of the germinants. The upland site is much more open with more direct sunlight reaching the seedlings.

The Future: Within both sites Mr Pulbrook planted more of the same provenances in May 1990. These have not been included in the original monitoring. Germination and survival has been excellent which may be related to rainfall patterns or to the fact that the seed was not cracked (resulting in less seed going mouldy). The upland block will have 100 sph (stems per hectare), to be followed through and the lowland block will have 200 sph to monitor.

The drainage site has commenced to emerge and further monitoring will be carried out on this.

General Recommendations For Growing Sandalwood

From our experience at Canna and elsewhere recommendations for growing sandalwood in the wheatbelt can be made with a degree of confidence.

1. Select a site with relatively young hosts (less than 25 years old), or plant a mixture of acacia species some 2-3 years before planting sandalwood.

2. Use fresh seed (collected the summer before planting).

3. There is no need to crack seed before planting only remove the outside papery material.

4. Place seed on what is considered to be the wetter side (consider the direction of rain).

5. Bury 3-4 seeds about 2.5 cm deep.

6. Aim at having a final stand of 100 sph. Therefore a maximum number of sites to be planted would be 200 sites per ha (this allows for 50% strike failure).

7. Have areas fenced off from stock. Rabbits if severe need eradication.

8. Weeds do not appear to be a problem and it should not be necessary to have weed control. In fact weeds may be a beneficial short term host.

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