DEPARTMENT OF CONSERVATION
AND LAND MANAGEMENT

SILVICULTURE SPECIFICATION 4/89

REGENERATION IN FOREST AFFECTED BY *Phytophthora cinnamomi*

1. PREAMBLE

The silvicultural objectives and system described in "Treemarking and Silvicultural in the Jarrah Forest" (1987) and silvicultural specification 7/89 are not appropriate in dieback - affected jarrah forest which requires regeneration. Specification 3/89 details treemarking requirements.

Many long-affected dieback areas, formerly of a high impact, have naturally regenerated predominately with marri. Poor regeneration appears most likely on sites where jarrah seed is not available,on sites which are difficult to establish (e.g. caprock), where scrub competition is vigorous and on seasonally waterlogged areas. Planting dieback sites has been successful where site potential is high, but where conditions have been more difficult success has been limited. These results suggest that intensive establishment practises are only appropriate where growth potential is high - i.e., on fertile, well drained sites.

Encouraging evidence of jarrah resistance to *Phytophthora cinnamomi* provides hope for maintaining or re-establishing jarrah in dieback - affected areas.

State forest is dedicated to multiple use and dieback - affected jarrah forest can best meet multiple values if it is restored to a stable, sustainable forest ecosystem. It is not expected that dieback - affected forest which requires artificial regeneration will have a high value for timber production in the medium term.

2. OBJECTIVE

To regenerate, protect and sustain the multiple values of the jarrah/marri forest on dieback affected areas.

3. SILVICULTURAL STRATEGIES

3.1 To protect existing natural regeneration and retained growing stock from damaging agencies and enhance its growth so that a forest cover is restored.

3.2 To establish regeneration in understocked areas.

3.3 Maintain fauna habitat (refer to Specification 5/89)

4. SUITABLE GROWING STOCK FOR RETENTION

Healthy trees are of high value on areas with a high impact from dieback. They continue to provide the forests' values, albeit at a much reduced level, and play a role in the regeneration process through seeding and site amelioration. Excessive loss of forest cover may affect site conditions for regeneration and therefore should be avoided on difficult sites.

Some jarrah have been found to have a significant degree of resistance to *P. cinnamomi.* Healthy jarrah trees surviving in dieback areas should be retained.

5. STANDS REQUIRING REGENERATION

Regeneration is required where there is an insufficient crop tree stocking to provide the desired forest values. Dieback - affected areas with a basal area of less than $5m^2$/ha or gaps of greater than 50 metres in diameter are to regenerated.

5.1 Advanced Growth Stocking

Determine the stocking of advanced growth (established lignotubers and saplings) by survey - (see Specification 8/89) and note the stage of regrowth development.

-Adequate advanced growth stocking (>500 s.p.ha.)

- poor dynamic growth (<200 saplings and poles per ha), see Section 7. and 8.
- good dynamic growth (>200 saplings and poles per ha), Section 8.

-Inadequate advanced growth stocking (<500 s.p.ha.),

-see Section 6. and 8.

6. ESTABLISHMENT OF REGENERATION

6.1 Mark to retain crop trees (Specification 3/89) and harvest produce. Remove tops and debris 5 metres from retained trees.

6.2 Burning

Separate the area from surrounding forest with an adequate firebreak. Allow logging tops to dry for at least one summer and burn in autumn to create ashbeds and stimulate seed fall.

6.3 Seeding

During July/August scarify the soil surface, seed and fertilise. Prepare and treat in 2-3 metre swathes, with swathes not being more than 5 metres apart. Do not treat within 5 metres of retained trees. Best results are obtained if seed is sown on freshly disturbed ground.

Application rates per net hectare of treatment:

400g of marri/jarrah seed at a 9:1 ratio (plus blackbutt on appropriate soil types).

500g of local leggumes, comprising: 100g each of *Acacia drummundii, A. lateriticola, A. Pulchella, Kennedia prostrata* and 50g each of *A. urophylla and A. extensa.*

470kg of mixed fertiliser comprising: 400kg of DAP, 50kg of KCl, 20kg of trace elements (Cu,Zn,Mn,Co,Mo)

6.4 Establishment Survey

Undertake a survey of seeded swathes during the following autumn. The minimum acceptable stocking is 750 s.p.ha.

6.5 Infill

Excluding harsh sites (eg shallow caprock), where the establishment survey reveals 0.5ha of understocked regeneration, infill by planting with marri (and blackbutt) to bring the stocking up to 750 s.p.ha. Plant after opening rains in June and fertilise each seedling with 200g of DAP.

7. REGENERATION RELEASE

Where sufficient natural regeneration exists but lacks dynamic growth, in spite of apparently being well established and free from overstorey competition, a fertiliser treatment may be undertaken to boost growth. It is aimed at accelerating the restoration of a forest cover.

7.1 Marking, harvesting and tops disposal burning as required.

7.2 Fertilise advanced growth with 200g of DAP per plant, choosing plants 3-5 metres apart. Saplings and ground coppice are preferred to small lignotubers and seedlings. Do not fertilise advanced growth within 5 metres of retained trees.

8. PROTECTION

Once advanced growth is established and dynamically growing it needs to be protected from all forms of disturbance, including fire. Prescribed burning can be conducted once regrowth reaches 6 metres in height.

Harvesting operations are to be excluded from sapling stands.

9.RECORDS

On the HOCS Regeneration Sheet record the year and species being regenerated with the type of treatment received eg:

REGENERATION - SEEDING - J/M/Bbt - 1989

Delineate regeneration areas on Protection Plans note the year on which regeneration was established and the year when it is expected that burning may resume.

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