

Year 3

The whole area is chained in July, or when the floodwaters recede and machinery can gain access. The first bulk spray over the whole area to control regrowth takes place in December. This is done meticulously using a run-by-run approach from fence line to fence line so that no plants are missed.

Year 4

The area is now classed as 'clean country' and is stick raked and bulk sprayed once again. Grasses are planted in around May. Particular attention is paid to water-courses so that seed can be spread through water movement in the wet. Species planted depends on what is available as seed or runners. Choice of species is a critical factor in ensuring that the area is revegetated, thus becoming productive once more.

Year 5

Treatment is similar to Year 4. Another bulk spray may be done if required and perhaps another stick rake, if the season permits.

Year 6

The area is grazed lightly for a short period and attention is paid to any regrowth areas. The country is now essentially clear of mimosa.

Native species for revegetation

Species choice is critical to the success of revegetation

following the clearing of mimosa and to bringing the country back into production. A normal native multi-species stand on the floodplain, that includes annual and perennial native grasses, will have the same carrying capacity as an improved pasture in upland country. This ranges from 1:1 ha to 1:5 ha. If the flood plain is in good condition, native grass species (especially native hymenachne) provide equal productivity gains to any introduced species.

Native grasses are also part of the natural sequence of events on the flood plain, so as well as providing productivity benefits, their use helps re-establish the natural floodplain environment.

Role of native species: natural process

There appears to be a natural flow to the sequence of native grass species present in a particular area of the floodplain over time. A good stand of one species in one year will be taken over by another species in the following year. This natural sequence is of particular importance in the shallow flood areas.

Annuals sedges are normally the first to colonise cleared areas after flooding takes place. Reeds usually then take over in deeper water and couch in shallow water. Annual species creep in from the edges and establish and seed early, whilst perennial species take up to five years to establish in their particular zones.

In some areas water chestnut (*Eleocharis* sp.) or bulrushes (*Typha* sp.) establish early after flooding. As they die back, they protect the germinating seedlings of native hymenachne (*Hymenachne acutigluma*). Both hymenachne and swamp rice (*Leersia hexandra*) have the ability to form a niche area monoculture, while annual species are always in combination and in the fluctuating patterns mentioned above. Different grass species also colonise different parts of the flood plain according to the depth of water, as shown in Table 1.

Native species are in harmony with floodplain soils. As plants die back, mulch is built into organic mat-

Table 1 Grass species in different parts of floodplain

Fringe country (Intermittent flooding)	Shallow flood areas (less than one metre deep)	Deeper flood areas (more than one metre)
couch	<i>Eriochloa</i> sp., rice grass, swamp panic, paspalum	native hymenachne

Table 2 Native flood plain species good for grazing

Perennial Scientific name	Common name	Annual Scientific name	Common name
<i>Cynodon arcuatus</i>	giant couch	<i>Panicum paludosum</i>	Swamp panic
<i>Cynodon dactylon</i>	green couch	<i>Eriochloa procera</i>	Not applicable
<i>Brachyachne ambigua</i>	native couch	<i>Echinochloa elliptica</i>	Not applicable
<i>Pseudoraphis spinescans</i>	spiny mud grass	<i>Cyperus</i> sp	various sedges
<i>Hymenachne acutigluma</i>	native hymenachne	<i>Oryza rufipogon</i>	wild rice
<i>Paspalum</i> sp.	Paspalum		





ter that acts as a “net” to catch seeds coming down as the flood waters recede. Native hymenachne, in particular, builds its own organic matter, forming a “peat” that retains nutrients, seed and water, over time.

Introduced species such as para grass (*Brachiaria mutica*) form a physical barrier to water flow and thus cause water to be retained longer on the floodplain. Native species, however, don’t interfere with natural water flows. Water therefore drains more quickly in areas dominated by native grasses, see Table 2, (preceeding page).

Sesbania (*sesbania cannabina*) is an annual woody shrub and is the only native legume that grows on the floodplain. It is edible when young, but is usually inaccessible unless cattle are able to swim to graze. It is usually in one place for only one season and is later supplanted by annual or perennial grasses.

Problems with native revegetation

Despite the benefits, there are a number of problems associated with using native grasses for revegetation on the floodplain.

Problems mainly relate to the availability of seed and the difficulty in getting enough for an economical planting. Seed is particularly difficult to harvest from annuals, although they tend to appear naturally, so this is less of a problem. Harvesting is difficult because:

- grasses grow fast, seed early, and drop seed onto shallow water;
- seed produced later in the season is difficult to harvest because access is difficult; and
- seed viability is different for every year.

Fire is the big killer of native species on the flood plains. If fires start, the grasses burn like peat. A hot fire results and creates a sterile environment ripe for the re-introduction of weeds. It is therefore important to keep fire out of the floodplain.

NHT native species trial

It is important to find out how to grow native grass species for seed production and to harvest them for local

use. The Mary River Landcare Group has endorsed a trial of flood plain grass species to determine their viability and effectiveness in revegetating areas following the clearance of dense *Mimosa pigra* infestations. The trial is being carried out at Melaleuca Station and will provide information on revegetation with Top End native grass species, seed and runner viability and harvesting techniques and planting techniques.

Species to be used are green couch and native and olive hymenachne. Evaluation measures in the trial are:

- growth of native species from collected seeds or runners;
- identification of at least one native species with potential to revegetate areas cleared of mimosa;
- the ability of native species to suppress mimosa seedling growth; and
- an indication of future research requirements for seed collection, viability and optimum planting conditions.

Conclusion

Native grass species are being successfully used to revegetate areas cleared of dense mimosa pigra infestation. While there are clear benefits to using native species, there are also drawbacks relating to the availability of seed and the impacts of fire. Trials are currently underway to investigate if and how methods involving the use of these species can be improved.

References

- Beumer, B., (personal communication), List of native species for the Top End.
- Mary River Landcare Group, (1999), *Revegetation following clearance of Mimosa pigra infestation*, Natural Heritage Trust funding application.
- Searle, T., (2000), *Practical management—Mimosa pigra control at Melaleuca Station—an attempt at weed impact reduction on a major scale*, Tropical Savannas CRC Practical Management Series.

Also see the information sheet on this CD:
How to attack Mimosa pigra on a grand scale

Disclaimer: Information provided by the TS–CRC for the Prime Notes CD–ROM is general advice only. Professional advice should be sought if seeking to apply the information to specific circumstances.

The TS–CRC has tried to ensure this information is accurate at the time of publication.

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For more information about the Centre’s extensive research program go to our research section.