Native grass establishment and seedling management

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Native Seeds P/L

Establishment

Can be from either:

- Direct sowing
- Recruitment from existing plants
- Combinations of these two approaches

Ian's revegetation philosophies

Given that:

- Weeds are the cause of most revegetation failures
- Most of the weeds are annuals or short-term perennials
- The topsoil will be full of weed seeds
- Removal of the topsoil is not viable for all situations

Therefore:

Select a backbone species of grass and use it exclusively for the first two years, then progressively introduce more species

Aim to undertake the revegetation in a number of phases rather than in one attempt

The best method to my mind is to :

- determine what grasses occur naturally in the area

- source high quality seed of the species you choose as your principal component

Select a species for which:

- Plentiful seed is available
- Methods with high success rates of sowing are known
- Selective herbicide technology is available

Backbone species

Example 1 – Kangaroo grass (*Themeda triandra*)

Seed is available, methods of sowing and early seedling requirements are known

Pre-emergent, early post-emergent and mature crop herbicide tolerances are well developed

Can be established with confidence and maintained weed-free for years

Kangaroo grass

1. Spray and remove weeds in winter
2. Sow seed into soil with rising temps of spring
3. Apply Roundup immediately prior to emergence
4. Apply Simazine at 3 leaf stage
5. Wait until winter and then apply Roundup over dormant Kangaroo grass
6. Spray pre-emergent herbicide if necessary in early spring
7. Kangaroo grass crop will be virtually free of weeds


Kangaroo grass sown in rows for seed production


Kangaroo grass crop a few months later

At full height
in December

Burrill Kangaroo grass approaching harvest in January 2012


Tangara kangaroo grass at harvest Dec 2012


Dormant kangaroo grass in mid winter, can be sprayed for all winter-growing weeds

Backbone species (2)

Example 2 – Weeping rice grass (*Microlaena stipoides*)

Seed is readily available of numerous varieties

Sowing methods are available, if a little difficult

Selective herbicide technology is available


Spring-sown crop of Weeping grass


Same crop 2 months later –
notice how the weeds are gone


Full production at 18 months of age


12 months later – still weed free

Revegetation by recruitment

Given an existing stand or some small number of plants, how do we maximise recruitment?

The natural processes can be helped along to give a more rapid recruitment result

- The key is to recognise when the target species is setting good seed and to provide niches for that seed to remain
- Another key is to minimise the amount of weed seed that is also likely to fall into those niches
- A third key is to manage the grass to improve the seed quality (fertilizer and irrigation)


Recruitment in a narrow trench
cut between established plants


Recruitment into soil crack near older plants


Kangaroo grass seed embedded in soil cracks


Significant recruitment of Silky Bluegrass seedlings into soil cracks


Recruitment in wallaby grass is much better when plant trash is present

Some examples

1. Wallaby grass crop establishment in Sth Gippsland, Vic


October 2007
Common pasture mix including
Ryegrass, Brome, Chicory and Clover

Feb 09 - Young wallaby grass cover with few weeds


May 09

Jan ‘10

2. Wheat grass establishment in Holbrook, NSW


Starting point for Holbrook sowing
March 02


Sowing - July 02

Sowing result

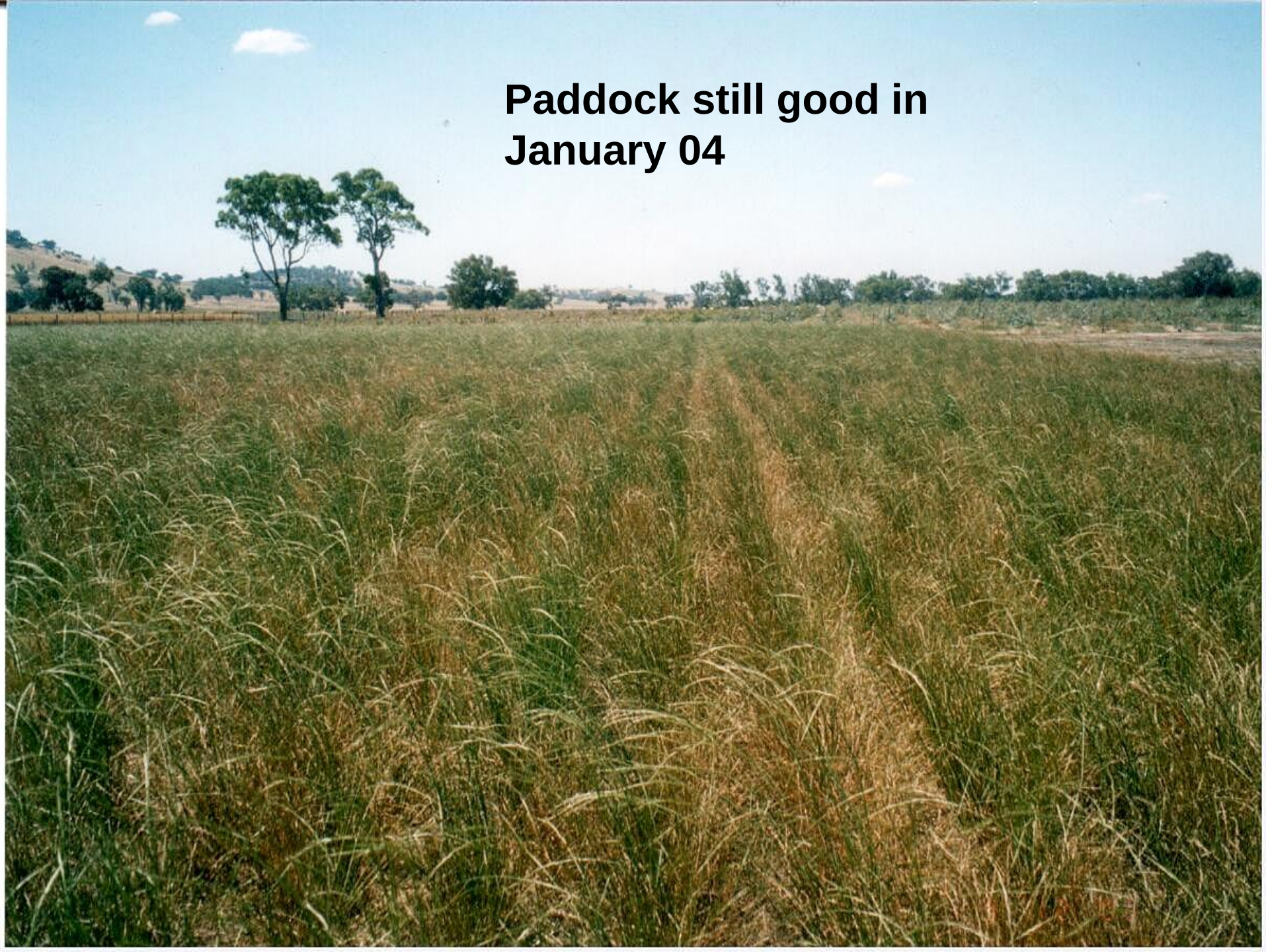
July 02

Emergence in August 02


Seedlings present in September 02


Everything looking parched
in February 03

Looking good in August 03


Paddock still good in
January 04

Early seedling management

- **The** critical time in the establishment of the sown grasses
- The time when most things can go wrong
- Do not just ‘sow and forget’
- Many things to watch for and act on

Weed control

Window No. 1

- Watch for weed germination and if the native grasses have not germinated when the weeds have already emerged, spray out the weeds immediately

- Seedling identification is vital

Weed control

Window No. 2

- Sowing in rows allows for weed control between the rows and easier identification
- The rows will be lost after a couple of years with recruitment


Inter-row cultivation within Tangara Kangaroo grass seedlings

Weed control

- Use of selective herbicides for weed removal

- Significant knowledge is available to help

Sowing Oakey Wheat grass (Elymus scaber)


Same crop 6 months later

Fertility

- Possibly need to apply fertilizer when the seedling is about 6 to 8 weeks after emergence
- At this time the seed reserves will be depleted and the seedling may be needing a feed
- If the grass leaves yellow then you can apply a light rate of a Nitrogen fertilizer, say 100 kg/ha of sterilised poultry manure

Weeping rice grass seedlings looking very yellow and needing some nitrogen fertilizer After one application they needed no further N fertilizer

Following Nitrogen fertilizer

Other things to watch for

- Insects/Pests
  - Red Legged Earth Mite
  - Gnats
- Diseases
  - Damping Off
  - Black Spot disease

Ian’s Recipe for sowing success with native grasses

- 10 parts weed control prior to sowing

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- 1 part soil preparation

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- 10 parts weed control prior to sowing
- 1 part soil preparation
- 2 parts weed control at sowing

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- 5 parts good quality seed

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- 2 parts weed control at sowing
- 5 parts good quality seed
- 2 parts weed management after sowing
- 1 part seed application
- 1 part seedling identification
- 4 parts weed control post emergence
- 10 parts patience