



# Native Grass Pasture for Horses

## 1. Introduction

Perennial native grasses are generally drought resistant, persistent, and most are highly palatable to livestock. They use less fertiliser than introduced pastures, and are very water efficient.

They can be categorised into C3 or C4 grasses. C3 grasses have adapted well to cool climates, germinate in autumn and grow between autumn and spring. They are described as winter active. For example Wallaby grass (*Rytidosperma* spp. - previously *Austrodanthonia* spp.).

C4 plants are adapted to hotter seasons and germinate in spring. They are summer active. For example Kangaroo grass (*Themeda triandra*).

Introduced grasses, for example perennial ryegrass (*Lolium perenne*) produce high levels of non-structural carbohydrate (NSC). One such NSC is the simple sugar fructan which is of particular importance to horse owners since there is evidence to suggest that fermentation of fructan in the equine gut releases laminitis triggers and may induce laminitis.

In both C3 and C4 grasses excess carbohydrate is stored as starch which does not contribute to laminitis in horses. Since Fructan levels are also low, grazing native grass pasture is an option for landholders grazing horses.

## 2. Common native grass species suitable for grazing in the Mt Lofty Ranges and Eastern Hills

There are a number of native grass species which grow well in this region and have adapted to areas of low and high rainfall. These grasses can provide good grazing for horses if managed appropriately, and can be quite productive, although for most horse owners feed quality and the capacity to maintain ground cover may be more important considerations.



**Wheat grass (*Elymus scaber*)**

This is a tussocky cool-season C3 perennial grass which grows early in spring and is generally a component of most pastures.



**Kangaroo Grass (*Themeda triandra*)**

This grass is one of Australia's most widespread C4 species (summer active). A drought-resistant, deep-rooted, warm-season perennial grass. Production: 1.6 to 8.3 t/ha. Crude protein (winter) to 17% (summer). Digestibility 45 to 75%.



**Weeping Grass (*Microlaena stipoides*)**

Weeping grass is a highly-competitive C3 species that responds well to increased fertility and moderate-to-heavy grazing. Production: 1.7 to 7.4 t/ha, up to 25 t/ha. Crude protein 10 to 27%. Digestibility 55 to 80%.



**Wallaby Grass (*Rytidosperma* spp. – previously *Austrodanthonia* spp.).**

Wallaby grasses are amongst the most valuable C3 native grasses, due to persistence and productivity. A tufted perennial grass that remains green all year. Production: 1.8 to 7.8 t/ha. Crude protein 10 to 25%. Digestibility 45 to 82%.



**Windmill grass (*Chloris truncata*)**

Windmill grass is a short lived (2 to 3 years) C4 perennial grass which makes good growth in spring and responds well to improved soil fertility and grazing. Production: 0.3 to 3.0 t/ha. Crude protein 7 to 12%. Digestibility 35 to 68%.



**Red Grass (*Bothriochloa macra*)**

Red grass is a warm-season C4 perennial grass. Leaves are usually reddish or purplish in colour. Stems are of low palatability and digestibility, but leaves are readily eaten when green. Production: 3.8 to 10.4 t/ha. Crude protein 4 to 15%. Digestibility 48 to 59%.



**Figure 1. Wallaby grass and windmill grass can make a suitable pasture**

### 3. How to sow seed and successfully establish pasture

Good planning is essential before sowing. Too many failures result from poor weed control and inadequate preparation of the soil. Any program for pasture establishment should consider the following:

- control of weeds and pests,
- selection of appropriate pasture varieties,
- soil preparation
- sowing rate,
- time of seeding,
- soil testing and fertiliser applications,
- deferred grazing (i.e. time to allow grasses to fully establish and set seed before grazing)

#### 3.1 Steps to follow for success

Follow a two year plan to establish a new pasture and do not omit any steps in the process. Good weed control is essential if pasture establishment is to be successful.

The following checklist is suitable for establishing pastures in low to high rainfall areas of the Mt Lofty Ranges and Eastern Hills.

##### Year 1

###### (a) Assess, select and plan early

Identify existing pasture and weeds,

Check on the availability of equipment and/or contractors.

###### (b) Control weeds/pests the year before sowing

Apply herbicides to control broadleaf weeds,

Spraytop, slash or graze to control annual grass weeds.

###### (c) Check soil fertility

Soil test over summer to check fertility levels,

Seek advice on a suitable fertilizer program,

**Note<sup>1</sup>:** *It is doubtful that applying lime to native grass pasture has any significant benefit.*

###### (d) Graze prior to sowing

Graze well over summer to remove residues. Having a clean surface with no thatch is important.

##### Year 2

(e) Control weeds & pests in autumn

Allow for weed seed germination after the autumn break (normally 2 to 3 weeks after opening rains),

Spray appropriate herbicides /insecticides to control weeds and pests (e.g. red legged earth-mite RLEM),

Lightly harrow paddock only if surface has to be made even.

(f) Ensure adequate soil moisture

Don't sow on the first autumn rains,

Sow into moist soil after weeds have been controlled,

Sowing can commence if significant rain(>12mm) is likely soon afterwards.



**Figure 2. Use a non-selective herbicide after the opening rains in autumn.**



**Figure 3. Paddocks may have to be lightly harrowed before sowing**

(g) Sow seed

Small areas can be hand broadcast, but the surface must be slightly disturbed prior to seeding.

Using a set of light harrows or dragging a farm gate (or chain) behind a four wheel drive or tractor should create enough disturbance. Cover the seed by dragging a piece of weld mesh over the soil surface. Larger areas should be direct seeded using appropriate seeding equipment to achieve 5 to 10mm soil cover over seed, As a guide, around 5% of the seed should be visible after sowing.

The ideal time to sow C4 grasses such as kangaroo grass (*Themeda triandra*) or red grass (*Bothriochloa macra*) is spring, provided there is sufficient soil moisture to allow grasses to establish. However, if rainfall in spring is low there is a risk of failure unless irrigation is available. Sowing in autumn is advised if no irrigation is available. Sow C3 grasses such as wallaby grass (*Rytidosperma* spp. – previously *Austrodanthonia* spp.) in autumn.

#### (h) Monitor weeds and pests

Check weekly for any pasture pests and weeds,

Establish photo points and record regularly,

Treat problems promptly.

#### (i) Graze pasture

Allow grasses to flower and set seed before grazing. Do not graze horses in the first year of a new pasture. In the case of C4 grasses it may be necessary to allow two summers to pass before grazing.

Do not cut hay in the first year of a new pasture.

### **4. Fertiliser requirements**

Most native grasses will respond to fertiliser applications, however it is important not to over fertilise. Often, application rates can be half the rate recommended for introduced pastures.

Soil test to determine actual requirements.

Most of the evidence to date suggests that liming is NOT cost beneficial .

### **5. Grazing strategies for native grass pastures**

Excessive grazing pressure will result in native grasses declining with a commensurate increase in weeds and bare ground. Rotational grazing is the best strategy to help promote good production. Pastures should be rested once plants have been grazed down to 5 to 8cms in height. Rest periods may vary from 30 to 120 days depending on how quickly plants re-grow.

### **6. Encouraging the spread and persistence of native grasses**

- After the autumn break defer grazing for 6 to 8 weeks to allow native grasses to grow and increase their competitiveness.
- Rotationally graze or stock paddocks at low rates.
- Avoid long rest periods which results in too much long standing dead grass.
- Reduce grazing pressure when seed heads appear to allow seeds to form.
- Apply fertiliser at low rates to encourage better growth. Do not exceed 80kg/ha/p.a. of single superphosphate.
- Maintaining legumes will provide useful nitrogen for native grasses. However if the legume content exceeds 20% it can be detrimental to grasses.
- Broadleaf weeds can be controlled by applying appropriate herbicides. Always read the label and ensure damage will not be done to specific native grasses.

## 7. Indicative costs to establish native grass pasture

Costs will vary considerably from property to property depending on whether landholders can use their own equipment, or need to rely on contractors. Seed costs will also vary depending on where seed is sourced, the quality of seed and the final sowing rate.

Costs are an approximate guide only due to the large variability between specific sites being renovated. Landholders are advised to research costs for their particular situation before embarking on any on-ground works.

### 7.1 Establishing native grass pasture using 'Gallop' horse mix ([www.nativeseeds.com.au](http://www.nativeseeds.com.au))

#### (a) Sowing requirements

- Seed mix: Wheat grass (*Elymus scaber*); Windmill grass (*Chloris truncata*); Wallaby grass (*Rytidopserma spp.*); Weeping grass (*Microlaena stipoides*).
- Sowing rate: 20kg/ha
- Sowing time: autumn

#### (b) Indicative establishment costs

Table 1. Indicative establishment costs - Establishing native grass pasture using 'Gallop' horse mix ([www.nativeseeds.com.au](http://www.nativeseeds.com.au))

Item	Trial 2	
	*Cost \$/ha (inc GST)	** Estimated Contractor costs \$/ha (inc GST)
Soil test	\$130.00	
Seed costs	20kg @ \$125 per kg. = \$2,500.00	
Weed control (herbicide costs for 3 applications prior to sowing)	\$150.00	3 x \$320 = \$960.00
Weed control (herbicide costs for 1 application post sowing)	\$50.00	1 x \$320 = \$320.00
RLEM control	\$20.00	\$320.00
Sowing	landholder	\$270.00
Fertiliser: Urea 15kg	\$90	\$235.00
Fertiliser: Phosphorus 5kg/ha	\$50	\$195.00
Total	\$3,540.00	\$2,300.00

\* Costs in this column, assume that landholders are sowing a small area (1 to 2 hectares), have access to a small spray unit and a fertiliser spreader, and can improvise to sow seed themselves.

\*\* Contractor rates are indicated in this column to give some idea if all the work is outsourced.

Cost of 'gallop' horse mix \$125/kg.

Contractor costs on site estimated at \$150.00 per hour (inc GST). Travel costs \$120.00 per hour (inc GST).

Maintenance fertiliser: Apply to established pastures. Nitrogen 10 to 20kg/ha in spring. Phosphorus 5kg/ha in autumn. Monitor pastures for increased production.

## **8. Estimated pasture production**

How well pasture is managed, especially with respect to grazing management, will play a large part in how productive pastures are.

An average pasture may expect to yield 3.0 to 5.0 tonnes per hectare. If a pasture yields 4 tonnes per hectare, the number of small square bales would be approximately 160 bales. Estimated weight of a small square bale is 25kg.

## **9. Useful websites**

UTLMP Native Grass Pastures – workshop videos,

<https://www.youtube.com/playlist?list=PL4IsUu0-il4oYMYb08WNPwUwwl1mVFYyr>

Native grasses for sustainable agriculture, *Evergraze – Future Farm Industries CRC, MLA, AWI.*

[www.evergraze.com.au](http://www.evergraze.com.au)

Van den Berg, M. Australian native grasses for horse pastures – part 4,

[www.horsesandpeople.com.au](http://www.horsesandpeople.com.au)

Native Seeds: Suppliers of native grass seed, [www.nativeseeds.com.au](http://www.nativeseeds.com.au)

Seed World Australia: Suppliers of native grass seed, [www.seedworld.com.au](http://www.seedworld.com.au)

Flora Victoria: Suppliers of native grass seed and hay, [www.floravictoria.com.au](http://www.floravictoria.com.au)

STIPA Group: Native Grasses Association Inc. [www.stipa.com.au](http://www.stipa.com.au)

Native Grass Resources Group, [www.nativegrassresourcesgroup.com.au](http://www.nativegrassresourcesgroup.com.au)

Meat and Livestock Australia, Native Pasture, <http://www.mla.com.au/Research-and-development/Grazing-pasture-management/Native-pasture>

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