Identifying sub-tropical grass seedlings

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Identifying sub-tropical grass seedlings
There is considerable interest in growing sub-tropical (or warm season) perennial grasses for out-of-season green feed, especially on the south coast and in the northern agricultural region (NAR). They consist of two types: creeping grasses, which spread by either above ground runners (stolons) or below ground runners (rhizomes) and bunch grasses, which are tufted and do not spread by runners.

The main species sown include Panic grass, Rhodes grass, Kikuyu, Setaria, Signal grass, Digit grass, and Bambatsi panic and are often sown as a mixture, comprising 2 or more species. This bulletin describes how to identify these grasses at the seedling stage.
Panic grass
(Panicum maximum syn. Megathyrsus maximus), cv. Gatton and Green panic (cv. Petrie)

Panic grass is a leafy, bunch grass with good palatability and feed quality. It has performed well on sandy soils in the NAR and in field trials on the south coast.

Seedlings may be identified by:
• leaf blades that are flat and slightly shiny with a smooth surface, often in pairs opposite each other on the stem
• generally semi-erect to erect growth habit, tillers radiating from the crown at about 45° from the ground
• good early vigour (see Table 1)

Variety differences:
Gatton panic—dark green, hairless leaves with more pronounced mid-rib and red-purple pigmentation on smooth, lower stems.

Green panic—distinctive light-green foliage (almost appearing N deficient), some hairs on lower leaves and stems, green stems (no red-purple pigmentation).
Red-purple stems radiating from crown at about 45°
Rhodes grass
(Chloris gayana)
cvs. Katambora, Pioneer, Finecut\(^d\), Topcut\(^d\) (diploids)
and Callide (tetraploid)

Rhodes grass is a creeping perennial which spreads through stolons. It is adapted to a wide range of soil and climatic conditions and has moderate to high drought tolerance.

Seedlings may be identified by:

- the first leaf pair being short and broad
- leaf blades that are flat and distinctively curved downwards, with a slight twist
- no hairs on stems and leaves, but sparse, 2-3 mm long hairs where the leaf blade meets the stem (ligule)
- semi-erect growth habit, which becomes more prostrate as they tiller and develop stolons
- base of stem often with red-purple pigmentation
- vigorous early growth (most vigorous of the sub-tropical grasses – see Table 1)
Identifying sub-tropical grass seedlings

Leaf blades curve downwards and twist
Kikuyu

*(Pennisetum clandestinum)*

cv. Whittet

Kikuyu is a creeping grass which forms a dense turf from both stolons and rhizomes. It has moderate waterlogging tolerance and is well adapted to the south and west coasts, where it has been extensively sown. Kikuyu will persist in the NAR, but biomass production is poor if subsoil moisture is low.

Seedlings may be identified by:

- long, narrow, slightly folded, light-green leaves with a prominent mid-rib
- semi-erect growth, with short inter-nodes between leaves which are usually opposite each other
- base of the stem being white to pale green, while larger seedlings have fleshy, white stolons
- good early vigour (see Table 1)
Identifying sub-tropical grass seedlings

Long narrow, v-shaped leaf blades

White, fleshy stolons

3.2 cm
Setaria
(Setaria sphacelata, S. splendida)
cvs. Narok, Solander, Splenda

Setaria is a moderate to tall bunch grass with comparatively good cool season growth and moderate waterlogging tolerance. It has performed well in trials on the south coast (>475 mm) and has potential on waterlogged soils in the NAR.

Seedlings may be identified by:
• lower stems that are distinctively flattened
• stems and leaves with a distinct smooth appearance
• leaf blades that are light-green and slightly folded with a mid-rib, while new leaves may have a crinkly appearance
• base of stems with red-purple pigmentation sometimes present
• moderate early vigour (less vigorous than panic and Rhodes grass)
Identifying sub-tropical grass seedlings

- Flattened, smooth stem
- Crinkly appearance on new leaves
Signal grass

(*Urochloa brachiaria*)
cv. Basilisk (usually sold as Signal grass)

Signal grass is a creeping grass which can form a sward, but under WA conditions behaves as a bunch grass. It has some potential on sandy soils in areas with mild winters and a low incidence of frosts in the NAR, but is generally not suited to the south coast.

Seedlings may be identified by:
- distinctive shiny, lime to bright green leaves
- leaf blades that are flat to slightly v-shaped, with larger seedlings developing a clear mid-rib
- emerging leaf blades that are distinctively rolled
- erect to semi-erect growth habit with a few large leaves arranged alternately on the stem with long inter-nodes between leaves
- good early vigour (see Table 1)
Identifying sub-tropical grass seedlings

First leaf larger than other sown species

Emerging leaf blades rolled

Large, lime to bright green leaves
Digit grass

(Digitaria eriantha)
cv. Premier

Premier digit grass is a highly palatable bunch grass. It has not been widely evaluated in WA, but in northern NSW digit grass has persisted and performed well on a wide range of soils and environments.

Seedlings may be identified by:
• dull green, broad and slightly curved leaves;
• conspicuously hairy lower stems
• leaves that are hairless, except for a few hairs near the base
• tillering from small plants, giving them a compact ‘chunky’ appearance
• slow early growth (much less vigorous than panic and Rhodes grass – see Table 1)
Identifying sub-tropical grass seedlings

Base of stem is hairy

1.0 cm
Bambatsi panic
(Panicum coloratum)
cv. Bambatsi

Bambatsi is well adapted to fine-textured soils (e.g. cracking clays) and has low biomass production on sandy soils, even though it may persist.

Small seedlings have few distinguishing features, compared to mature plants. Its main seedling features are:

- dull green leaves with a flat leaf blade; which become blue-grey in mature plants
- no obvious mid-rib when small, while larger seedlings develop a prominent white mid-rib
- stems and leaves with few or no hairs
- slow early growth (slowest of all the sub-tropical grasses – see Table 1)
Identifying sub-tropical grass seedlings

Prominent white mid-rib

0.8 cm
Table 1. Comparative seedling size of sub-tropical grasses 18 days from an early March sowing in Perth. Seedlings were grown under irrigation and measurements are the average of 6 random plants.

<table>
<thead>
<tr>
<th>SPECIES</th>
<th>AVERAGE HEIGHT (cm)</th>
<th>AVERAGE WIDTH (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panic grass</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>Rhodes grass</td>
<td>3.5</td>
<td>2.1</td>
</tr>
<tr>
<td>Kikuyu</td>
<td>3.5</td>
<td>3.5</td>
</tr>
<tr>
<td>Signal grass</td>
<td>2.2</td>
<td>3.5</td>
</tr>
<tr>
<td>Digit grass</td>
<td>1.0</td>
<td>1.6</td>
</tr>
<tr>
<td>Bambatsi panic</td>
<td>0.5</td>
<td>1.3</td>
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</table>