



Department of Agriculture

Farmnote



Summer Growing Perennial Grasses in the Central Swan Coastal Plain and Hills Region Reviewed 2007

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Perennial Grasses - their role

Summer growing perennial grasses grow over a range of soil types: poor sands, winter waterlogged sands, gravels and mildly saline sandy loams.

Because of their deep root systems, perennial grasses are able to remain green later in spring than annual pasture. Perennial grasses respond rapidly to summer or early autumn rainfall and produce quality feed when it is most valuable. Summer active perennials, grown on areas with shallow watertables, can grow actively all summer. They have the ability to intercept nutrients leached below the shallow root system of annual pastures and use the nitrogen produced by annual legumes.

The growth pattern of perennial grasses is suited to animal requirements and this means reduced weight loss through summer and autumn. Beef can be turned off earlier to obtain premium weaner prices and sheep grow more uniform, stronger wool. Perennials significantly reduce the need for supplementary feed in grazing systems and provide a stable pasture base across seasons. They also have a soil binding root mass that prevents wind and water erosion.

Background

Summer growing perennial grasses are common throughout the Swan Coastal Plain. They include kikuyu (*Pennisetum clandestinum*) and *Paspalum dilatatum* on the wet depressions and flow lines, couch (*Cynodon dactylon*) on the medium and higher sands, perennial veldt grass (*Ehrharta calycina*) on the dry sands, and elephant grass (*Pennisetum purpureum*), African lovegrass (*Eragrostis curvula*) and tambookie grass (*Hyparrhenia hirta*) on roadsides.

Species

A range of alternative pasture species has been evaluated for the coastal plain.

Rhodes grass (*Chloris gayana*)

Rhodes grass has emerged as the most promising summer growing perennial over a range of soil types from poor sands, wet sands and gravels to mildly saline sandy loams. It is very drought tolerant, spreads by aboveground runners and sends roots down three metres. It eastern Australia it is one of the most widely planted pasture grasses. No farm animal toxicity problems have been reported (source G. Peck, DPI Qld).

Cultivars of Rhodes grass

Pioneer - introduced from South Africa and released to farmers in 1903. This is probably the most drought resistant cultivar, but this has not been confirmed by local demonstrations. It matures earlier than Callide and does not continue growth as late into the autumn as Callide.

Callide - released in 1963, it has a coarser appearance than other Rhodes grasses. Generally all parts of the plant are larger than the corresponding parts in Pioneer. It may be slightly less drought resistant than Pioneer. It is the



Rhodes grass sown September 2000: photo June 2001

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preferred cultivar for sowing on the coastal plain and should be included in all Rhodes grass mixes.

Katambora - drought resistant and may perform better under grazing than Pioneer. It has been reported to be more difficult to establish than Pioneer, but this trend has not been observed on the coastal plain.

Finecut - recently released, and bred from Katambora types. Finecut has produce up to 23 per cent more dry matter than commercial Katambora in Queensland trials. It has high salt tolerance. Finecut has not been evaluated in Western Australia but it would be expected to perform well.

Topcut - recently released. This was bred for improved dry matter yield. Topcut has produced up to 21 per cent more dry matter than Pioneer and 11 per cent more dry matter than Callide in Queensland trials. It has high salt tolerance. Topcut is largely untried in Western Australia, but based on eastern Australian research, it may be included with Callide and other mixes.

Nemkat - recently released, and bred from Katambora types. Nemkat is largely untried in Western Australia, but based on eastern Australian research, it may be included with Callide and other mixes.

Kikuyu (Whittet)

Kikuyu is a proven soil stabiliser, which is particularly favoured by horse owners. It produces a good quality summer feed when heavily rotationally grazed and can be included with all mixes of Rhodes grass. Kikuyu has underground runners (stolons) so is much more tolerant of heavy grazing than Rhodes grass. Over time, kikuyu may dominate mixed stands. It has different growth habits to Rhodes grass; in particular, unlike Rhodes grass, it will not grow on into the late autumn and winter. Careful consideration needs to be taken before mixing kikuyu with Rhodes grass.

Other species

Green panic and Gatton panic, which are renowned as being very palatable, may have a place on the Swan Coastal Plain but are not preferred to Rhodes grass at this stage. They can be included in mixes, but be aware that they are bunch grasses. Bambatsi blue panic has a place on very waterlogged sites that are too wet for Rhodes grass.

These and many other perennial summer growing grasses such as setaria are being trialled and others are yet to be trialled. Most of these grasses are bunch grasses and some have reported toxicity problems if grazed consistently for more than two months, and if the grass dominates the sward.

Summer Growing Perennial Grass Establishment

Establishment options

Summer growing perennial grasses can be established as part of a pasture system by either of two methods:

- If the annual pasture is of good quality, consisting of desired species and has a good seed bank, the annuals are sprayed for weed control in spring and over-sown with the selected summer growing perennials. The annual species will return after the break of the season from the existing seed bank.
- More commonly, landholders introduce perennial-based pasture as an opportunity to establish improved winter growing legume species; in this case the existing pasture is sprayed in spring for weed control and to reduce weed seed production and over-sown with selected summer growing perennial grasses. The established summer growing perennial pasture is then over-sown at the break of the season with the selected improved winter growing legume species.



Weed-free seedbed essential for successful establishment.



Rolling is essential on all sandy soils

Perennial grasses cost more to establish than annual pastures because of higher seed cost and the need to reduce stocking in the year of establishment.

Winter preparation

Heavily graze to remove the bulk of vegetative material.

Weed control

Complete weed control is essential. In early to mid-August spray with 2.5 L of glyphosate and add insecticide for redlegged earth mite (RLEM) and lucerne flea control.

Note: For dry sands spray early August. For wet sands spray mid-August or later (as soon as machinery can travel over the ground).

Sowing time

Sow no later than the first week of September to take advantage of late spring and early summer rainfall.

Note: For high dry sands sow mid-August and on wet sites sow when machinery can travel over the area.

Seedbed preparation

Harrow or cultivate to obtain enough loose soil to form a seedbed. Do not cultivate deeply (no deeper than 2.5 cm).

Sowing method

Mix seed and fertiliser in the fertiliser box of a combine. At least 60 kg/ha of fertiliser will be needed to get the seed to run through the fertiliser box. The mixture will require regular stirring while seeding to prevent the seed separating from the fertiliser and causing inconsistent seeding.

Set the disc or cultivators to 2.5 cm depth. Remove the hoses and drop the seed and fertiliser onto the surface, then lightly harrow to cover the seed. Roll to compact the soil around the seed. The heavier the roller, the better the result. The use of a soil wetter after rolling may improve germination on non-wettable sands.

Nutrition

Sow with 100 kg/ha of Agras No. 1 to supply small amounts of nitrogen for fast establishment.

Insect control

Redlegged earth mite and lucerne flea should be controlled by mixing the insecticide with glyphosate when controlling weeds. Observe seedlings closely to make sure that control has been achieved.

No grazing

It is important not to graze in the first summer. Seedling Rhodes grass has fragile roots which are easily damaged and a Rhodes grass stand is thickened by runner development, the bulk of which does not root from the nodes until winter. Grazing in summer would remove all of these runners. Do not start grazing until roots are well established; in dry years this will take all summer and part of winter.

Hay production

Hay production can be carried out in the autumn of the year of establishment, without inflicting significant damage to the Rhodes grass runners, if there has been good summer rainfall or on water gaining sites where Rhodes grass grows well.

Recommended seed per hectare to establish Rhodes grass

- *4 kg Rhodes grass
- 3 kg cereal rye

* Rates can range from 2 to 5 kg/ha. Large areas can be sown at rates of 1 to 2 kg/ha, but will rely on the runners to thicken the stand.

Note: Cereal rye can be included for protection against wind erosion. Add 2 kg green panic or Gatton panic in place of 2 kg of Rhodes grass if panic is desired in the mixture. Add 0.5 to 1 kg of kikuyu to the mixture in place of 1 kg of Rhodes grass if kikuyu is to be included.

- Estimated cost per hectare to establish Rhodes grass: \$160.00

Recommended seed per hectare for very waterlogged sites

4 kg Bambatsi panic
1 kg Rhodes grass
0.75 kg *Palestine strawberry clover
0.75 kg *Sustain white clover
* Inoculate and lime pellet

- Estimated cost per hectare to establish Bambatsi panic: \$180.00.

Over-sowing established summer growing perennial grasses with annual legumes in autumn.

After the first year of establishment the perennial grass stand may need over-sowing with legumes in the autumn. The combination of annual legumes and perennial grasses is well balanced, with the annual legumes providing winter production and nitrogen for the perennial grasses' summer production.

Recommended seed per hectare

Well drained soils – Pinjarra North

8 kg Subterranean clover - Junee, York, Seaton Park mixture.

3 kg *Crimson clover - Caprera or Flame
3 kg *French serradella - Cadiz
0.5 kg *Yellow serradella Santorini, Avrila mixture
3 kg Balansa clover – Frontier
*Inoculate and lime pellet

- Estimated cost to establish: \$75.00

Well drained soils – Pinjarra South

8 kg Subterranean clover – Goulburn, Junee mixture
3 kg *Crimson clover - Caprera or Flame
3 kg *French serradella – Cadiz
0.5 kg *Yellow serradella Santorini, Avrila mixture
2 kg Balansa clover – Frontier
1 kg Balansa clover - Paradana
*Inoculate and lime pellet

- Estimated cost to establish: \$70.00

Wet soils – Pinjarra North and South

8 kg Subterranean clover – Trikkala (Nth) or Trikkala, Gosse mixture (Sth)
3 kg Balansa clover - Paradana (Nth) or Bolta (Sth)
3 kg *Persian clover – Prolific, Nitro or Red Gully
0.75 kg *Strawberry clover - Palestine
0.75 kg *Sustain white clover
* Inoculate and lime pellet

- Estimated cost to establish: \$67.00

Dry sandy soils – all areas

8 kg *Subterranean clover Dalkeith
3 kg *Rose clover Hykon
3 kg *French serradella Cadiz
1/4kg *Yellow serradella Charano
*Inoculate and lime pellet

- Estimated cost to establish: \$60.00

Note: All prices quoted are for materials only as per Farm Budget Guide 2001

Management of Established Stands

Rhodes grass and kikuyu are almost dormant during winter and can be grazed to use the winter feed from the annual pasture.

Note: Stock will have to be excluded from the balansa, Persian clover and serradella in spring to allow seed production.

Rhodes grass and kikuyu will become active again in spring, at about the time that the annual pastures are drying off. Over summer, the ideal is to graze paddocks in a rotation. Over grazing of kikuyu is not a problem, but, although mature Rhodes grass appears to be more tolerant of grazing than most perennial grasses, it can be killed by over grazing. Rotational grazing will not only encourage persistence, it will also improve the feed quality.

Summary

The combination of Rhodes grass, kikuyu and annual legumes offers improved production and income to landholders and is more environmentally friendly than the traditional shallow rooted annual pastures commonly grown in this region. Landholders considering establishing summer growing perennials on their properties should carefully plan the operation in the autumn before spring sowing. Vital points that must be considered are:

- Up to 4000 kg/ha of dry matter pasture production will be forfeited in the process of establishment.
- Summer growing perennial grasses are serious environmental weeds off-site. Care should be taken in site selection to avoid spread to major flow lines. Landholders have a moral obligation to immediately control the grasses if they spread from the targeted sown area.
- Rhodes grass, and to a lesser extent, kikuyu suffer badly from frost damage; therefore it is important to encourage good winter production of annuals that will provide some cover to protect the Rhodes grass from frost damage.
- After establishment, soil testing should take place to guide future fertiliser applications.

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