REEF CATCHMENTS

GLOVEBOX GUIDE

Grasses & Legumes

MACKAY WHITSUNDAY ISAAC REGION



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Some photos and plant identification information have been sourced from Tropical Forages, Pastures: Mackay Whitsunday, AusGrass and iNaturalist. Links to all websites can be found at the back of this book in the references section.

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The terms “3P grasses” and “Land Types” are sourced from the Stocktake and Pasture (Forage) Budgeting training package provided by DPI, located on the FutureBeef website www.futurebeef.com.

“I would like to thank everyone involved in helping develop this valuable resource. As a grazier, I have found our region has lacked a location-specific guide that landholders can easily take with them into the paddock to identify and better understand the quality of their pastures. It’s not always just about recognising the challenges, it’s equally important to identify and appreciate what’s thriving.”

Kellie Harmsworth - Sustainable Agriculture Facilitator

Disclaimer:

This document is designed to be used as a tool to assist in the identification of pasture and legumes present in the Mackay Whitsunday Isaac region. It is not a substitute for personnel with expert knowledge of grazing land production or pasture management, and the information contained within may not be applicable to other regions. The Queensland Department of Primary Industries (DPI), Reef Catchments, and all other supporting organisations accept no responsibility or liability for any loss or damage caused by reliance on the information in this publication. Users of information contained in this publication must form their own judgements about appropriateness to local conditions.

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INTRODUCTION

Mackay Whitsunday Isaac region

The Mackay Whitsunday Isaac region occupies a narrow coastal strip on the central coast of Queensland. The region extends from south of Bowen, incorporates Proserpine, Airlie Beach and the Whitsunday Islands in the north, through to Sarina and Carmila in the south, a total distance of approximately 300 kilometres. The Pioneer Valley at its centre is around 80 kilometres and extends from the Great Barrier Reef and Coral Sea coast in the east to the Eungella tableland in the west. The catchment encompasses an area of 940,000 ha.

Grazing begins at the salt water around the busy lagoons of the marine plains and coastal wetland areas. The heavy and very deep clays in these environments continue to tea tree back swamps where topsoils become more variable and can include lighter sands, loams and clay loams.

Soil microbes and worm activity are constrained to the aerobic micro elevations of grass tussocks creating the undulating 'debil-debil' effect that has become synonymous with this part of the landscape.

These back swamps are often bounded by sandy levees adjacent to watercourses, forming the environments of the lower landform. Elevated from these areas are the alluvial flats and plains. These semi-waterlogged soils vary from sandy loam to heavy clays and were once dominated by large Blue Gums and Poplar Gum hollows but now by and large grow sugar cane.

The mid slopes and escarpment regions comprise coastal eucalypt forests with denser Coastal Rainforest closer to where watercourses run on a steeper grade. Some of the best soils in the region are present under these tree canopies, rich brown and red clay loams over heavy clay subsoils, the brigalow country of the coast.

Soil depth decreases further up the ridge and tree density increases. The scrub soils give way to Eucalypt dominated open woodlands and traditionally, native grasses. At the back of the valley where rainfall increases even further, hinterland rainforest appears either in thick copses or not at all in the areas where dairying has come and gone.

It is important to remember that in high rainfall areas like Mackay Whitsunday, water and by association topography rules. How this water has flowed over countless millennia influences the soil environment and therefore the ecosystems present. Working with this will ensure more sustainable and productive grazing outcomes.

3P pasture species are desirable pasture plants that persist throughout the year, are readily grazed by cattle, and make a significant contribution to animal productivity, health, and overall performance.

This book showcases a comprehensive range of 3P pasture species found within the Mackay Whitsunday region. It is intended as a practical reference to assist landholders, graziers, and extension officers in assessing pasture condition and understanding the productive potential of grazing paddocks. By becoming familiar with these species, you can better evaluate pasture composition and identify opportunities to improve grazing productivity and land condition.



3P PASTURE SPECIES

What we are looking for

The Mackay Whitsunday grazing environment contain a diverse collection of grasses, legumes and forbs, all competing for space with each other.

But not all plants are equal. To be useful, they need to adhere to the **THREE P's**. That is they must be...

Perennial

Perennial plants grow for a minimum of two years, responding to wet season rain and regrowing from the grazed residual from the previous year. In this tropical environment if you are not here all year, like an annual which returns each year from seed, your space will be taken up by something else. If you're a profitable grazier, you place a value on those plants that provide dry matter for your bovines all year round.

Palatable

Among the most challenging weeds in cattle paddocks are those that mimic productive grasses and legumes but offer little value as forage. When cattle avoid these plants, they gain a competitive advantage and can rapidly become a serious weed problem.

Productive

The more high quality feed you have, the more productive your pasture will be. A 450kg animal (1 AE) requires around ~10 kilograms of dry matter per day. There needs to be sufficient leafy material for the animal to select.

THE CRITICAL ELEMENTS TO PASTURE SPECIES SELECTION AND ESTABLISHMENT

When selecting pastures for your paddocks, it is important to think about where in the landscape they are located. Things to consider include:

Waterlogging

Pastures in recharge areas (upslope) generally have good drainage, supported by well-structured clay subsoils and rock. In discharge areas (lower lying), heavy subsoils can create waterlogged conditions for up to six months of the year. Where this is the case, select varieties known to tolerate periods of inundation.



Tully grass thrives in waterlogged and nutrient deficient areas. Suppression of weedy regrowth is another advantage.

Salinity

Recharge areas with better drainage tend to have lower salinity, as salt is able to move through the soil profile. In discharge areas, salt can accumulate in the subsoil, restricting the yield of tap-rooted plants such as legumes. Some grasses and legumes better tolerate these conditions.

Soil depth

Soil depth can refer to either physical depth or utilisable depth. On upper slopes where topsoil has been lost through degradation or weathering, high-yield grasses can struggle. Grasses with shallower roots and stoloniferous growth habits tend to be more competitive and persistent in these conditions.

Soil texture and pH

Recharge areas on the mid and upper slopes tend toward coarser sediments such as loams and clay loams over well-structured clays. These soils typically start slightly acidic to neutral (pH 5.5 - 7) in the 0 - 10 cm horizon, becoming gradually neutral to alkaline with depth (pH 7 - 8.5). In discharge areas where water moves out of the profile, heavy silts and sandy loam topsoils can be more acidic (pH 4.5 - 6), shifting rapidly to alkalinity in the sodic subsoils (pH 7 - 9).

Every sown pasture and legume species evolved in a specific environment, whether a Ugandan delta or the Brazilian Pampas, and developed preferences for particular soil textures and pH ranges. If you want them to perform and persist here, you need to match those conditions as closely as possible.

Nutrient availability

If soil nitrogen falls below approximately 10 mg/kg, or accessible phosphorus and sulfur drop below about 12 mg/kg, the system likely lacks sufficient macronutrients to sustain productive high-density grazing. At this point, one or more interventions are needed: reduce stocking rates to more conservative levels, extend spelling periods, or introduce a strategic fertiliser regime. Without action, pasture productivity will decline and weed pressure will follow.

Competition

Assess your current pastures for competition from less desirable plants, weeds and trees, all of which compete for nutrients, water and space. Where competition is high, consider selecting pasture species that may be less palatable but are better equipped to hold their ground.



GRASSES

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Common-language grass terms

Anther
The pollen-bearing part of the flower — the part that releases the yellow or dusty pollen.

Awns
The stiff bristle or "whisker" sticking out from the seed or floret. Many spear grasses have obvious awns.

Culms
The grass stem or stalk — the upright part that holds the leaves and seed head.

Decreaser
Highly palatable and nutritious plants that decrease in abundance under sustained grazing pressure because livestock preferentially graze them.

Digitate
Several branches or seed spikes all coming out from one point, similar to fingers spreading from your hand.

Erect
Growing upright or standing straight up.

Flag leaf
The very top leaf just below the seed head. It is usually the last leaf produced before flowering.

Florets
The tiny individual flowers that make up the grass seed head. A grass "flower" is usually a group of many florets.

Glumes
The pair of small protective scales at the base of each spikelet. They act like little covers around the florets.

Increaser
Plant species that become more abundant in a pasture under grazing pressure due to their lower palatability and greater ability to survive and adapt to grazing.

Keel
A ridge or sharp fold, often on a leaf or glume, similar to the keel of a boat running down the middle.

Ligule
A tiny flap, membrane, or ring of hairs where the leaf blade joins the sheath. Very useful for grass identification.

Node
The "joint" on the stem where leaves or branches grow. Similar to the knuckle on a cane.

Panicle
A branched seed head — basically a "tree-shaped" flower head with many sided branches coming off the main stem. Examples are many native grasses and oats.

Prostrate
Growing flat along the ground instead of standing upright.

Racemes
A flower or seed head where the little seed clusters are attached along a single main stem, usually on short stalks. Think of seeds lined up along one branch.

Rhizome
An underground creeping stem that spreads underground and sends up new shoots. This helps grasses spread and recover after grazing.

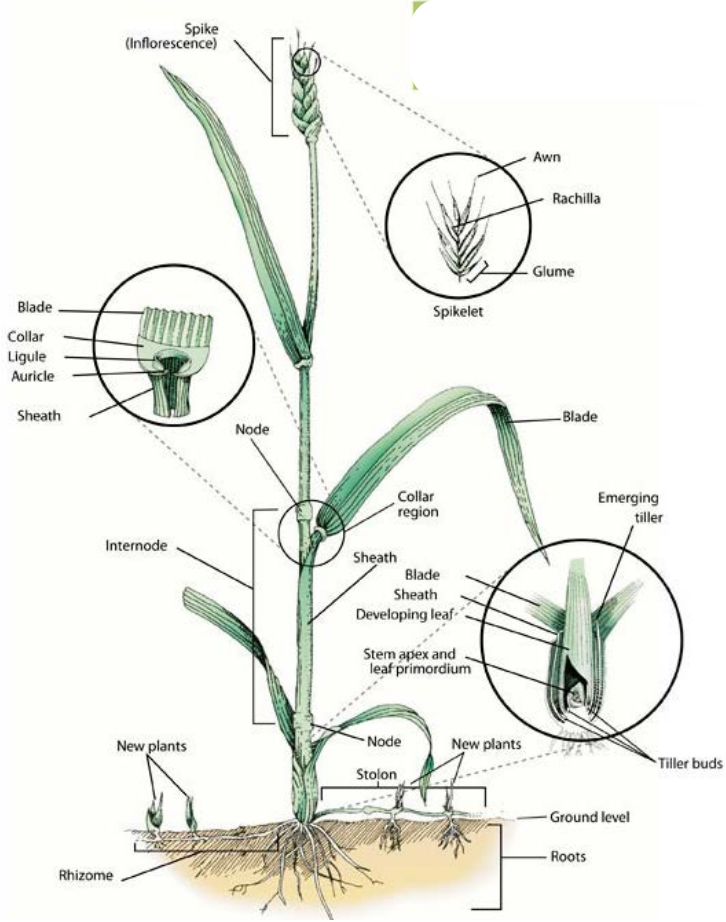
Spikelet
The basic seed/flower unit of a grass — a small cluster made up of florets and glumes. This is one of the most important ID features.

Stolon
A creeping stem that runs above ground along the surface and roots at the joints. Couch grass is a classic example.

Sub-digitate
Almost finger-like, but not all branches start from exactly the same point. They are close together near the top and spread outward.

Whorls
Leaves, branches, or seed parts arranged in a circle around the stem at the same level.

Fact sheet key - Anatomy of a grass

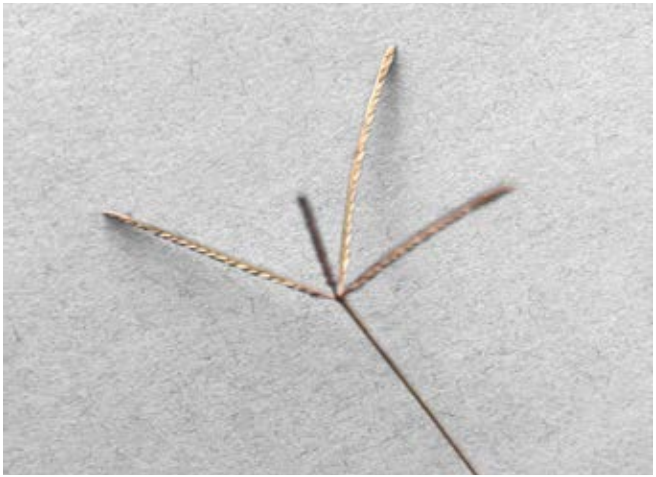


Source: University of Missouri

- Annual
- Perennial
- Native
- Suitable for horses
- Shade tolerant
- Good seed availability
- Sown
- Frost tolerant
- Suitable to bale
- Flood tolerant
- Legume friendly
- Biosecurity







AFRICAN STAR GRASS

Cynodon nlemfuensis

Sown species (3P), stoloniferous, decreaser, good hay option, no seed available, good horse feed.



Description

Plant: Largely robust, stoloniferous, deep-rooted, perennial. Stolons often woody, and culms to 100 cm tall, and 1 - 3 mm in diameter near the base. Leaf blades flat, 3 - 30 cm long, 2 - 7 mm wide.

Seedhead: Inflorescence a digitate or sub-digitate panicle, comprising 3 - 20 spreading, spike-like racemes 3 - 11 cm long, in 1 - 7 whorls.

Habitat

Can establish on a wide range of soil types from sands to heavy clays, although best in moist, well-drained, lighter textured soils. African star grass is adapted to soils with a pH between about 4.5 and 8, but ideally between about 5.5 and 7. This makes African star grass very similar to pangola in terms of its adaptation and use. They contrast in their palatability with African star grass becoming less palatable as yield increases.

Suitable land types

Alluvial flats and plains, coastal eucalypt forests and woodlands, coastal rainforests, poplar gum woodlands, eucalypt hills and ranges.

Pest/disease resistance

Moderate - susceptible to rust and couch smut.

Notes

While present in Mackay for some time African star grass has not become a popular pasture possibly due to lower yields and palatability compared to other alternatives.





ALEMAN GRASS

Echinochloa polystachya

Amity



Sown species (3P), stoloniferous, decreaser, good for horses.

Description

Plant: Robust, vigorous aquatic or semi aquatic perennial grass. Sward grows to a height of more than 1 m. Stout stems up to 3 m long, containing 7 - 10 nodes, are 10 - 15 mm in diameter.

Seedhead: Inflorescences an open panicle 15 - 25 cm long with large coarse seeds that are golden at maturity.

Habitat

Can tolerate a wide range of soil types from acid infertile solodic soils to heavy cracking or grey sodic clays. It is tolerant of poor drainage and seasonal flooding. It survives prolonged flooding, but the bulk of growth is produced after the water recedes.

Suitable land types

Alluvial flats and plains, tea tree plains and coastal wetlands.

Pest/disease resistance

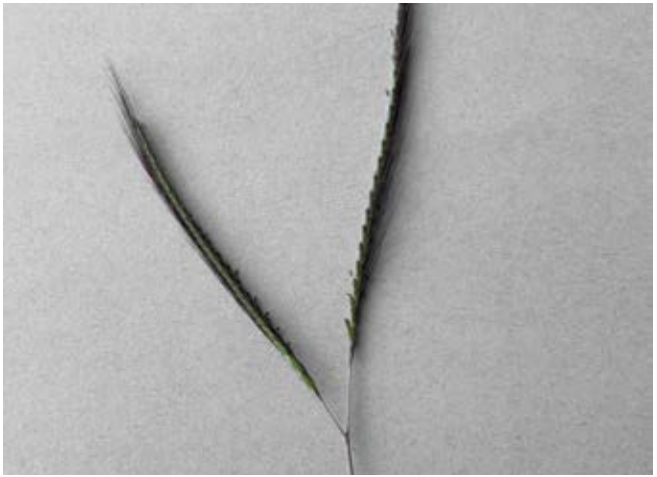
High - no serious insect or disease problems are recorded for this species.

Notes

Excellent companion grass with para grass for areas of ponded pastures where water is deeper than 1 m, will persist in areas up to 3 m of water depth.

A recognised weed of waterways, aleman grass is not a prohibited or restricted invasive plant under the Biosecurity Act 2014. However, by law, everyone has a general biosecurity obligation (GBO) to take reasonable and practical steps to minimise the risks associated with invasive plants under their control.







ANGLETON GRASS

Dichanthium aristatum

Sown species (3P), rhizomatous, decreaser, legume friendly.

Description

Plant: A perennial, tussock grass with slender stems and varying degrees of stolon development. Stems appear a candy cane like green and yellow from segment to segment. Young plants are prostrate to semi-erect with foliage to 80 cm high, becoming erect at maturity.

Seedhead: A panicle with 2 - 5 branches, sometimes only 1 under unfavourable conditions, 2 - 8 cm long and hairy at base. Awns on seed are 16 - 30 mm long.

Habitat

It is one of the few introduced warm season grasses suited to very heavy black, self-mulching clays with alkaline pH (up to 10.5) but is adapted to a wider range of soils including moderately acid red and black clays, clay loams and loams. Quite suited to heavy black soils and heavily sodic grey clays. It tolerates waterlogging and short term inundation and is salt tolerant.

Suitable land types

Marine plains, coastal wetlands, alluvial flats and plains, coastal eucalypt forests and woodlands, coastal rainforests.

Pest/disease resistance

Moderate - lowly susceptible to rust and also ergots which may reduce seed yields.

Notes

No large stands of angleton grass are apparent in Mackay Whitsunday. It tends to find its niche in the more low-lying backswamps and heavy “glue pot” clays close to the Pioneer River and other watercourses. Highly palatable, it will be sought out by stock.









BLACK SPEARGRASS

Heteropogon contortus

Native species (3P), tussocky, lesser palatability than sown species, legume friendly, fire tolerant, shade tolerant, decreaser.



Description

Plant: A robust, erect, tussocky grass growing to 60 - 150 cm tall. Stems form a keel at the base of the plant. When young and fresh it can be a greenish blue colour, changing to a deep reddish colour when fully grown out and mature.

Seedhead: Forms a tangled mass of long black awns. When wet individual awns will twist.

Habitat

One of the more common native grasses to the open woodlands of the Mackay ranges where it is found on coarse-textured soils. Black speargrass provides a good yield of accessible dry matter that is of reasonable quality early on in the year but will soon decline as the season progresses. Will increase with conservative grazing and fire.

Suitable land lypes

Coastal eucalypt forests and woodlands, poplar gum woodlands.

Pest/disease resistance

High - no serious insect or disease problems are recorded for this species.

Notes

Land managers of black speargrass dominated pastures need to be mindful of the poor nutrition it provides during the dry season. Look to incorporate a legume like stylo into these pastures.







BLADY GRASS

Imperata cylindrica

Native species (1P), rhizomatous, unpalatable and unproductive, increaser.



Description

Plant: A heavily rhizomatous grass almost burrows under the ground before sending up very erect culms 1 - 150 cm tall. Leaves have fine-toothed margins and white midvein.

Seedhead: The flower heads are white and very fluffy, and generally stand above the foliage.

Habitat

Persistent across alluvial plains and midslope country.

Suitable land types

Tea tree plains, alluvial flats and plains, coastal eucalypt forests and woodlands, poplar gum forests, coastal rainforests, eucalypt hills and ranges.

Pest/disease resistance

High - no serious insect or disease problems are recorded for this species. Its aggressive, rhizomatous growth habit makes it highly resilient.

Notes

This species behaves more like a weed than a productive pasture grass. It readily infests sown pastures and is notoriously difficult to control or reduce once established. Wick wiping bladey grass prior to the wet season may assist in managing its population and allow other grasses and legumes to move in. Ensure that preferred pastures are managed well for productivity to compete.







BRACHIARIA BRIZANTHA AND HYBRIDS

Brachiaria ruziziensis x B. decumbens x B. brizantha

Mulato II, Mekong (brizantha), Tauro (hybrid), NT Supreme

Sown species (3P), tussocky to semi stoloniferous, increaser, variable seed availability by cultivar, legume friendly, high oxalate.

Description

Plant: Semi-erect tussock growing to 100 cm (140 cm at flowering). Leaf blades are 40 - 60 cm long and 24 mm wide. Brizantha has coarse leaves with a few bristles whereas the hybrids are typically hairy and soft.

Seedhead: Panicle with 4 - 8 racemes (5 - 7 cm long) on a 15 cm rachis. Spikelets are 5 mm long and 2 mm wide in two rows; stigmas are cream-white.

Habitat

A productive, high-yielding grass which can grow on a range of soils and best on loams with poor cation balance and high aluminium levels. It tolerates neutral to acidic soils (pH 5 - 7). While preferring better-drained mid-slopes, it survives short-term waterlogging and flooding. The Mulato II produces a dense mat of litter that is an excellent weed suppressor. Mekong less so being more tussocky.

Suitable land types

Alluvial flats and plains, coastal rainforests, coastal eucalypt forests and woodlands.

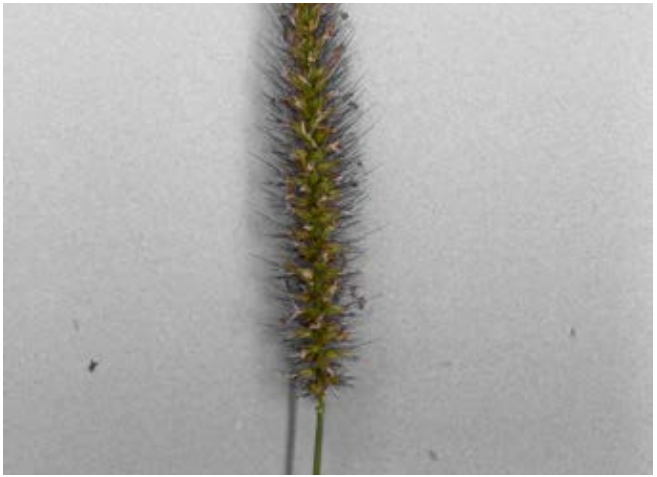
Pest/disease resistance

High - no serious insect or disease problems are recorded for this species.

Notes

A relative to signal grass produced in South America to combat the insect Brachiaria. Grows copious amounts of dry matter if managed well and provided adequate nutrition. Palatable to stock; under high nitrogen fertiliser regimes, yields exceed 15,000 kg of dry matter/ha. Cultivar seed availability varies.







BUFFEL GRASS

Cenchrus ciliaris

Gayndah, Biloela, Cloncurry, USA

Sown species (3P), tussocky/rhizomatous, decreaser, plenty of seed, high oxalate.

Description

Plant: Low- to tall-growing, erect to sprawling, summer-growing, perennial, tussocky grass with varying degrees of rhizome (underground stem) development. Deep, strong, fibrous root system to >2.0 m.

Seedhead: Erect to nodding, straw, grey or purple coloured foxtail, 2 - 15 cm long and 1 - 2.5 cm wide.

Habitat

While buffel grass is not common to the region it is often found in the escarpment areas surrounding the Mackay valley. These well drained soil and open woodland areas are quite suitable for this grass.

Suitable land types

Eucalypt hills and ranges.

Pest/disease resistance

Moderate - Gayndah is susceptible to die back and buffel blight. Cloncurry susceptible to buffel blight. Can also be affected by rust in some areas.

Notes

Buffel grass is quite easily established, grazing and fire tolerant. A useful pasture in the grazing areas but a weed in national parks along the Dalrymple and Connors ranges. A good companion species to the native grasses and sown legumes like stylos that are also common there.





CREEPING BLUE GRASS

Bothriochloa insculpta

Bisset, Hatch

Sown species (3P), stoloniferous, decreaser, good hay option, good horse feed.

Description

Plant: A perennial, tussock grass, 30 - 80 cm tall, and up to 1.5 m when flowering, spreading by runners. Seeds and leaves have a characteristic aromatic odour when crushed.

Seedhead: Olive green to purplish in colour, with 3 to >20 branches (racemes) 4 - 9 cm long along a short central axis.

Habitat

It is adapted to well-structured, well-drained, red and black clays, limiting its adaptation within the Mackay Whitsunday region. Primarily a grass for neutral to alkaline pH (7 - 10) loams and clay loams, of at least moderate fertility, but is less suited to sands or to very heavy black clays. Can handle some sodicity and establish on scalded or puggy grey clays. It does not tolerate waterlogging.

Suitable land types

Coastal eucalypt forests and woodlands and coastal rainforests.

Pest/disease resistance

Moderate to high - susceptible to pasture die back. Cultivar Hatch is susceptible to rust.

Notes

Underutilised grass for the wet coast. A good striker and hay variety that is good for horses and other ruminants.







FOREST BLUEGRASS

Bothriochloa bladhii subsp. *glabra*

Native species (3P), tussocky, legume friendly, fire tolerant, shade tolerant, increaser, good horse feed.



Description

Plant: A tufted, perennial warm season grass, erect or prostrate then erect, 40 - 80 cm tall before flowering, sometimes with short stolons.

Seedhead: A panicle comprising up to 20, mostly simple, green to purplish branches arising from different positions, stunning reddish maroon in colour.

Habitat

Grows on both fertile and infertile soils with textures from sandy loam to clays and hard-setting clay loams; will pop up in all areas of the landform. Generally prefers the neutral to acidic pH range of soils. Can tolerate a variable rainfall from 750 - 1800 mm year. Forest bluegrass is quite productive and palatable whilst being relatively grazing tolerant. A very good native species in the open woodland ranges surrounding Mackay.

Suitable land types

Tea tree plains, alluvial flats and plains, coastal eucalypt forests and woodlands, eucalypt hills and ranges.

Pest/disease resistance

Moderate - leaf seed crops can be affected by the leafhopper Balclutha rubrostriata, which infests the inflorescence. Leaf rust caused by Puccinia duthiei is often severe late in the growing season and is favoured by wet weather, rendering the forage less palatable to livestock when combined with the high stem component at flowering.

Notes

In some highly palatable and productive paddocks in Mackay this grass can become less desirable. Maintaining good soil nutrition will help to promote competitiveness by the sown grass species.







GIANT GUINEA GRASS

Panicum maximum

Alto, Hamil, Megamax 059, Makueni

Sown species (3P), decreaser, shade tolerant, tussocky, legume friendly, high oxalate, limited seed available.

Description

Plant: 1.5 - 3.5 m tall, with stems to about 10 mm diameter. Leaf blades glabrous to hairy, 40 - 100 cm long, 1 - 3.5 (rarely –5) cm wide, tapering to fine point.

Seedhead: Panicle, 12 - 45 (–60) cm long, and 12 - 25 (–30) cm wide.

Habitat

Particularly suited to the lighter, better drained alluvial soils such as those adjacent to waterways, sand to loams and lighter clays. Can respond well to fertiliser inputs and grow large yields. Ideally prefers soil pH acidic to neutral (5.5 - 7).

Suitable land types

Alluvial flats and plains, coastal eucalypt forests and woodlands, coastal rainforests, poplar gum woodlands, eucalypt hills and ranges.

Pest/disease resistance

Moderate - ergot and other fungal diseases can affect seed yields.

Notes

Quite shade tolerant which is why it is a weed in riparian areas so not an advantage there, but it is an advantage in grazed forested areas with high tree density and competitive against lantana. A good source of dry matter for fire management when needed. Can respond post grazing with good residual leaf growth.





GIANT SPEARGRASS

Heteropogon triticeus

Native species (2P), tussocky, unproductive, legume friendly, fire tolerant, shade tolerant, decreaser.



Description

Plant: A tufted, perennial grass, 50 - 70 cm tall before flowering, stems growing to 2 m. Pale sections of the stem internodes alternate with the green sheaths giving a banded appearance.

Seedhead: The inflorescence is a raceme more than 9 cm long, with long black awns that form a tangled mass on maturity.

Habitat

Giant speargrass is present in the range country around Mackay and will verge into the coastal forest escarpment areas where they are cleared and where grazing is very conservative. Can often appear where soil has been disturbed and then spelled for a good period of time. Does not contribute heavily to grazing as tussocky and sporadic in pasture and will disappear quickly following any increase in grazing pressure.

Suitable land types

Coastal eucalypt forests and woodlands and eucalypt hills and ranges.

Pest/disease resistance

High - no serious insect or disease problems are recorded for this species.

Notes

Giant speargrass appears in well managed paddocks in the eucalypt rangelands region, especially if fire has been used. More common inpastures low in phosphorus.





GOLDEN BEARD GRASS

Chrysopogon fallax

Native species (3P), rhizomatous, legume friendly, fire tolerant, shade tolerant, decreaser, good horse feed.

Description

Plant: Erect, tufted, perennial grass 30 – 150 cm tall. Leaves are mostly basal; the old leaf sheaths persist and have a woolly appearance.

Seedhead: The inflorescence is a panicle 7 – 21 cm long, with whorled branches. The spikelets appear at the end of the branches and are purplish to golden brown.

Habitat

Present in open to closed woodlands on the ranges. Particularly on the clay loam midslopes. Found in the understory of large trees.

Suitable land types

Eucalypt hills and ranges.

Pest/disease resistance

High - no serious pest or disease issues are recorded. Its deep root system and vigorous growth contribute to strong persistence under grazing and stress conditions.





HUMIDICOLA

AKA KORONIVIA GRASS, TULLY GRASS

Brachiaria humidicola /
Urochloa humidicola

Sown species (3P), highly stoloniferous, increaser, moderate seed availability but can also be sown by runners, moderate hay option, high oxalate.

Description

Plant: Strong, creeping, perennial grass which forms a dense matted sward.

Seedhead: Inflorescences up to 60 cm high. It consists of 2 - 5 racemes (arms) 2.5 - 5.5 cm long bearing two rows of seeds.

Habitat

Tolerant of a wide range of soil types from acidic sandy soil to heavy sodic clays. It grows well on soils with low phosphorus and has a higher nitrogen use efficiency than all other sown species of grass. It is tolerant of poor drainage and seasonal flooding. It survives prolonged shallow flooding although some yield losses may be incurred. Evidence suggests that this grass will often colonise upper areas of the landform during wet years and then die back in drier years.

Suitable land types

Marine plains, tea tree plains, coastal wetlands, alluvial flats and plains, coastal eucalypt forests and woodlands, coastal rainforests and poplar gum woodlands.

Pest/disease resistance

High - no serious insect or disease problems are recorded for this species.

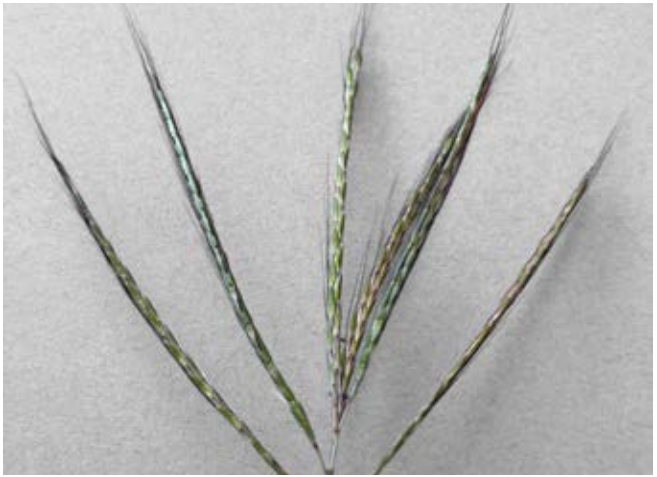
Notes

A highly competitive grass limiting legume options. Best option for weed control, particularly giant rats tail grass. Can be less palatable to stock than other grass species leading to underutilisation. This can be managed through targeted fertiliser regimes.









INDIAN COUCH

Bothriochloa pertusa

Keppel, Dawson, Medway

Sown species (3P), stoloniferous, increaser, moderate hay option, limited seed available, good horse feed.

Description

Plant: A stoloniferous, mat-forming, perennial, 30 - 60 cm tall. Stolons commonly red or pink, rooting down at nodes. Has a very distinctive 'turpentine' like aroma when crushed.

Seedhead: Comprises 3 - 8 branches arising from different points on a central axis, 1 - 3 cm long, and purplish in colour.

Habitat

Adapted to low fertility, saline, acid to alkaline soils, from sands to clays. It colonises poorer soils when tufted grasses succumb to heavy grazing. It is commonly known as a weak perennial and in below average rainfall years can disappear from the pasture only to return aggressively in areas of bare ground once rain returns. Shallow stolons also allow it to compete in areas of shallow top soil and excessive compaction such as scalds or gullies.

Suitable land types

Marine plains, alluvial flats and plains, coastal eucalypt forests and woodlands, coastal rainforests, poplar gum woodlands, hinterland rainforests, eucalypt hills and ranges.

Pest/disease resistance

Moderate - susceptible to rust and ergot which does not affect the sward to a high degree.

Notes

In the rangeland areas, Indian couch can be considered a contaminent of sown pastures, but can also be useful in less productive situations. The Keppel and Medway varieties are most productive. Less competitive with many tropical sown species.





KANGAROO GRASS

Themeda triandra

Burrel, Tangara, Mingo

Native species (3P), shortly rhizomatous, legume friendly, fire tolerant, shade tolerant, decreaser, good horse feed.

Description

Plant: A native, tufted, perennial, warm season grass. Stems droop almost back to the ground.

Seedhead: An open panicle 10 - 30 cm long, with long awns on the seed clusters which are fan like.

Habitat

Kangaroo grass is adapted to the sandy and clay loams on the midslopes of the landform right up to the course textured soils in the ranges. Part of the ecosystem of the open woodland, it is common under tree rings with native legumes and golden beard grass. Appears in clumps rather than thick swards. Good fire management and wet season spelling will see this grass return.

Suitable land types

Eucalypt hills and ranges.

Pest/disease resistance

High - no major pests or diseases are known for this species.





KIKUYU GRASS

Pennisetum clandestinum / Cenchrus clandestinus

Whittet, Breakwell, Crofs, Noonan



Sown species (3P), rhizomatous, increaser, good seed availability, legume friendly, frost tolerant, high oxalate.

Description

Plant: A mat-forming, perennial grass spreading by rhizomes and branched stolons. Under regular grazing it forms a dense turf, but otherwise can grow to 30 or 40 cm high.

Seedhead: Much reduced and largely enclosed by the leaf sheath. Presence is indicated only when pollen-bearing stamens or feathery stigmata extend beyond the shoot tip.

Habitat

Kikuyu prefers fertile, moderately drained, light to medium textured soils. It grows best on well-structured, red basalt soils, but also on alluvial and fertilised moist sandy soils. It tolerates some waterlogging and up to 10 days inundation. It performs best in soils with moderate acidity (pH 5.5 - 7.0), but tolerates pH as low as 4.5. This along with frost tolerance make it a common and very productive grass in the Eungella hinterland area.

Suitable land types

Hinterland rainforests.

Pest/disease resistance

Moderate - susceptible to Kikuyu Yellows (root fungus) and pyricularia leaf spot.

Notes

Yields can be greatly increased through targeted fertiliser application. It is most productive when actively grazed to maintain fresh growth and ensure seeding of companion clover. Caution is needed when grazing horses on kikuyu/clover pastures. Under certain conditions (e.g. drought stress), white clover can accumulate cyanogenic glycosides, which pose a cyanide poisoning risk to horses. This risk is uncommon and can be managed through good pasture management practices.







MOLASSES GRASS

Melinis minutiflora

Introduced species (3P), stoloniferous, decreaser, no seed available, moderate oxalate.



Description

Plant: A long lived perennial, usually growing 0.6 - 1 m tall, with upright, straggling or trailing stems up to 2 m long. It has hairy stems that will root at the node if in contact with soil. Leaves are sticky and give off aromatic “molasses” smell.

Seedhead: Numerous branched seedheads growing 8 - 30 cm long and pale pink, red, or purplish in colour.

Habitat

Originally introduced as a pioneer pasture species for developing hilly country because of its characteristics such as fast-establishment, tolerance of low fertility, ability to quickly cover disturbed country and build up sufficient fuel load for a fire to manage woody regrowth. However, this grass will not persist under consistent grazing. Can establish on a variety of soil types but prefers the well drained slopes in the upper areas of the landform.

Suitable land types

Hinterland rainforests, eucalypt hills and ranges.

Pest/disease resistance

High - no serious insect or disease problems are recorded for this species.

Notes

Stoloniferous cousin to Red Natal grass, which is similar but a tussock grass without the scent.







NORTHERN CANE GRASS

Mnesithea rottboellioides

Native grass (1P), rhizomatous, produces lower yield of useful forage, decreaser.



Description

Plant: Coarse tussock with a very large basal area. Culms erect, 100 – 300 cm tall.

Seedhead: Multiple large coarse inflorences, arranged on the same stem.

Habitat

A wetland grass, very tolerant of waterlogging, found adjacent to salty marshlands and wetland swamps in the heavy sodic clays. Not a huge contributor to grazing but provides browse to cattle chasing dry matter in these wet environments at the lower end of the landform. Very sensitive to grazing.

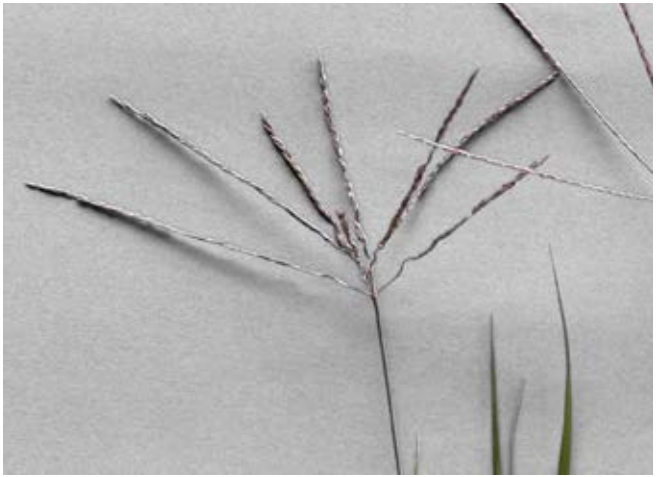
Suitable land types

Marine plains, coastal wetlands, tea tree plains.

Pest/disease resistance

High - no major pests or diseases are known for this species.







PANGOLA GRASS

Digitaria eriantha

Sown species (3P), stoloniferous, decreaser, very good hay option, legume friendly, planted using runners.



Description

Plant: A mat-forming, creeping, perennial, spreading by runners (stolons) that root at the nodes.

Seedhead: The flowering head extends above the leaves, with one or two rings of radiating branches at the top (compare with rhodes grass), each branch is fine and about 10 cm long.

Habitat

Originally introduced as a pioneer pasture species for developing hilly country because of its characteristics such as fast-establishment, tolerance of low fertility, ability to quickly cover disturbed country and build up sufficient fuel load for a fire to manage woody regrowth. However, the grass declines with regular severe fire and heavy grazing. Can establish on a variety of soil types but prefers the well drained slopes in the upper areas of the landform.

Suitable land types

Marine plains, tea tree plains, coastal wetlands, alluvial flats and plains, coastal eucalypt forests and woodlands, coastal rainforests.

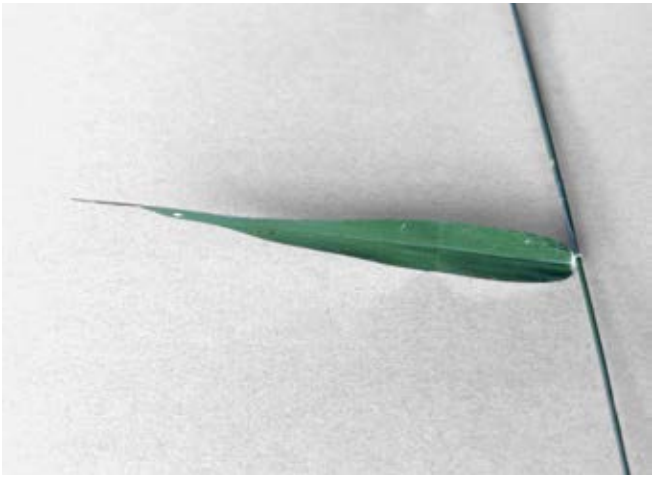
Pest/disease resistance

Low - pangola stunt virus is active in the region. Also contracts penny spot and rust. Susceptible to leaf beetles, leaf hoppers and aphids which reduce yield and assist in the distribution of disease.

Notes

One of the oldest sown species in Mackay. Pest and disease burden can significantly reduce yields and competitiveness. Still few other grasses compare as consistent hay source. Not the greatest horse feed but if you are looking for a horse paddock, pangola is more manageable than many other grasses available in the Mackay Whitsunday region.







PANIC GRASS

Panicum maximum

Gatton, Green, Megamax049

Sown species (3P), tussocky, decreaser, good combination species, legume friendly, shade tolerant, high oxalate.

Description

Plant: Stands less than 1.5 m in flower; stems to about 5 mm diameter. Leaf blades glabrous to hairy, to 1.4 cm wide.

Seedhead: Panicle 18 - 20 cm long and 15 - 18 cm wide,

Habitat

Particularly suited to the lighter, better drained soils from sands to loams and lighter clays. Best grown on fertile soils but can handle acidic pH to slightly alkaline soils (pH range 5 - 8). Productive on sandy levees adjacent to watercourses particularly and can respond to rainfall to produce good forage very quickly. Intolerant to waterlogging. Often dominates in closed woodland environments where grazing is limited.

Suitable land types

Alluvial flats and plains, coastal eucalypt forests and woodlands, coastal rainforests, poplar gum woodlands, eucalypt hills and ranges.

Pest/disease resistance

Moderate - seed heads affected by fungal diseases.

Notes

A useful species in wooded areas that are conservativly grazed - provides good yields and lives well with vine legumes when spelled. Decreases quickly if overgrazed.





PARA GRASS

Brachiaria mutica

Sown species (3P), stoloniferous, decreaser, no seed available, plant from vegetative material, high oxalates.



Description

Plant: Coarse, vigorous, trailing, perennial grass. Sward grows to a height of 1 m. Stout stolons up to 5 m long, which branch and root readily at the nodes.

Seedhead: Inflorescences a panicle 6 - 30 cm long with 5 - 20 densely flowered racemes.

Habitat

A grass of wet areas. It is tolerant of a wide range of soil types from acid, infertile, solodic soils to heavy cracking or grey sodic clays. It is tolerant of poor drainage and seasonal flooding to a depth of approximately 1 m. It survives prolonged flooding, but will remain sparse until water recedes. Soils need to stay wet until June for it to persist. It is tolerant of heavy grazing especially given wet conditions will result in a spell and produces additional residual feed to cattle long after the wet season.

Suitable land types

Alluvial flats and plains, tea tree plains, coastal wetlands.

Pest/disease resistance

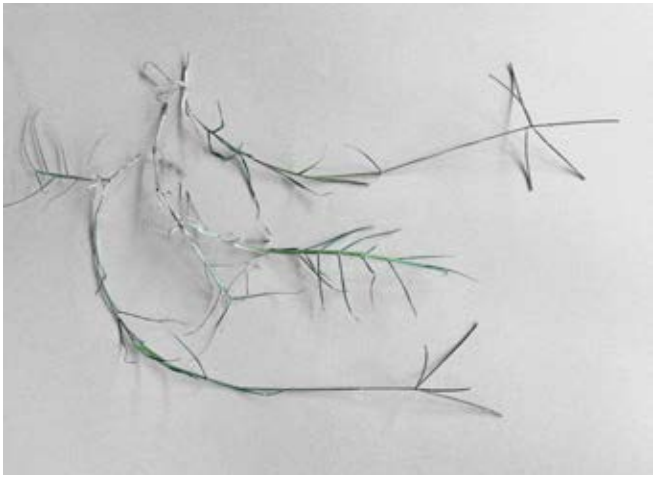
High - no serious insect or disease problems are recorded for this species.

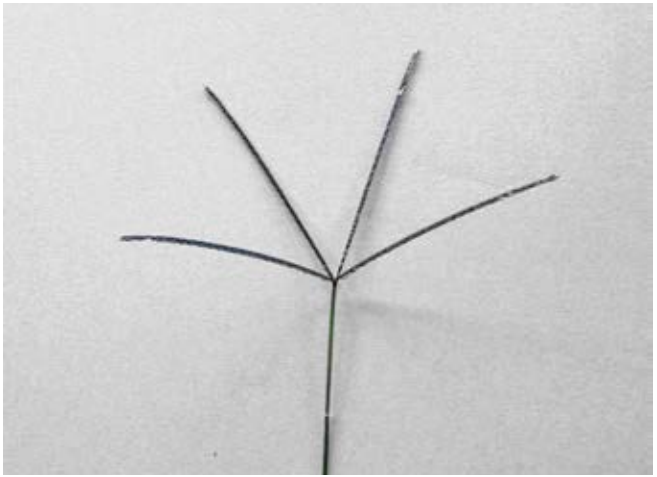
Notes

Para grass is a grass usually found in wetlands and a recognised environmental weed. Used historically in ponded pastures in the Mackay Whitsundays for grazing.

Para grass is not a prohibited or restricted invasive plant under the Biosecurity Act 2014. However, by law, everyone has a general biosecurity obligation (GBO) to take reasonable and practical steps to minimise the risks associated with invasive plants under their control.







QLD BLUE COUCH

Digitaria didactyla

Sown species (2P), lower yield potential, stoloniferous, increaser, good seed availability, good horse feed.



Description

Plant: Stoloniferous perennial, forming dense mats 2 - 12 cm high. Stems prostrate with nodal roots until mat complete, then ascendant through taller vegetation. Leaves a greenish blue colour.

Seedhead: Inflorescence a digitate panicle mostly comprising 2 - 3 racemes.

Habitat

Common in most free-draining grazing environments in Mackay, but with yield limitations. Very palatable and produces a dense ground cover under heavy grazing. pH tolerance ranges from 5.5 - 8.5. Moderately tolerant of salinity.

Suitable land types

Marine plains, alluvial flats and plains, coastal eucalypt forests and woodlands, coastal rainforests, poplar gum woodlands, hinterland rainforests.

Pest/disease resistance

Moderate - susceptible to rust and couch smut.

Notes

A grass which increases under heavy stocking regimes. A good feed option for horses.







RHODES GRASS

Chloris gayana

Katambora, Callide , Tolgar, Toro, Mariner, Reclaimer + others

Sown species (3P), stoloniferous, decreaser, good hay option, good combination grass, good seed availability, legume friendly, good horse feed.

Description

Plant: Tufted, perennial grass 1 - 2 m tall, spreading by looping runners forming new plants along the runners (stolons).

Seedhead: Mostly a single (sometimes double) circle of radiating light, greenish brown (ripening to darker brown) branches 4 - 15 cm long.

Habitat

Well drained loams and clay loams ideally with clay sub soils. Avoid heavy clays or areas of poor drainage. Very tolerant of high soil salinity levels, making it a useful grass for sodic rehabilitation areas. Optimal soil pH 5.5 - 7.5 but will exist in the range of 4.5 - 10.

Suitable land types

Alluvial flats and plains, coastal rainforests, coastal eucalypt forests and woodlands, poplar gum woodlands, eucalypt hills and ranges.

Pest/disease resistance

Moderate - some varieties susceptible to nematodes which are common to Mackay Whitsunday soil especially ex-cane. May explain lack of persistence.

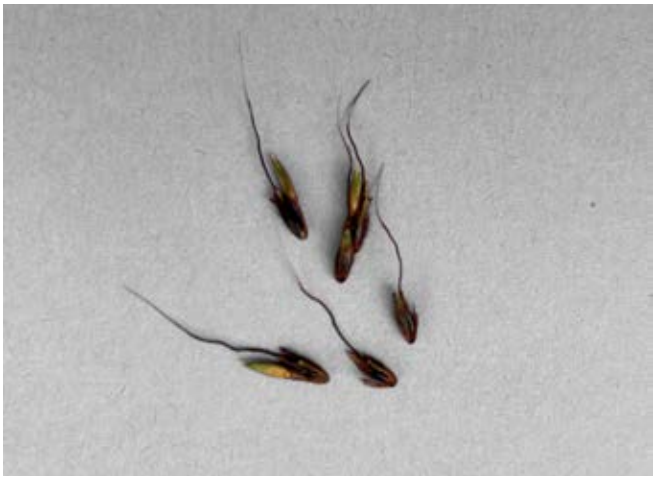
Notes

An extremely versatile pasture grass (cattle pastures, hay production, horse grazing). Easy to establish. May not persist long term without careful grazing/baling management and fertiliser.









SCENTED TOP

Capillipedium spicigerum

Native species (1P), rhizomatous, unpalatable in coastal sown pastures, increaser.



Description

Plant: A stout and robust perennial native grass with stems up to 1.5 m tall.

Seedhead: Inflorescences are panicles, reddish to purple in colour and produce a pleasant fragrance when crushed.

Habitat

Common to the timbered country of coastal and semi coastal Queensland. It has become a weed in more productive sown pastures due to its lower palatability compared to sown pasture grasses.

Suitable land types

Alluvial flats and plains, eucalypt forests and woodlands.

Pest/disease resistance

High - no serious insect or disease problems are recorded for this species.

Notes

In pastures where scented top is becoming an issue, look to manage through effective fertiliser regimes and rotational grazing to increase competitiveness of preferred species.







SETARIA

Setaria sphacelata

Kazungula, Nandi, Narok, Solander, Splenda (hybrid)

Sown species (3P), tussocky, decreaser, good hay option, seed available most years, legume friendly, high oxalate.

Description

Plant: Tufted, perennial grass growing 1 - 2 m tall, and up to about 30 cm diameter at the base. Stem forms a keel at the base of the tussock.

Seedhead: Seeds are borne on a bristly, cylindrical 'spike' 6 - 25 cm long, and about 1 cm across, varying in colour from golden to dark brown.

Habitat

Key pasture grass in both the coastal and hinterland regions of Mackay Whitsunday. Established well from seed on a range of soil types irrespective of soil texture and pH, although not saline tolerant. Can tolerate waterlogging and common to swamps and wetlands.

Suitable land types

Tea tree plains, coastal wetlands, alluvial flats and plains, coastal eucalypt forests and woodlands, coastal rainforests, poplar gum woodlands, hinterland rainforests.

Pest/disease resistance

High - no serious insect or disease problems are recorded for this species.

Notes

High yielding and a good companion feed to other grasses and legumes in Mackay Whitsunday. Moderate palatability means that other grasses will be preferred earlier on. Due to its height and stooling nature is less effective at weed suppression than some other grasses. Where pastures remain waterlogged, this grass is extremely productive and a valuable asset, particularly in rotation systems where short spells allow it to produce a massive amount of residual growth throughout the year.





SIGNAL GRASS

Brachiaria decumbens / Urochloa decumbens

Basilisk

Sown species (3P), stoloniferous, increaser, seed available most years, high oxalate.

Description

Plant: Stoloniferous, leafy, perennial grass with an erect or trailing habit. Leaf canopy can grow to 50 cm above ground.

Seedhead: Complex, made up of 2 - 3 rod-like branches separated by 2 - 5 cm on the stem with one at the stem tip. Each branch is 3 - 5 cm long , 3 - 5 mm wide and is made up of 2 rows of alternating seeds totalling about 40 seeds.

Habitat

Grows on a wide range of soils, but best on well-drained and deep alluvial soils or clay loams over clays. Adapted to the lower pH (4.5 - 7) irrespective of cation balances. Adapted to soils of low fertility but is very responsive to applied nitrogen. Will tolerate short-term flooding, but not prolonged water-logging. Less tolerant to salinity. Best suited to the alluvial areas and the midslopes, escarpments and ridges. Well suited to open woodlands were legumes can become more competitive with it.

Suitable land types

Alluvial flats and plains, coastal rainforests, coastal eucalypt forests and woodlands, poplar gum woodlands, eucalypt hills and ranges.

Pest/disease resistance

High - no serious insect or disease problems but can be temporarily damaged by toya leaf hoppers.

Notes

A very common pasture in Mackay Whitsunday region, particularly upslope in the landform. While high oxalate levels means it is unsuitable for horses or smaller ruminants, it is a fantastic pasture for cattle and an easy pick for anyone improving pastures on the suitable landtypes.







SUMMER GRASS

AKA SOUR GRASS, CRAB GRASS

Digitaria sanguinalis / D. cilaris



Naturalised species (1P), unproductive due to low yield levels or limited life cycle (annual), tussocky, increaser, high oxalates in some species.

Description

Plant: Tufted annual, prostrate at base of stem but ascending to 60 cm tall. Leaf is lance-shaped, 5 - 10 cm long; bluish green with a white midrib.

Seedhead: The flowering head extends above the leaves, with one or two rings of radiating branches at the top. Each branch is quite fine and up to 10 cm long.

Habitat

Common to many tropical environments around the world. Summer grass is a short lived annual that germinates quickly from seed each year. Commonly in the alluvial and lower landforms of Mackay Whitsunday, it is tolerant of wet conditions and can grow on all soil types. Palatable to stock initially but becomes less palatable once seeded then dies off. Dominance of this grass would indicate other pastures are not managed optimally for competitiveness.

Suitable land types

Alluvial flats and plains, tea tree plains, coastal rainforests, coastal eucalypt foress and woodlands.

Pest/disease resistance

Moderate - high presence of rust later in the wet season.

Notes

Brings a flush of high-quality dry matter to the paddock early in the wet season, but senesces and is normally gone from the paddock at the onset of colder weather.







TALL FINGER GRASS

Digitaria milanjiana

Jarra, Arnhem

Sown species (3P), stoloniferous, decreaser, good hay option, good horse feed, legume friendly.

Description

Plant: A vigorous grass with long stolons that can strike readily at the nodes to form a tussock-like plant. Similar to Rhodes grass in its growth habit.

Seedhead: Inflorescences up to 1.5 m high. It consists of 2 - 18 spikes in a ring of radiating branches that are subdigitate and up to 15 cm long.

Habitat

A relative of pangola grass, it is adapted to a range of soils from sand to heavy cracking clay in the acid to neutral pH range (pH range 5.5 - 7). It also grows well on well drained clay loam soils on the upper midslopes of the landform. Jarra withstands waterlogging, but not flooding.

Suitable land types

Alluvial flats and plains, coastal rainforests, coastal eucalypt forests and woodlands.

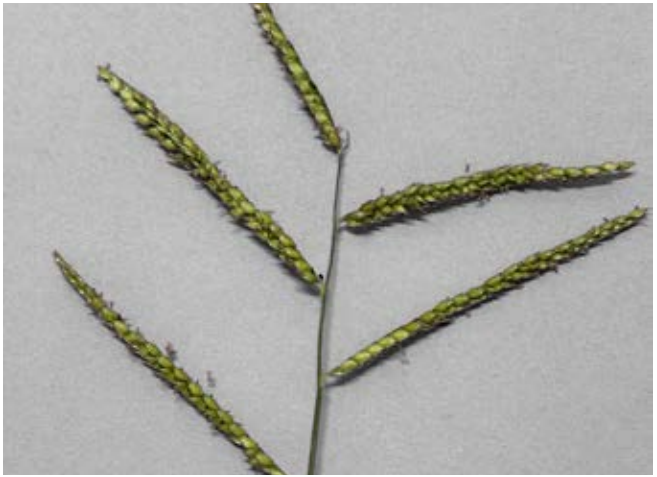
Pest/disease resistance

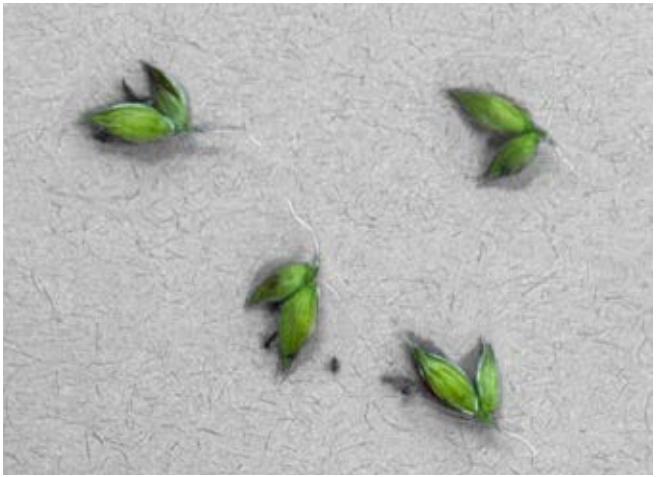
Moderate - rust can affect at times.

Notes

A potential alternative to pangola, with viable seed production. Tall finger grass is a leafy, palatable grass when fresh but can become stalky and less nutritious if underutilised. An issue from both a grazing and hay production perspective.







TROPICAL PASPALUM GRASSES

AKA BRUNSWICK GRASS, BAHIA GRASS, PLICATULUM GRASS

Paspalum plicatulum / P. lepton / P. notatum

Rodds Bay, Bryan, Hartley (P. plicatulum), Blue Dawn (P. lepton), Competidor, Pensicola (P. notatum)



Sown species (2P), rhizomatous, increaser, low palatability, high oxalate.

Description

Plant: Mat-forming, perennial grass, with short to long rhizomes, mostly in top 10 cm of soil. Foliage usually 20 - 30 cm deep and seedheads carried on erect stems 10 - 20 cm above the foliage.

Seedhead (plicatulum/lepton): Grey-green in colour, generally comprising 2 - 5 branches 2 - 7 cm long along a main axis.

Seedhead (notatum): Usually comprises two 'arms' of a 'Y', and borne above the foliage on erect stems about 50 cm tall.

Habitat

Extremely competitive grasses forming dense mats of vegetation. Well adapted to acidic soils, prefers drainage. Most species and cultivars of these paspalum grasses are well noted for their unpalatability once they grow older leaves and seed. They have been classified as weedy in many council areas in Queensland and New South Wales.

Suitable land types

Alluvial flats and plains, coastal eucalypt forests and woodlands, coastal rainforests, poplar gum woodlands.

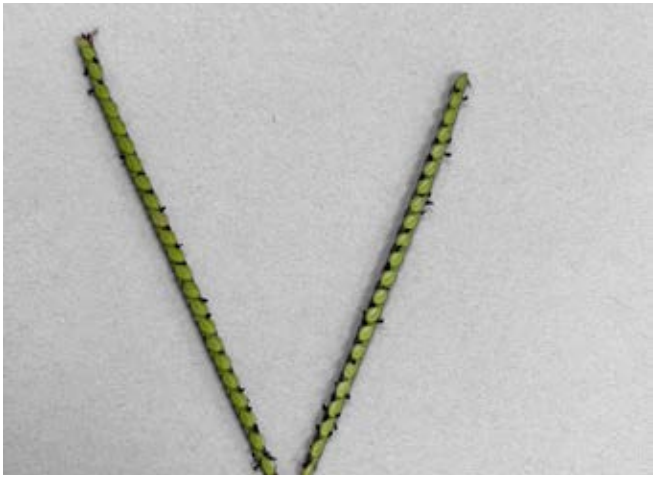
Pest/disease resistance

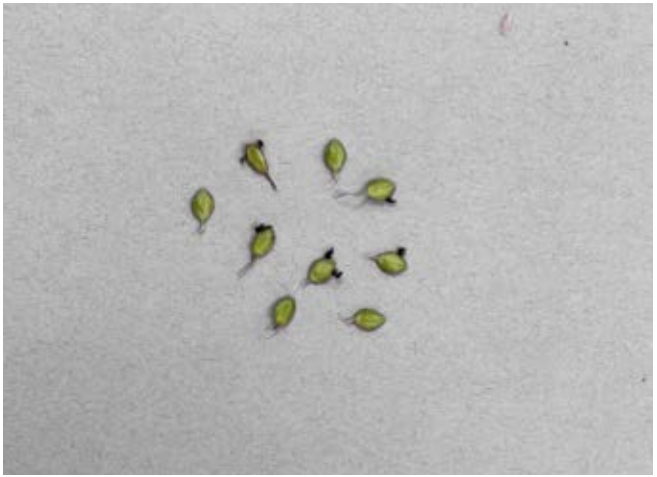
Moderate - P. lepton can be affected by seed ergot resulting in 'paspalum staggers' in horses. P. notatum and P. plicatulum have few pest or diseases.

Notes

Best to avoid these grasses as they are too dominant and unpalatable to be productive.







WATER COUCH

Paspalum distichum

Introduced species (3P), stoloniferous, increaser, no seed available, possibly grown from stolons, high oxalate.



Description

Plant: Mat forming perennial grass, 5 - 50 cm tall, spreading by rhizomes and stolons.

Seedhead: Consist of two erect branches 2 - 7 cm long, forming a V-shape with hairs at the junction.

Habitat

Water couch has become more common in the area adjacent to wetlands in recent years. Forms a fairly good sward of accessible pasture that cattle may tend to leave for later in the year. More common in wet years. A useful addition to pastures but lack of seed and unknown persistence under grazing limits use.

Suitable land types

Alluvial flats and plains, tea tree plains, coastal wetlands.

Pest/disease resistance

High - some reports of water couch affected by an ergot (Claviceps paspali). Ingestion of ergot-affected water couch seeds by horses can cause staggers.





WIRE GRASSES

Aristida spp

Native grasses (1P), tussocky, non-palatable and low yielding, present on more densely wooded areas in the ranges, shade tolerant, fire tolerant, legume friendly, increaser.

Description

Plant: Perennial, tufted. Culms erect, 25 - 109 cm tall. Sparse leaves curled at the base.

Seedhead: Seeds are distinctive with three awns forming a triangular pattern and joined at a sharp point at the base.

Habitat

Common to the ranges, very tolerant of competition by trees. Can live under dense overstoreys and common to the clay loams and shallow granite soils right at the top of the landform.

Suitable land types

Eucalypt hills and ranges.

Pest/disease resistance

High - no serious insect or disease problems are recorded for this species.



LEGUMES

SPECIES IDENTIFICATION INDEX

Legumes

American Jointvetch 81
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Pinto Forage Peanut 99
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Common-language legume terms

Adventitious root
Roots that grow from places they normally would not, such as from stems or nodes instead of the main root.

Axillary
Something that grows from the angle (junction) between a leaf and the stem

Bipinnate
A more complex version of pinnate, where each leaflet is further divided into smaller leaflets.

Cotyledon
The first "seed leaves" that come out when a plant germinates; they help get the seedling started.

Haem
An iron-containing compound involved in oxygen movement within cells. In legumes, it is part of the system that helps nitrogen-fixing bacteria function inside nodules.

Inoculum
A preparation of rhizobia bacteria applied to legume seed or soil at sowing to promote nodulation and nitrogen fixation. Specific legumes require inoculation with the particular rhizobia strain they interact with.

Nodule
Small lumps on the roots where bacteria live and help the plant capture nitrogen from the air (basically natural fertiliser factories).

Peduncle
The main stalk that supports a group of flowers or a single flower.

Petiole
The little stalk that connects a leaf to the main stem.

Pinnate
A leaf made up of smaller leaflets arranged along both sides of a central stem (like a feather).

Promiscuous
Refers to nodulation compatibility. A legume that can nodulate and fix nitrogen with a broad, unspecific range of naturally occurring soil rhizobia strains, rather than requiring a specific inoculant at sowing.

Rhizobia
Soil bacteria that form a symbiotic relationship with legume roots, living in nodules on the root system where they convert (fix) atmospheric nitrogen into a form the plant can use. In return, the plant supplies the bacteria with carbohydrates.

Sprays
A loose, branching cluster of flowers or seed heads spread out over multiple small stems.

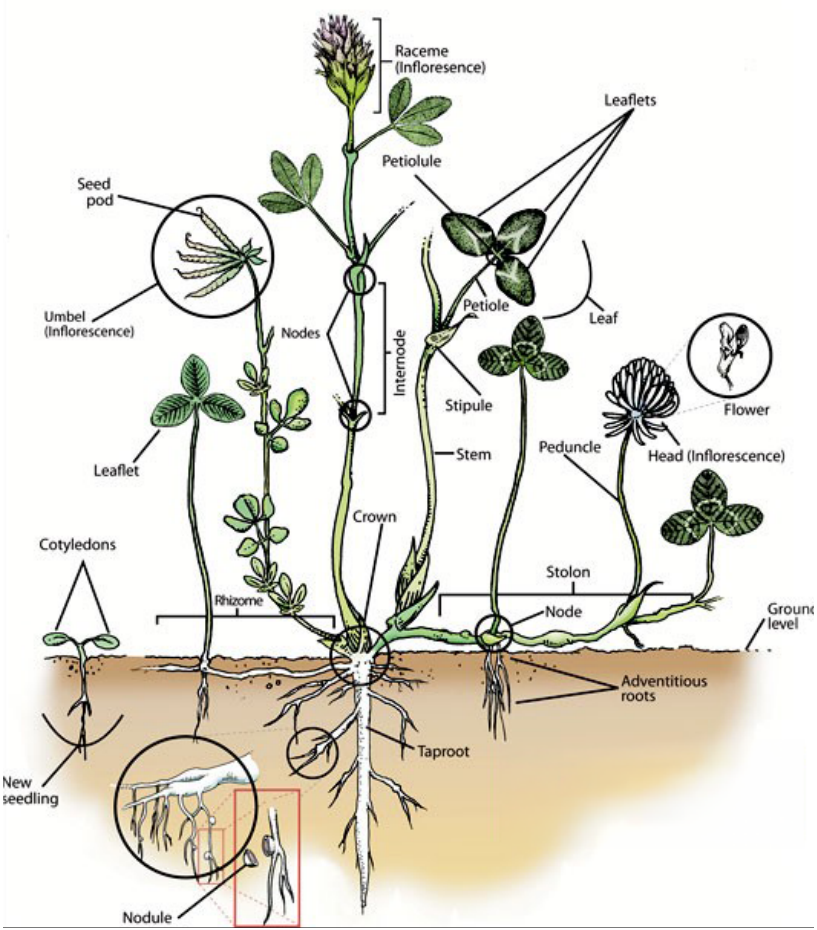
Stipule
Small leaf-like structures found at the base of a leaf stalk (common in legumes like clover).

Taproot
The main, thick root that grows straight down into the soil (like in lucerne), with smaller roots branching off it.

Trifoliate
A leaf made up of three leaflets coming off a single point, instead of one whole leaf.

Umbel
A flower structure where all the flower stalks spread out from one point, like the ribs of an umbrella.

Fact sheet key - Anatomy of a legume



Source: University of Missouri

- Annual
- Perennial
- Native
- Suitable for horses
- Shade tolerant
- Good seed availability
- Sown
- Frost tolerant
- Suitable to bale
- Flood tolerant
- Biosecurity







AMERICAN JOINTVETCH

Aeschynomene americana

Glenn, Lee



Sown species (2P), tap rooted shrub, short lived perennial or annual, decreaser, no seed available.

Description

Plant: Variable species, with erect to semi-erect or sprawling, annual or perennial shrub to about 2 m tall and 2 m across.

Leaf: Compound alternate, leaves feathery, 30 - 80 mm long, comprising 8 - 38 pairs of oblong, dark green (often with purplish tinge) leaflets. Leaflets fold together at night, and when touched.

Flowers: Small pinkish to pale mauve or yellow-orange pea-shaped flowers 5 - 10 mm long, borne in small groups.

Pod: A chain of 'D' shaped segments.

Habitat

A plant of irrigation channels and the edges of wetlands and gilgais. Prefers the very wet areas of silty clay and pH 5.5 - 7.

Suitable land types

Tea tree plains, alluvial flats and plains.

Pest/disease resistance

Moderate - powdery mildew is common in the late wet season/early dry season which causes a marked decline in feed quality. 'Lee' is less affected than 'Glenn'. Botrytis stem rot can significantly reduce seed production.

Notes

Can be present in abundance or non-existent in pastures but is generally palatable and productive and a good nitrogen fixer. The leaves and younger bristly stems emit a distinctive odour due to glandular secretions.





ATRO

Macroptilium atropurpureum

Aztec, Siratro

Sown species (3P), tap rooted vine, decreaser, good seed availability, promiscuous, good horse feed, good hay.

Description

Plant: Summer growing, perennial, twining, legume with a deep swollen taproot.

Leaves: Trifoliate, dark green and slightly hairy on the upper surface, silvery and very hairy on the lower surface. taproot.

Flowers: Deep purple with reddish tinge near base; groups of 6 - 12 flowers, often paired.

Pod: A cylinder that splits open when dry.

Habitat

A reliable legume growing on soils from sands to clays. Best grown on fertile, free draining soils. It tolerates low-lying wet areas but grows poorly under waterlogging.

Suitable land types

Alluvial flats and plains, coastal eucalypt forests and woodlands, coastal rainforests, poplar gum woodlands, eucalypt hills and ranges.

Pest/disease resistance

Moderate - rust can affect older cultivars like Siratro. Aztec was released as the rust resistant cultivar. Rhizoctonia fungus and Violet Rot can also affect it at times.

Notes

Productive and competitive with good fertiliser and spelling, especially if late wet season grazing is reduced. Its large seed offers more vigour than other legumes, which can improve establishment rate.





BUDDHA PEA

Aeschynomene indica

Introduced species (1P), tap rooted shrub, short lived perennial/annual, unpalatable, increaser in understocked wet areas, no seed available.



Description

Leaf: Compound, alternate, narrow pinnate, 100 mm long with 40 - 60 oblong leaflets.

Flower: Yellow or whitish pea-flowers with reddish veins, 7 - 10mm long in 2 - 4 flowered axillary sprays.

Habitat

Grows in similar areas to jointvetch; silty and heavy clays adjacent to swamps. Often presents a denser sward of leaf than its cousins.

Suitable land types

Tea tree plains, alluvial flats and plains.

Pest/disease resistance

Moderate - this species is susceptible to the plant disease anthracnose caused by the fungus Colletotrichum gloeosporioides.

Notes

A close relative to the jointvetches with flower colour and leaf length the only variation. Palatability issues result in cattle leaving this one in the paddock. There is some evidence that it may be toxic to ruminants at high levels but further information on this is limited.





BUTTERFLY PEA

Clitoria ternata

Milgarra



Sown species (3P), tap rooted vine, decreaser, promiscuous, good seed availability, good horse feed, good hay.

Description

Plant: Perennial, herbaceous legume with fine twining or climbing stems from 0.5 to 3 m long.

Leaves: Pinnate with 5 to 7 leaflets.

Flower: Usually single and range in colour from white, mauve, light blue to dark blue.

Pod: Elongated and flattened containing 6 - 10 seeds.

Habitat

Butterfly pea grows best in fertile soils, with good water holding capacity. It prefers the pH range 6.5 - 8.5 and will establish in soils that may be acidic in the upper horizons but alkaline further down. Grows on a wide range of clay soils, though alkaline heavy clays are probably the most optimal.

Suitable land types

Alluvial flats and plains, coastal eucalypt forests and woodlands, coastal rainforests, poplar gum woodlands, eucalypt hills and ranges.

Pest/disease resistance

High - no serious insect or disease problems are recorded for this species. Noted to contract fungal leaf disease in wet areas but not noted in this region.

Notes

Butterfly pea will be far more competitive under good fertiliser regimes and rotational grazing. Tends to eventually decline out of pasture. Butterfly pea is also an excellent hay when grown on its own.







CARIBBEAN STYLO

Stylosanthes hamata

Verano, Amiga

Sown species (3P), tap rooted shrub, increaser/decreaser, good seed availability, promiscuous, good horse feed, moderate hay.

Plant: Annual or short-lived, much-branched, prostrate to semi-erect, perennial legume, growing to about 75 cm tall.

Leaves: Comprising three narrow, pointed leaflets 1.5 - 2.5 cm long.

Flowers: Small (4 - 5 mm wide), mainly yellow, pea-like flowers with red markings.

Pod: Comprising two single-seeded segments 4 - 7mm long, the upper segment bearing a short hook.

Habitat

Tolerant of most acidic soils pH 5.5 - 7, does not grow well on heavier textured clay soils. It is fairly shade tolerant and can compete with stoloniferous grasses in the open woodland areas of the mid and upper slope. Can tolerate low fertility. More productive with sulfur and phosphorus inputs. Susceptible to frost.

Suitable land types

Alluvial flats and plains, coastal eucalypt forests and woodlands, coastal rainforests, poplar gum woodlands, eucalypt hills and ranges.

Pest/disease resistance

Moderate - botrytis head blight can reduce seed yields.

Notes

An extremely useful legume for open pastures. Good supply of high quality seed. An excellent crop can be achieved with good pre-establishment planning.







CENTRO

Centrosema molle / C. pubescens

Cardillo (C. molle), Common, Belalto (C. pubescens)

Sown species (3P), tap rooted vine, decreaser, good seed availability, requires inoculum, good horse feed, good hay.

Description

Plant: Perennial, twining and trailing legume which will climb associated grasses and fences. Individual plants can spread 1 - 2 m from the strong taproot. C. molle roots down very strongly at the nodes.

Leaves: Three slightly hairy leaflets are egg-shaped with obvious veins. The middle leaf is usually largest, to 4 cm wide and 6 cm long.

Flowers: 3 - 5 pale lilac (almost white) flowers attached to each flowering stalk.

Pod: A compressed tube containing up to 15 seeds.

Habitat

Centrosema has moderate tolerance to acidic, poorly drained soil, often found in lower back swamps under good grazing. It prefers well-drained, structured mid-slope soils. Grows best in prolonged wet seasons, springing up through April and May if managed well. A strong tap root ensures it persists under grazing and improves grass hay paddocks.

Suitable land types

Alluvial flats and plains, coastal eucalypt forests and woodlands, coastal rainforests, poplar gum woodlands, eucalypt hills and ranges.

Pest/disease resistance

High - no serious insect or disease problems are recorded for this species.

Notes

Only C. molle grown for seed. A highly useful legume in dense grass pastures. Early wet season spelling can promote this legume well even in very competitive grass swards.





COMMON STYLO

Stylosanthes guianensis
var. *guianensis*

Nina, Temprano, Schofield, Cook, Graham

Sown species (3P), tap rooted shrub, increaser/decreaser, good hay option, good seed availability, promiscuous, good horse feed.

Description

Plant: Erect to semi-erect, tap-rooted, short-lived perennial legume, growing to over 1 m tall.

Leaves: Scattered bristles, comprising three dark green pointed leaflets about 2 - 3 cm long and 1 cm wide. Very sharp ended leaf.

Flowers: Small, yellow pea-type flowers about 0.5 cm across, borne in clusters at the ends of the stems.

Pod: Hidden single unit pods which are 'shed' from the seed heads when mature (minute hook on seed).

Habitat

Prefers well-drained, open-textured soils from sands to light clays on mid-slopes, avoiding heavy clays. Well adapted to low fertility, but far more productive if sulfur and phosphorus are remediated. Tolerates low pH and high aluminium/manganese, but won't persist on alkaline soils.

Suitable land types

Alluvial flats and plains, coastal eucalypt forests and woodlands, coastal rainforests, poplar gum woodlands.

Pest/disease resistance

Variable - older cultivars (Cook, Graham, Schofield) succumbed to anthracnose and are no longer produced. Highly resistant varieties (Nina and Temprano) are now used.

Notes

The new anthracnose tolerant cultivars provide a great legume option for the region. Must be rotationally grazed to persist in pastures. Good to plant in combination with shrubby and carribean varieties in acidic soils on the mid slope.







LEUCAENA

Leucaena leucocephala
+ hybrids

Redlands (hybrid), Wondergraze, Taramba, Cunningham (L. leucocephala)

Sown species (3P), tap rooted understorey tree, increaser, highly palatable, seed available, requires inoculum.
Description

Description

Plant: Shrub or tree up to 8 m tall if not managed, branching strongly when cut.

Leaves: Feathery leaves (bipinnate), comprising 4 - 9 main branches, each with 11 - 22 pairs of small, dark blue-green "leaflets".

Flowers: Small and white/yellow, clustered into a round head (compare with wattle flowers) mostly 2 - 3 cm diameter.

Pod: Large flattened pod containing up to 25 flattened seeds.

Habitat

Best grown in cleared areas in fertile, free draining soils pH 6.5 - 8.5. Target areas of mid slope where soil is best and ensure rows wide enough (>15 m) to avoid shading grasses.

Suitable land types

Alluvial flats and plains, coastal eucalypt forests and woodlands, coastal rainforests.

Pest/disease resistance

Moderate - main issue is defoliation and seed destruction by psyllids.

Notes

Originally used as a bank stabiliser for road sides, the original variety has become quite weedy. With the development of a psyllid resistant cultivar 'Redlands' the opportunity to utilise this high yield, high quality grazing legume has become available to graziers in this region.

Leucaena is not a prohibited or restricted invasive plant under the Biosecurity Act 2014. However, by law, everyone has a general biosecurity obligation (GBO) to take reasonable and practical steps to minimise the risks associated with invasive plants under their control.







PHASEY BEAN

Macroptilium lathyroides

Amarillo, Bolton



Introduced species (3P), tap rooted shrub, decreaser, no seed available, promiscuous, good horse feed.

Description

Plant: Summer growing, upright shrub to 30 cm but as high as 1 m.

Leaves: Trifoliate, dark green and slightly hairy on the upper surface, silvery and very hairy on the lower surface.

Flowers: Deep purple with reddish tinge near base; groups of 6 - 12 flowers, often paired.

Pod: Tube like up to 12 cm long containing up to 30 seeds.

Habitat

Adapted to a wide range of soils from deep sands to heavy clays. pH range over 5 - 8. Tolerates moderate salinity levels but intolerant of high manganese or aluminium.

Suitable land types

Tea tree plains, alluvial flats and plains, coastal eucalypt forests and woodlands, coastal rainforests.

Pest/disease resistance

Moderate - susceptible to root knot nematodes.

Notes

A useful addition to pastures, readily grazed by cattle and horses. There is no available seed, but if phasey bean persists look to the centro and siratro options as they will also persist.







PINTO FORAGE PEANUT

Arachis pintoi

Sown species (3P), stoloniferous ground cover, increaser, good horse feed, good hay, no seed available, can be grown vegetatively.



Description

Plant: Creeping, perennial legume forming a dense mat, 10 to 20 cm deep.

Leaves: Made up of oval-shaped leaflets, usually 3 - 4 cm long.

Flowers: Pale to lemon yellow pea-type flowers, 12 - 17 mm across, on a long tubular 'stem'.

Pod: Individual seeds are buried 8 - 10 cm below ground in a 'nut-like' structure.

Habitat

It can grow on most soils providing moisture is adequate. It is best suited to moist, well-drained conditions, with optimal areas being the more elevated areas of the lower and mid slopes of the land form. Can tolerate temporary waterlogging. Adapted to a variable pH range (5 - 8) and of higher aluminium levels associated with this. Can also tolerate lower levels of salinity.

Suitable land types

Alluvial flats and plains, coastal eucalypt forests and woodlands, coastal rainforests and hinterland rainforests.

Pest/disease resistance

High - no serious insect or disease problems are recorded for this species. Root knot nematodes have been reported but uncommon.

Notes

Forage peanut is a competitive legume of very high feed value. It does best in grazing scenarios where pasture can be grazed heavily following a spell. Allowing companion grasses to grow too much will shade and reduce peanut populations. Could eventually be a useful horse hay option. In Florida it is nicknamed 'tropical lucerne'. Rarely seed available for sowing but can be established from planting rooted runners.





ROUNDLEAF CASSIA

AKA SOUR GRASS, CRAB GRASS

Chamaecrista rotundifolia

Sown species (1P), lowly palatable and productive due to leaf drop, prostrate shrub, increaser.

Description

Plant: A short-lived, summer growing perennial legume, prostrate growth no higher than 40 cm, with a shallow taproot.

Leaves: Rounded in paired leaflets.

Flowers: Up to three small yellow flowers originating from the leaf axils.

Pod: Flattened pods up to 5 cm long containing up to 10 rhomboid seeds.

Habitat

Cassia is tolerant of acidic soils down to pH 4.5. It is well adapted to the sandy levees adjacent to watercourses.

Suitable land types

Tea tree plains, alluvial flats and plains.

Pest/disease resistance

High - no serious insect or disease problems are recorded for this species.

Notes

Can become dominant in open pastures with regular heavy grazing. Leaf drop can often occur after a few cold periods which also reduces its productive contribution. Shrubby, caatinga and Caribbean stylo are often a better option.





SHRUBBY STYLO

Stylosanthes scabra

Seca, Siran

Sown species (3P), tap rooted shrub, increaser/decreaser, good seed availability, promiscuous, good horse feed.

Description

Plant: Perennial, shrubby legume, usually to less than 1 m tall, large tap root to 4 m deep.

Leaves: Comprising three dark green, hairy, elliptical to oblong leaflets, to about 2.5 cm long and 1 cm wide.

Flowers: Small (4 - 5 mm wide), yellow, pea-like flowers with red markings, borne in small groups.

Pod: Hidden 2-segment structure, the top segment has a hook shorter than the length of the top segment.

Habitat

Shrubby stylo performs well under low fertility and shallow soils in the upper regions of the landform. Good shade tolerance. They can be less palatable in really marginal country and dominance can occur. Good fire management and heavier grazing later in the year can bring this dominance under control.

Suitable land types

Poplar gum woodlands, eucalypt hills and ranges.

Pest/disease resistance

Moderate to high - anthracnose is not uncommon. Susceptible to Botrytis head blight and violet root rot with winter rain. Little leaf disease is also common to the region which appears to effect Seca more than Siran.

Notes

A hardy legume useful for dry season feed in open pastures. Old stands of Seca can be heavily infected with stylo little leaf disease and may need bolstering with an establishment of new plants from seeds. Fire may also help to reduce disease.





WHITE CLOVER

Trifolium repens

Legacy

Sown species (3P), stoloniferous ground cover, decreaser, good seed availability, requires inoculum, good hay.

Description

Plant: Rhizomatous, prostrate perennial with stolons from crown rooting at nodes. Some stolons may be buried.

Leaves: Trifoliate, leaflets oval or heart shaped. May have light crescent mark on upper side and is smooth/hairless.

Flowers: 30 - 40 white/seedhead; dense clusters on long stalk; globe shaped to 2.5 cm diameter; pale pink/white, fade to brown.

Pod: Small pods hidden within the inflorescence.

Habitat

White clover and other varieties are common to the Eungella hinterland, tolerating acidic soils and moderate aluminium levels.

Suitable land types

Hinterland rainforests.

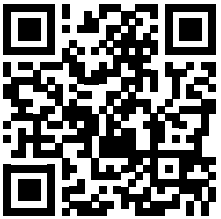
Pest/disease resistance

Moderate to low - susceptible to various fungal, viral and Mycoplasma diseases.

Notes

Clover provides reliable year-round feed through rain, dry spells and frost. It can dominate over-utilised pastures; with risks of causing bloat especially in spring. A wet season spell followed by increased grazing before spring can help manage this.

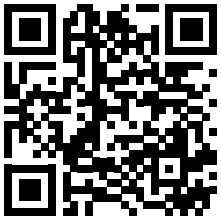
References



Tropical Forages



Pastures: Mackay Whitsunday Region



AusGrass



iNaturalist

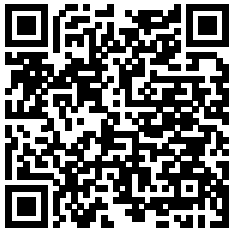


FutureBeef



Grazing Land Management Types

Further reading



Pasture Standards for Mackay Whitsunday Region



Meat & Livestock Australia (MLA)



Weeds Australia



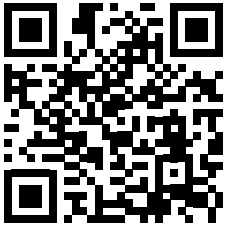
QLD Gov - Invasive Plants & Weeds



Survey123



Tropical Soils - A Guide to Soil Health



Pasture Portal



Soil Manual for the Mackay-Proserpine region

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