

 **BARENBRUG**

Tropical Pasture Production Guide

EDITION 3.0

Grow with Confidence



The Leader in Research & Development

At Barenbrug we specialise in the highest quality pastures, forages and field crops. We offer an extensive range of species and varieties to help our customers grow highly productive plants to optimise and maximise output from the colder temperatures of Tasmania to the furthest reaches of Northern Australia, the Pacific Coast through to the Western Australian shoreline.

With commitment to Research and Innovation, Barenbrug strives for continuous improvement. With \$6 million annually into research activities across Australia. We take a collaborative approach with leading agriculture plant breeding and research organisations to ensure our products meet and exceed the demands of our challenging, changing industry.

Our highly experienced team of territory managers can offer valuable and timely advice to guide farmers and retailers to make informed decisions to suit their local environments.

Committed to the North

✓ Increasing Productivity

- Toowoomba enhancement facility
- Walkamin depot
- Wellcamp research farm

✓ Improving Products

- Better feed quality varieties
- Higher yielding
- Higher persistence, drought tolerance, water use efficiency
- Tropical plant breeding program

✓ Improved Support

- Research agronomists
- Summer crop agronomist/specialist
- Northern agronomy services
- Tropical pasture systems training program

✓ Improved Research and Extension

- NSW DPI, QDAF
- Zero Net Emissions CRC
- MLA CN30
- Methane reduction
- Localised commercial trials





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Unauthorised commercial propagation or any sale, conditioning, export, import or stocking of propagating material is an infringement under the Plant Breeders Rights Act (1994). Any breach of this legislation will have the grower/seller liable for prosecution.



Inoculant

Inoculant (rhizobia) group recommended to inoculate the cultivar in order to achieve successful nodulation and nitrogen fixation.



Minimum annual average rainfall (mm)



pH range

pH range that can be used as an indicator for the suitability of a cultivar. The pH referred to is for a suspension of 1:5 soil: 0.01mol calcium chloride (CaCl₂).



Preferred soil type

Tropical Pasture Guide
Edition 3.0

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Pasture Improvement

Pasture improvement is the process of developing country to increase the productivity and efficiency of the pasture system. This can be in the form of:

- Fertiliser Application
- Soil amendment
- Improved Species Establishment
- Fencing and improved water infrastructure

To support and improve production livestock need consistent, nutritionally superior pastures. Barenbrug has developed and can supply many options to improve productivity in tropical/sub-tropical environments.

C4 grasses are more efficient users of water and nitrogen

Tropical grasses and legumes are more drought and heat tolerant.

Why you should consider improving pastures:

- More feed, better quality = more reliable production
- Lifts carrying capacity
- Increases average daily weight gain, wool clip or milk production
- Improve conception rates = improved calving and lambing rates
- Increase turn off rate
- Decrease days on farm = decreasing methane production
- Increased farm profitability
- Improved ground cover, soil fertility and structure = less erosion
- Restoration of degraded land
- Improved pasture diversity.

In most Northern pasture systems, unimproved or native grasses have a very limited window of feed quality (4-6 weeks) after the start of the wet season. These species quickly lose quality as they turn reproductive and protein, energy and overall digestibility drop quickly, and it's unlikely that new growth will occur.

By increasing quality through pasture improvement strategies such as planting improved species extra weight gain, and increasing carrying capacity can be achieved. Improving pastures can give the manager greater flexibility as daily weight gain can be lifted, conception and weaning rates can be improved and feed can go further into the season providing a profitable resilient grazing system.

Improving pastures allows you to get more out from every mouth full



How do I improve my pastures?



Pasture Renovation

Full pasture renovation and new species establishment is often the most effective way to improve pastures.

- Preparation is key, follow the 7 steps of successful pasture establishment
- Aim to improve smaller paddocks, to improve grazing management and utilisation
- Improve better soil types first
- Select species and varieties that suit your situation - Breeding or Finishing
- Utilise pasture mixes to extend growing seasons and have more feed on offer and maintain quality throughout the season.

Over-sow

Oversowing can be a common practice mainly with Legume species in extensive areas or out of season annual species in higher rainfall environments. When done correctly, oversowing can be a very productive profitable investment, however is often more risky than full pasture establishment.

Oversowing of Tropical or Temperate legumes can provide large increases in feed quality (protein and digestability) as well as being a natural source of nitrogen for your pasture systems.

- Legumes require good grazing management and recovery after grazing. OTHERWISE they will be overgrazed and be lost out of the pasture
- Variety selection is key, choose quick, regenerating legumes so they can compete with established grasses
- Ensure you choose some varieties that are quick to flower, or hard seeded to improve persistence and longevity of legumes in pasture system

Eg - Tropical Legume Mix- Spellgrazer Desmanthus, Presto Burgandy bean into established tropical grass pasture

When oversowing grass species

- Can perform well in higher rainfall subtropical cross over zones
- Understand this is a riskier, quick fix solution
- Choose highly competitive annual species that have counter growth seasons compared to existing pasture system
- Is extremely limited by seasonality and rainfall

Eg - Vortex Annual ryegrass into semi-improved summer active native pasture for winter feed.

Blade ploughing soil amelioration

When any form of disturbance to existing pasture occurs (ie blade ploughing, deep fertiliser application or lime incorporation) it is a great strategy to add favourable species to areas disturbed to encourage production and reduce weed species moving into these areas.

- Great for ground cover and reduction of weed competition
- Allows some soil constraints to be addressed
- Utilise higher rates of seed as competition and ground cover are keys to success
- Include quick competitive species such as forage sorghum or millet to improve ground cover
- Ensure seed placement is not deeper than 1cm from soil surface as this significantly reduces likelihood of establishment and risk of failure

Faecal Seeding

Faecal seeding can be a great strategy to introduce legumes into extensive systems. This works extremely well with the use of supplements such as dry licks in northern situations

- Cheap and labour efficient way to get legumes into pasture system
- Manure can be a very favourable seed bed for nutrients, especially important in northern situations with poorer soil types and nutrition
- Can be utilised as a strategy to maintain seed bank levels to ensure legumes persist in the system.

Legumes in Tropical Grazing Systems

Legumes with their high protein content and high level of digestibility are an excellent source of nutrition for stock and maintain quality longer into the season than grasses

- High in Protein
- High in Digestibility
- Ability to fix atmospheric Nitrogen
- Tropical Legumes are Non-Bloating
- Some are hard seeded = improving recovery after dry season and drought
- Increased stocking rates + Weight Gain = Quicker turn off rates
- Aids in stopping pasture rundown
- Not affected by pasture dieback

Legumes provide significant increases of feed quality, especially when grasses have turned reproductive, as well as being a nitrogen source for the pasture

Legumes can readily supply 16-18kg of Nitrogen/tonne of dry matter produced. This can equate to 150-200 units of N over the season equivalent to 300-400kg of Urea fertiliser.

Including a legume into a grass based pasture therefore reduces the requirement for N Fertilisers, increases forage yield, seasonal growth and quality increasing productivity dramatically

Legumes are up to 25% more digestible than grasses, for every 1% increase in digestibility there is a 3% increase in animal performance.





Beating Pasture Run Down

Pasture Rundown is a decline in pasture productivity over time. Tropical Grasses are extremely productive at the start and produce large amounts of biomass, this overtime with increased production and turn off can lead to removal of nutrients and tie up of plant available nutrients.

Pasture rundown is caused by declining plant available nutrients, importantly Nitrogen. In rundown pastures nitrogen is still present but it can not be utilised by the grasses until it is mineralised and becomes plant available.

Rundown can result in reduced grass growth by up to 50% and the flow on can see similar losses in carrying capacity and animal performance.

Pasture improvement activities can help tackle run down, adding fertiliser is a simple short term solution. **The addition of tropical legumes is a longer term solution** to tackling pasture run down, legumes fix atmospheric nitrogen that is plant available to the existing pasture system.

Short term fallows or pasture/crop rotations can also aid in release of tied up Nitrogen

Other activities such as cultivation or blade ploughing can increase nitrogen cycling, promoting the release of unavailable N that is tied up, however tis does not increase the level of nutrient in overall soil and there is still an overall declining trend of productivity in the pasture

Warm Season Tropical Legumes

Legumes that grow over summer such as Desmanthus and Burgundy Bean can provide large improvements of feed quality. In the North, case studies have shown that **addition of tropical legumes to grass based pastures can lift carrying capacity and animal performance by 20%.**

The increase in feed quality is extremely important later into the season when grasses turn reproductive and lose digestibility improving overall productivity whilst also providing a source of Nitrogen to the pasture

Cool Season Temperate Legumes

The addition of winter growing legumes to tropical grasses can provide large extension to the overall growing season of the pasture. In Sub-Tropical cross over zones addition of these legumes provide high protein, highly digestible feed in Autumn and winter when grasses are lowest in quality (senescing or dormant).

The additional energy and protein from legumes can greatly improve utilisation of the dry feed base, similar to that of a lick supplement.

Legumes are extremely specialised to soil types and climate zones, speak to your local territory manager to find the variety to best suit your individual situation.



AgriCOTE Enhancement



AgriCote seed

Typical coating make-up

Lime coating

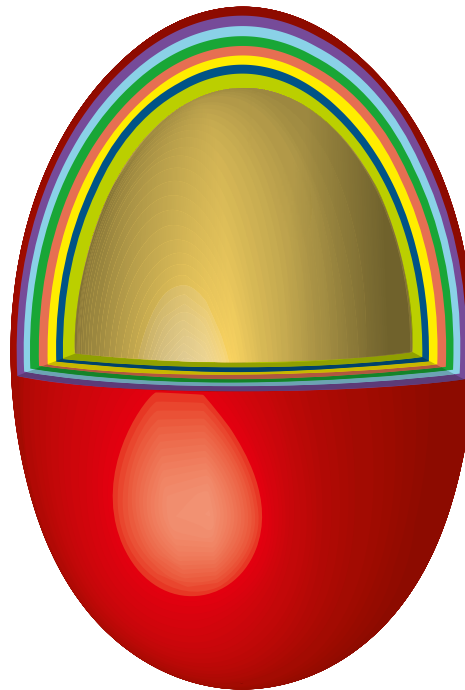
Creates a favourable germination environment

Fungicide protection

Option of pythium and phytopthera protection

Protective polymer

Protects and isolates bacteria



Bonding polymer

Bonding AgriCote seed capsule

NPKS and T.E. nutrients

Immediate rhizobia and seedling nutrition

Growth promotant

Promotes establishment and seed vigour

Legume inoculant

Promotes legume establishment and persistence

AgriCote is a tailored seed coating treatment that conveniently combines all the AgriCote technologies into the one high performing coat.

Starting with the highest quality seed available, Barenbrug then adds advanced binding and protective polymers with lime as the basis for this cutting-edge seed coating technology. The polymer formulation enables the seed to be coated evenly, which makes it easier to work with on-farm and promotes a more even seed distribution in the paddock. In addition, the lime helps to optimise the pH level immediately around the germinating seed, which promotes faster moisture uptake by the seed and better establishment.

AgriCote treatments include nutrients designed to be immediately available to the seedling, protection against fungal diseases through a fungicide treatment and insecticidal treatments to provide protection from biting and sucking insects.

AgriCote is designed to enhance seedling establishment by delivering improved early seedling vigour and root development, through the inclusion of growth promoting and dormancy breaking technologies.

In addition to all of these state-of-the-art elements, AgriCote also features encapsulated rhizobia, which prolongs shelf life of treated legumes and helps to ensure good legume nodulation in the paddock, maximising your investment.

Not only easy to use on-farm, AgriCote offers farmers and graziers improved germination, enhancing the overall health and well-being of your seedlings. This revolutionary seed coating technology also provides better seedling tolerance of post emergent stresses, which helps successfully grow productive pastures in challenging conditions.

Potential benefits

- Dormancy breaking technology which is not available in any other seed coat
- Greater plant establishment
- Growth promoting chemicals included for improved early vigour
- Greater earlier root growth and development
- NPK macronutrients and trace elements that are immediately available to the seedling
- A more robust seedling for slow establishment grasses
- Encapsulated rhizobia for longer shelf life and successful in the field nodulation convenience
- Protection against biting and sucking insects
- Protection against fungal diseases
- Improved tolerance to stress
- Better ballistic properties for flying seed onto hill country or extensive grazing systems

Pasture Establishment

Category	Type	Example	Feature	Purpose
High Performance Improved Pastures	Annual/Seasonal 6-12 Months	Forage Cereals Forage Sorghum Forage Brassica Forage Legumes Teff Grass Millet Annual Ryegrass Italian Ryegrass Medics + HDL Annual Clovers	Feed at key times Rapid growth High yield Good quality Moisture Conservation Feed Budgeted	Cover a feed gap Pasture renovation Silage / hay crops Cropping break Weed/pest control Moisture Conservation Feed Allocation
	Short Term 2-5 Years	Italian Ryegrass Hybrid Ryegrass Perennial Ryegrass Lucerne Chicory Plantain Legumes Rhodes Grass	High performance Responsive to inputs Yield at key times Rapid paddock turnover anticipated Not plant every year	Cropping break Mixed farming High intensity operations / finishing Specialised seasonal production Extended growing season Take advantage of variable rainfall
	Perennial 5+ Years	Rhodes grass Panic grass Buffel grass Bracharia Ssp Setaria Grass Sabi Grass Digit Grass Tropical Legumes	Perennial grasses Perennial or self-regenerating legumes Resilient and reliable Often multiple varieties / species	Backbone feedbase of grazing operations Long term pasture phase/ cropping break Fodder production Take advantage of seasonal and variable rainfall
Low-Mid Performing Pastures Semi Improved	Run Down Improved Pastures		Improved planted species not managed correctly Low legume content Poor fertiliser strategy Poor species balance Weedy, and underperforming	Opportunity to improve through grazing management addition of new species and fertiliser strategies Fodder cropping stage
	Semi Improved Native Pastures		Native or endemic species, with good fertiliser history or addition of legumes or herb species	Opportunity to improve by utilising better grazing management, addition of new species, improved fertiliser strategies
Unimproved Pastures	Native Pastures		Useful beef / sheep country of a seasonal nature. Often very extensive, low stocking rates	Opportunity to improve by utilising better grazing management, addition of new species, improved fertiliser strategies
	Rangeland		Areas where the rainfall is too low or unreliable and the soils too poor to support crop or improved pastures	Opportunity to optimise production by utilising better grazing management, addition of new species, improved feed budgeting strategies

Pasture Establishment Key Guidelines

7 Steps to a Successful Pasture



	<h3>Planning & Preparation</h3>	<ul style="list-style-type: none"> - Pasture improvement is a lengthy process, look to have a productive pasture plan. - Prepare your paddock early and reduce weed competition before pasture improvement is considered.
	<h3>Know Your Soil</h3>	<ul style="list-style-type: none"> - Conduct a soil test - Amend soil nutrition, condition and constraints
	<h3>Pasture Selection</h3>	<ul style="list-style-type: none"> - Choose pasture species by climate/rainfall zone, soil type, frost tolerance - Choose correct varieties for your production type
	<h3>Timing</h3>	<ul style="list-style-type: none"> - Favourable climate conditions are desirable in the 3-4 weeks following emergence. - Time plantings for soil temperature, rainfall, avoiding frost in late season planting - Plant into well prepared ground, with good subsoil moisture
	<h3>Sowing</h3>	<ul style="list-style-type: none"> - Choose the appropriate method of sowing - Use the correct rate for your sowing method - Ensure good seed soil contact is achieved - Monitor planting depth
	<h3>Establishment</h3>	<ul style="list-style-type: none"> - Don't graze until plant is "anchored" - Graze lightly to encourage tillering - Spell pasture in late summer to allow seed set
	<h3>Maintenance</h3>	<ul style="list-style-type: none"> - Practice good grazing management principles - Strategically fertilise to optimise pasture performance - Maintain good legume component

Custom Mix Selection

How do I choose the right custom mix?

Use this diagram to ask the questions you should be considering when working out the custom mix you need.



Planting Timing Checklist



Each individual species has different requirements for germination and establishment. But as a rule of thumb, when dealing with tropical pastures you can use the following as some parameters

- In normal tropical planting window for your region
- Soil temperature 16°C and rising, with no cold fronts predicted
- Ambient temperatures of 20°C and nights above 10°C for a period of seven to ten days.
- Rainfall Predicted in the coming weeks.

Planting rate and planting depth are critical. Look to use the correct rate for pasture performance and productivity, and ensure planting depth does not exceed 10mm.

Generally, sowing method and sowing timing can have a large bearing on what seed and seeding rate is required to have a successful outcome.

Generally:

- Direct drilling, advised seeding rates from guides
- Broadcasting/ surface application, Significantly higher seeding rates than guides

However it is important to understand how specific conditions around planting may impact the rate or your choice of seed. e.g. planting into heat or dry sowing.

Planting Depth

Tropical pasture species are sensitive to planting depth, seed should be sown less than 10mm deep and ideally pressed in with a press wheel to get good seed to soil contact. As they are small seeded they struggle to emerge from depth, so extreme care should be taken to ensure the desired depth is achieved.

It is critical to monitor throughout the planting process to ensure maximum establishment.



Tropical Mixes

Meatmaster pasture seed blends are 'ready to sow', offering the latest pasture technology and best seed varieties. Choose between short term and permanent pasture for rainfall zone, paddock conditions and desired outcome.

High Performance Blends

Meatmaster Prime Pasture

Prime Mix for Weight Gain

Variety	Species	%
Endura	Rhodes grass	30
Megamax 059	Panic grass	20
Bambatsii	Panic grass	20
SARDI-Grazer	Lucerne	10
Medic Mix	Medic	10
Presto	Burgundy bean	10



This mix is suited to the heavier black, self-mulching and grey-cracking flood plain soil types. The productivity of Endura Rhodes, Bambatsii and Megamax 059 is enhanced by the adaptation to the soil type. The late season of the grasses is complemented by a legume component to keep protein in the pasture and nitrogen cycling. This is a very productive mix for finishing cattle in summer, whilst building a large volume of good standover feed for the winter months.

Meatmaster Big Beef Blend

Quick Weight Gain

Variety	Species	%
Endura	Rhodes grass	30
Megamax 059	Panic grass	25
Bisset/Hatch	Bluegrass	15
SARDI-Grazer	Lucerne	20
Presto	Burgundy bean	10

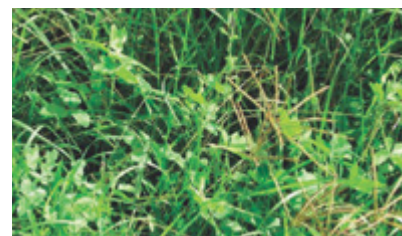


The productivity of Endura Rhodes and Megamax 059 is enhanced by creeping bluegrass, with its stoloniferous growth pattern allowing good ground cover and moisture holding capacity is ideal for medium black to red chocolate soils. The mix of both winter and summer active legumes enables the feed gap to be filled over winter.

Meatmaster Premium Coastal

Coastal Finisher

Variety	Species	%
Mariner	Rhodes grass	45
Splenda	Setaria	20
Signal Grass	Brachiaria	20
Garnet	Burgundy bean	10
Greenleaf	Desmodium	5



This coastal mix has the highest quality tropical grasses together with productive tropical legumes, suited perfectly to high rainfall zones in south east Queensland and northern New South Wales. Mariner provides the high dry matter yields of a diploid rhodes but maintains its quality throughout the season making it ideal for highly productive coastal regions.



High Productivity Blends

Meatmaster Western Light Soil

Built for Persistence

Variety	Species	%
USA	Buffel grass	30
Gayndah	Buffel grass	30
Presto	Burgundy bean	10
Mega Stylo Mix	Stylo	15
Sabi Grass	Urochloa	15



A blend of USA buffel for lighter country and Gayndah buffel for the red/grey loams, this mix will cover lighter soils encountered in the western Queensland area in the 350–450 mm rainfall category. The use of Sabi grass for vigorous establishment plus Stylos and burgundy bean complement the mix, enabling protein levels to be maintained in the dry winter.

Meatmaster Floodplain Soils

Perfect Feed for the Floodplain

Variety	Species	%
Endura	Rhodes grass	25
Bambatsii	Panic grass	35
Floren	Bluegrass	30
Presto	Burgundy bean	10



Rhodes and Bambatsii is enhanced by the black soil adaptation of Floren bluegrass, increasing persistence and ground cover in very wet or dry conditions. The addition of Presto as a legume helps to provide nitrogen to companion grasses and improve feed quality and persistence of the pasture. A productive mix for finishing cattle in summer or building a large volume of standover feed.

Meatmaster Light Soil Allgrass

Built for Toughness

Variety	Species	%
Endura	Rhodes grass	25
Premier	Digit grass	45
Megamax 059	Panic grass	30



This mix is suited to the red loam and harder cropped out soils of northern New South Wales and Queensland. Combining productivity, persistence and late season stay-green of Premier digit grass with green leafy growth of Megamax 059 and the ground cover on harder scald areas of Rhodes grass. Ideally sown in spring after a cereal grazing crop or direct drilled into a weed-free paddock.

Meatmaster Slopes and Plains Allgrass

Allrounder built for productivity

Variety	Species	%
Endura	Rhodes grass	15
Premier	Digit grass	40
Bambatsii	Panic grass	25
Megamax 059	Panic grass	20



Developed for the medium black to red chocolate soils of the New South Wales slopes and plains. Bambatsii and Megamax 059 combine for soft, leafy productivity on the heavier soils, with Premier digit grass and Endura Rhodes performing and persisting on the lighter soil.

Meatmaster Floodplain Allgrass

Perfect Feed for the Floodplain

Variety	Species	%
Endura	Rhodes grass	30
Bambatsii	Panic grass	40
Floren	Bluegrass	30



This blend is suited to the heavier, black self-mulching and grey-cracking flood plain country. The productivity of Endura Rhodes and panic grasses is enhanced by the black soil adaptation of Floren bluegrass, increasing persistence and ground cover in very wet or dry conditions. A very productive mix for finishing cattle in summer or building a large volume of good standover feed.

Equimaster Premium Horse Blend

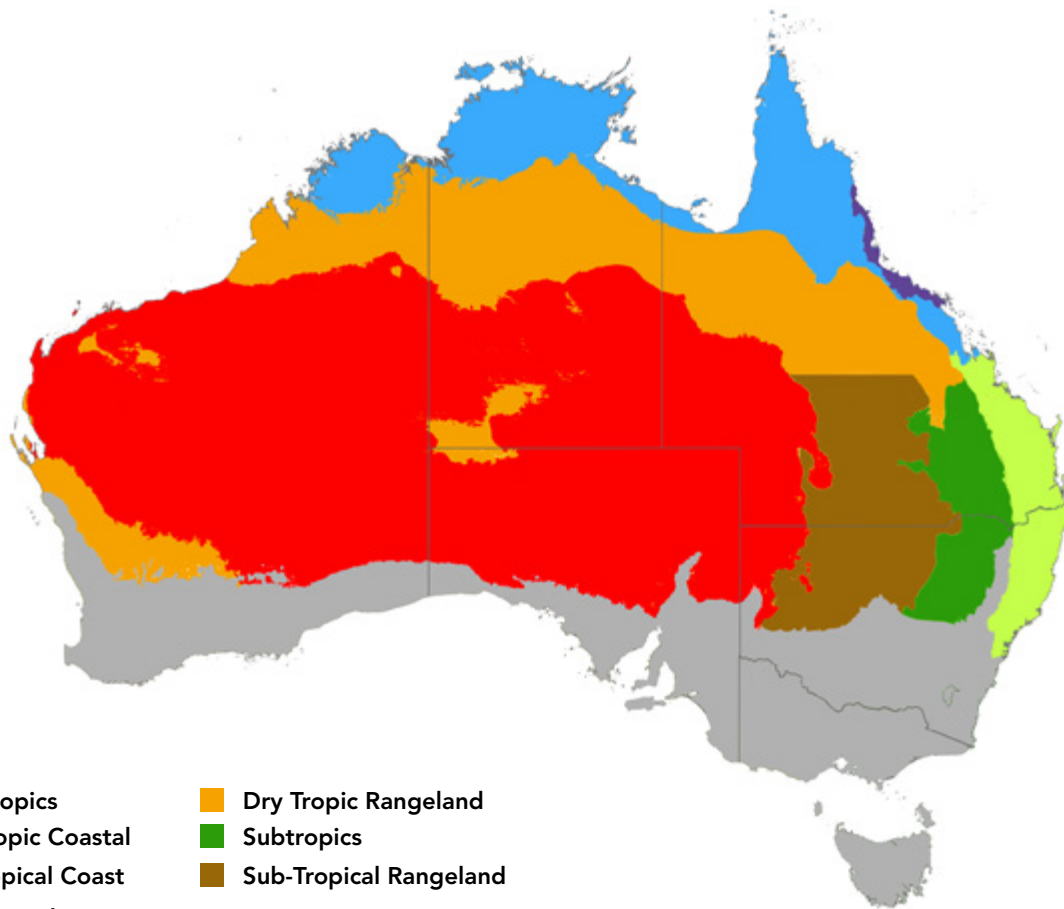
Variety	Species	%
Mariner/Endura	Rhodes grass	40
Bisset/Hatch	Bluegrass	15
Premier	Digit grass	15
SARDI-Grazer	Lucerne	10
Presto	Burgundy bean	10
Shirohie	Millet	10



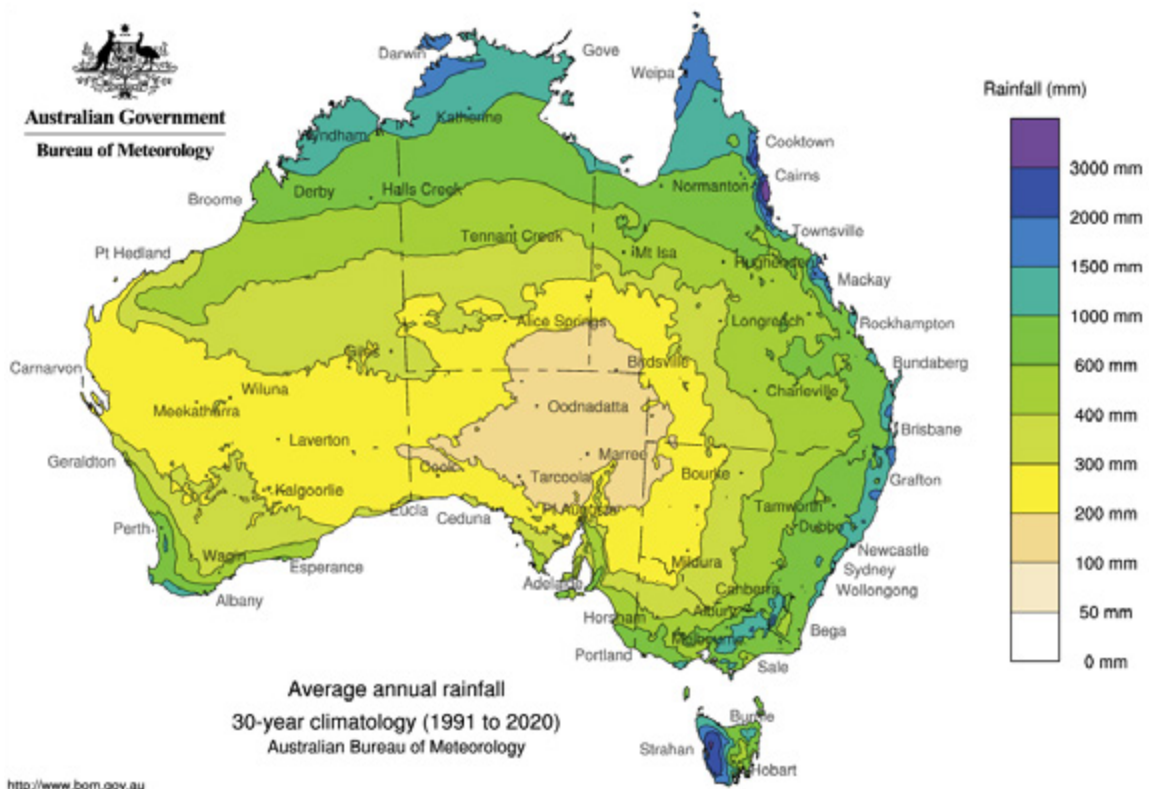
Equimaster is designed specifically for horses as all grasses are low in oxalate and can handle grazing pressure. The use of both tufted and stoloniferous grass species allows the pastures to fill in quickly, producing a large ground cover. The legume component consists of lucerne and burgundy bean for both summer and winter production. The millet will help with quick ground cover and protect juvenile plants from heat stress and frost or cold shock. The choice of Mariner (coastal) or Endura Rhodes (western) ensures the right grass for the right region.



Tropical Australia Climatic Zones



Average annual rainfall over 30 years



Climate zone characteristics



Wet Tropics

- Very high rainfall environment although still summer dominant (1500mm+)
- A wet tropical climate tends to vary less in temperature during a year than a dry tropical climate.

Dry Tropic Coastal

Heavily influenced by monsoonal patterns and often more reliable monsoons and summer rainfall.

- Distinct wet and dry seasons of relatively equal duration. Most of the region's annual rainfall is experienced during the wet season and very little precipitation falls during the dry season.
- A lengthy dry season and a relatively short wet season. (450-1500mm)

Dry Tropic Rangeland

Drier Semi-Arid environment, with distinct wet and dry seasons

- These climates tend to have hot, or sometimes extremely hot, summers and warm to cool winters.
- Still influenced by monsoonal patterns, but much less quantity and reliability but distinctly summer rainfall and dry winters

Subtropics

- Subtropical climate characterised by hot and humid summers, and mild to harsh winters
- Summer dominant rainfall, with ability to still receive winter rain. No true dry season.
- Referred to as temperate cross over zone (450-800mm)

Subtropical Coast

- Subtropical climate characterised by hot and humid summers, and mild winters
- Summer dominant rainfall, with ability to still receive winter rain. No true dry season.
- Coastal influence on rainfall (800mm+)

Sub-Tropical Rangeland

Drier Semi-Arid environment with summer and winter rainfall influence

- These climates tend to have hot, or sometimes extremely hot, summers and cool to mild winters.
- Influenced by monsoonal rainfall patterns and southern winter rainfall drivers.



Meatmaster Selection Guide

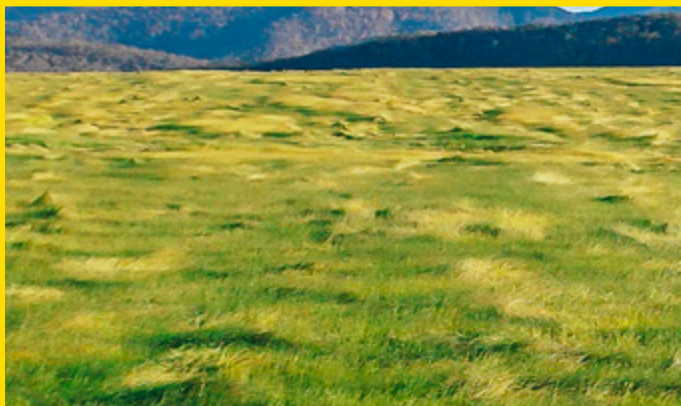
	Enterprise			Region						Typical Annual Rainfall Range				
	Finishing (Intensive)	Breeding (Extensive)	Irrigation	Sub-Tropics	Wet Tropics	Dry Sub-Tropic Rangeland	Dry Tropic Rangeland	Dry Tropic Coast	Sub Tropic Coast	350-500mm	500-700mm	700-800mm	800-1000mm	1000mm +
Prime Pasture	Green	Green	Green	Green	Yellow	Yellow	Red	Green	Green	Red	Yellow	Green	Green	Green
Big Beef Blend	Green	Green	Green	Green	Red	Yellow	Red	Yellow	Green	Yellow	Green	Green	Green	Yellow
Premium Coastal	Green	Green	Green	Yellow	Green	Red	Red	Green	Green	Red	Red	Yellow	Green	Green
North Western	Red	Green	Red	Red	Red	Yellow	Green	Red	Red	Green	Green	Yellow	Red	Red
Western Light Soil	Yellow	Green	Red	Yellow	Red	Green	Green	Red	Red	Green	Green	Yellow	Red	Red
Western Heavy Soil	Yellow	Green	Red	Yellow	Green	Green	Green	Red	Red	Green	Green	Yellow	Red	Red
Light Soil (All Grass)	Red	Green	Red	Green	Red	Yellow	Red	Red	Yellow	Yellow	Green	Green	Green	Yellow
Slopes & Plains (All Grass)	Yellow	Green	Yellow	Green	Red	Yellow	Red	Red	Yellow	Red	Green	Green	Yellow	Red
Flood Plain (All Grass)	Yellow	Green	Yellow	Green	Red	Yellow	Red	Red	Red	Red	Green	Green	Yellow	Red
Equimaster Premium	Green	Green	Green	Green	Red	Yellow	Yellow	Green	Green	Red	Green	Green	Green	Yellow

Sowing Rates (kg/ha)	
Marginal Dryland (Rangelands)	6
Good Dryland (Sub-tropics)	10
Semi-Irrigated (Sub-Tropic Coastal)	15
Irrigated (Tropic Coastal)	20

Key

- = Suitable
- = Suitable in some cases
- = Not recommended

Talk to your local Barenbrug Territory Manager to find best suited Meatmaster Blend, or create a tailored Meatmaster mix.



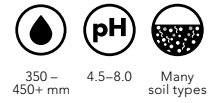


Soil Texture			Soil pH				Notes
Light/Sandy	Medium/Loam	Heavy Clay	Acid 4.5-5.2	Slightly Acid 5.2-5.10	Neutral 6.0-7.6	Alkaline 7.6 +	
Green	Green	Green	Red	Yellow	Green	Yellow	Lucerne becomes less productive and less persistent in acid soils
Yellow	Green	Yellow	Red	Yellow	Green	Yellow	Blue Grasses and Lucerne become sensitive at lowering pH
Yellow	Green	Yellow	Yellow	Green	Green	Red	Setaria & Desmodium sensitive to less than 5 and higher than 7 pH
Green	Yellow	Red	Red	Green	Green	Red	Buffels Sensitive to low pH, Stylos sensitive to high pH
Green	Green	Green	Red	Green	Green	Yellow	Buffels Sensitive to low pH, Stylos sensitive to high pH
Green	Green	Green	Red	Yellow	Green	Yellow	Buffel, Bambatsii & Desmanthus sensitive to low pH
Green	Green	Green	Red	Yellow	Green	Green	Lucerne becomes less productive and less persistent in acid soils
Yellow	Green	Green	Yellow	Green	Green	Yellow	Bambatsii sensitive to low pH
Red	Green	Green	Yellow	Green	Green	Yellow	Bambatsii and Bluegrass sensitive to low pH, suited to heavier soil types
Green	Green	Yellow	Red	Yellow	Green	Green	Blue Grasses and Lucerne become sensitive at lowering pH



Mega Stylo Mix

High protein legume mix



The Mega Stylo Mix is a high protein source that provides a balanced combination of Caribbean and Shrubby stylo species that provide disease and environmental adaptability. Barenbrug's stylo mix of Amiga, Siran and Seca ensures performance and persistence in a tropical pasture for the long term.

	Amiga	Seca	Siran
	400+mm	400+mm	400+mm
	4.5 - 8.0	4.5 - 8.0	4.5 - 7.0
	Many soil types	Many soil types	Many soil types
	AgriCOTE	AgriCOTE	AgriCOTE
	20%	40%	40%



Amiga Stylo

Amiga extends the area of adaption of Caribbean stylo into harsher (drier) and cooler (higher altitude) environments.

- Highly palatable
- Resistance to anthracnose
- High altitude, low temperature tolerance
- Longer persistence
- Abundance of seed.

Seca Stylo

Seca is late flowering and suited to lower altitudes but can flower in spring in sub-tropical areas.

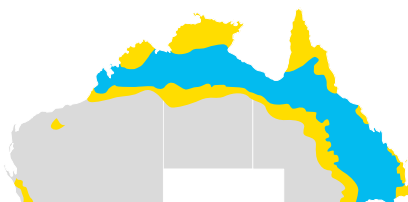
- Leafier
- Resistant to common anthracnose (single gene).

Siran Stylo

Siran is a shrubby type of stylo with good tolerance to anthracnose, and highly adaptable to a variety of conditions.

- Highly nutritious
- Adaptable to range of conditions and soil types
- 2m height growth
- Resistant to common anthracnose (multi-gene).

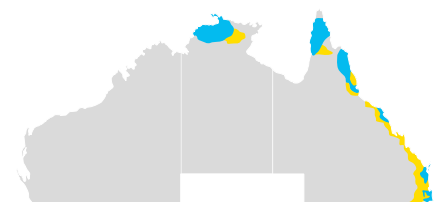
Stylo regional adaptability



Siran
Semi-arid tropics and sub-tropics



Amiga
Semi-arid tropics

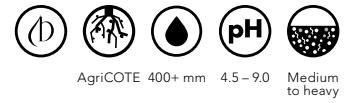


Tropical stylo
Coastal tropics and sub-tropics

Marginal Suitable



Spellgrazer® Desmanthus



Spellgrazer Desmanthus is a blend of Ray Desmanthus and Marc Desmanthus giving graziers the benefit of varying maturities, different growth habit and a more diverse pasture mix. Desmanthus is a highly productive, drought tolerant perennial legume that is very palatable to livestock, with high digestibility and protein (circa 12-20% CP) and is non bloating.

- Australia's most reliable Desmanthus blend
- Highly palatable mix of non bloating legumes
- Ideally suited and highly productive in heavy clay soils
- Excellent drought tolerant
- Tolerant to light frost and colder regions
- Exceptional persistence — under heavy grazing, recruits readily from seed and regenerates from the crown and produces a hard seed bank
- No requirement for height management
- Suitable for addition to stock licks and animal supplements (faecal seeding)
- Australian bred for Australian conditions
- Inoculated with the most compatible rhizobia strain for nitrogen fixation (CB3126)
- Does not require *Leucaena rumen inoculum* (*S. jonesii* or *Leucaena Bug*).



Suggested sowing rates
(AgriCOTE coated seed)

Pasture mix (oversow): 2–5kg/ha
Stand alone dryland: 3–6kg/ha
Irrigated: 6–10kg/ha

Suggested sowing rates
(Bare seed)

Pasture mix (oversow): 1-2kg/ha
Pasture mix (aerial): 3kg/ha
Faecal seeding: 2kg/ha



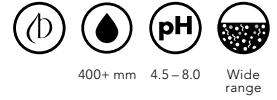
Image: AgriCote Spellgrazer® Desmanthus displaying enhanced root nodulation 8 weeks after sowing.

Tropical Legumes

Burgundy Bean

Burgundy Bean is hardy palatable productive legume with very good cold tolerance. Regarded for its drought tolerance and deep root system, burgundy bean produces large leaves and runners with exceptional forage quality.

Presto Burgundy Bean



Presto is extremely drought tolerant and an ideal choice for companion legume for tropical pastures. Being quicker to flowering allows for earlier seed set and ability to improve persistence into future seasons as well as being adapted to shorter growing seasons such as those experienced in sub-tropical regions.

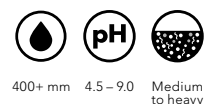
- Hardy, non-bloating and suited to tropical and sub-tropical regions
- Earlier maturing, for persistence and shorter growing seasons
- Handles tougher conditions than Garnet
- Higher seed production, and has good regrowth after grazing
- Drought and cold tolerant
- Mosaic Virus Resistant



Desmanthus

Desmanthus are an extremely persistent legume suited to drier inland environments with heavy clay alkaline soil types. Non-bloating, it provides quality feed without any animal health or toxicity issues. Does not require *Leucaena rumen inoculum* (*S. jonesii* or *Leucaena Bug*) as it does not contain mimosine (Toxin in *Leucaena*). Does not require height management, and has good drought tolerance.

Ray Desmanthus® Desmanthus



Ray Desmanthus is a completely new variety of desmanthus bred in Australia. It is highly productive, palatable and extremely high forage yielding. Unlike other desmanthus varieties, Ray remains fine in the stem and has very good stay green traits that help maintain feed quality once the plant has produced seed. It is later flowering (42 days later than Cv Marc) which allows for greater production of quality forage later into the season. This with its fine stems Ray often gets labelled as 'Tropical Lucerne' or 'Mini Leucaena'.

- Highly palatable, non-bloating tropical legume
- Non Toxic, unlike lucaena (does not have mimosine)
- Exceptional persistence – recruits readily from seed and regenerates quickly after grazing
- Exception forage yield and quality
- Drought Tolerant
- Tolerant of heavy grazing
- Can be added to stock lick for Faecal seeding.

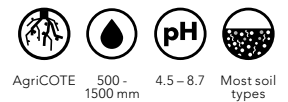




Butterfly Pea

Butterfly pea is a productive and persistent legume adapted to a medium to heavier soils and in tropical and subtropical Australia. . It is palatable and has high nutritive value, with a higher leaf nitrogen percentage and lower acid digestible fibre than most other tropical legumes. It is a non-bloating legume and can persist for 5-10 years

Milgara Butterfly Pea



Milgara is a perennial, summer growing legume with fine, twining stems 0.5–3 m long. Although being a perennial, it has high forage production and can be utilised like an annual.

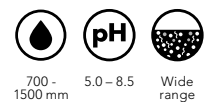
- Easy to establish, and a prolific seed producer under good grazing management
- Tolerant of heavy grazing
- Non-bloating, highly palatable and high quality exceptional weight gains
- Good cold tolerance
- Heliothis tolerant
- Great break crop option for summer systems



Centro

Well suited for high rainfall and monsoonal areas of Northern Australia, and can persist on a wide range of soil types. Can handle dry seasons or periodic dry but thrives under high summer rainfall systems.

Cavalcade Centro



Cavalcade is a prostrate annual twining legume, which under favourable condition can produces roots off trailing stems, which can extend up to 2 m from the crown of the plant. It is a heavy seed producer and when mature, the pods shatter explosively scattering seeds to 1m or more. It can maintain its high quality during the dry season because it retains most of the dead leaves on the stems. This makes it particularly useful as a stand-over feed.

- Fast growing climbing annual, highly productive and palatable
- Persistent from season to season
- Good for improving quality of stand over feed in dry season



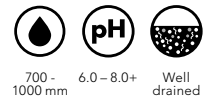
Glycine

Glycine is a productive, moderately drought tolerant tropical legume. It is palatable with good seed production, and is persistent under suitable management. It is an excellent companion legume, due to its trailing habit, climbing onto other companion plants and has ability to root down at nodes. Suited to the cooler more fertile areas of the tropics and sub-tropics.

Cooper Glycine

Cooper is known for its better cold tolerance, the variety can be grown further inland where soil fertility and rainfall are high enough. Well suited to the sub-coastal region of southern QLD, it has larger coarser leaves and longer internodes.

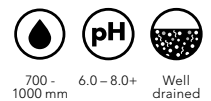
- Better cool season tolerance
- More drought and waterlogging tolerant than Tinaroo



Tinaroo Glycine

Tinaroo is a semi-erect variety that is slower to establish than Cooper. It is much later flowering (4-6 weeks later than Cooper), and is well suited to high fertility scrub soils of South-Eastern QLD and North-Eastern NSW. Tinaroo gives the highest late season production into late autumn and early winter, due to its late flowering. It has softer thin leaves, with a more bright green appearance

- Later flowering - Suits longer season environments
- Highest late season feed production and quality

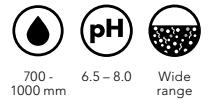




Desmodium

Desmodium has a climbing habit and vigorous warm-season growth, with a good ability to suppress weeds. Suits high rainfall Tropical and Sub-Tropical Coastal situations. Companions well with tall-growing tropical grasses and other twining tropical legumes to build up a big bulk of high-quality feed. Can be utilised as stand-over feed to help fill a late autumn/winter feed gap. It is slow to establish and requires good grazing management as it can be overgrazed.

Greenleaf Desmodium



The trailing habit of Greenleaf makes it a very competitive tropical legume. Very well suited to high rainfall situations and a wide range of soil types. Can produce a considerable amount of forage yield in warmer months once established. Needs adequate spelling for really good persistence.

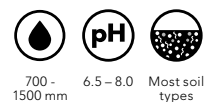
- Perennial with strong tap root
- Great early and late season growth
- Good shade and frost tolerance
- Great companion with Setaria, Rhodes and Panics



Siratro

Siratro is a competitive, high yielding tropical legume with ability to handle a wide range of soil types. Siratro has relatively good drought tolerance and can handle tougher conditions than some other coastal suited legumes. A good companion for tufted tropical grass species.

Aztec Atro Siratro



Aztec is a hardy drought tolerant perennial legume suited to a wide range of well drained better fertility soils. It is highly productive and persistent under good grazing management. Is less tolerant of frost than some other tropical legumes. Aztec atro has better rust resistance and can have 25% more yield than siratro. It is not tolerant of waterlogging or periodical flooding.

- Drought hardy and non-bloating
- Widely adapted to different textured well drained soils
- Handles saline soils
- Improved rust resistance.



Stylo

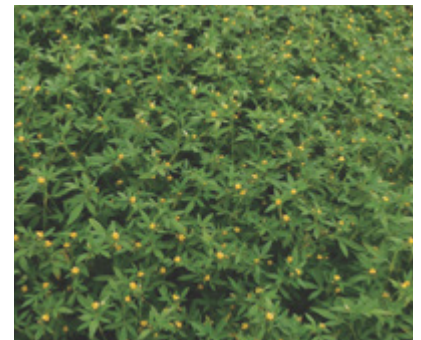
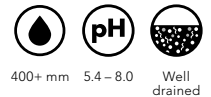
The stylo family of legumes provide hardy valuable source of protein and nitrogen for northern grazing systems. Their hard seededness makes them excellent candidates to be faecal seeded.

Amiga Caribbean Stylo

Oversow: 2-5kg/ha | Faecal seeding: 25kg/t

Amiga extends the area of adaptation of Caribbean stylo into drier and cooler environments. It is robust and persistence delivering performance, can handle tougher conditions. A good seed producer and easy to establish, it handles heavy grazing. Growing well in warm environments it generally doesn't handle shade or frost.

- Seed is easily spread by livestock
- Tougher variety that handles lower rainfall
- Extremely well suited to the tropics
- Greatly improved persistence

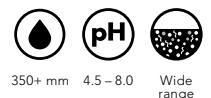


Siran Shrubby Stylo

Oversow: 1-5kg/ha | Faecal seeding: 25kg/t

Siran is a leafier, higher yielding variety of shrubby stylo. A 3 way composite providing multiple gene resistance to anthracnose. Siran is more widely adapted to climate conditions than Seca and produces higher volume of feed. Well adapted to more hostile soil types, it can handle acid soils and a variety of surface soil structure issues. Tolerant of heavy grazing Siran can grow up to 2m tall, however will adopt a prostrate growing pattern under heavy grazing.

- More adaptable to a range of climatic conditions and soil types
- Multigene resistance to anthracnose
- Drought tolerant
- Highly nutritious and high yielding, growing up to 2m.

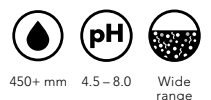


Seca Shrubby Stylo

Oversow: 1-5kg/ha | Faecal seeding: 25kg/t

Seca is later flowering than other shrubby stylos, however is not as widely adaptable. Suits light to medium soil types but does not persist or establish well on heavy clays. It has good drought tolerance, but very limited ability to handle waterlogging.

- Drought tolerant
- Single gene resistance to anthracnose

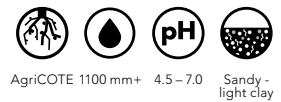




Creeping Vigna

A prostrate, twining growth perennial tropical legume, suited to a wide range of well-draining soils. Suits high rainfall coastal conditions, Creeping Vigna is moderately susceptible to frost and drought but after drought it can regenerate from soil seed reserves. It is very tolerant of heavy grazing.

Shaw Creeping Vigna



Shaw Creeping Vigna is a prostrate or climbing herbaceous perennial legume. It grows many stolons, which readily take root at the nodes. It is suited to warm hill sites, in common with other twining tropical legumes, but has a unique persistence under heavy grazing and competition from dense stoloniferous grass. Shaw has up to 96% hard seed content, allowing it overtime to dominate soil seed banks.

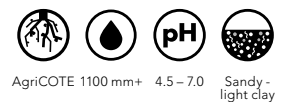
- Persistent under heavy grazing
- Palatable and digestible
- Very competitive, and compatible with quick tropical grasses
- Shade tolerant
- Ability to build up soil seed bank, great for persistence.



Cassia

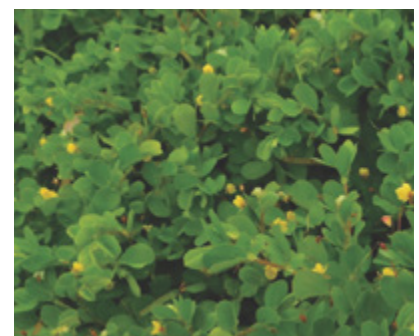
Round leafed cassia is a legume, native to savanna and similar vegetation zones in tropical and sub tropical North and South America.

Wynn Cassia



Wynn cassia is a short-lived perennial whose growth habit varies with stand density and grazing pressure. Wynn cassia grows as a perennial in a 900–1500mm rainfall region, and as an annual in a 400–900mm region. It prefers free-draining light soils of acid to neutral pH. Wynn cassia can be planted in frosted areas, because roots and crowns survive all but the most severe frost. Plants regrow quickly with spring rains.

- Tolerant of heavy grazing
- Perennial or annual habit depending on rainfall
- Good cold tolerance for tougher environments
- Adapted to hostile acid soils.

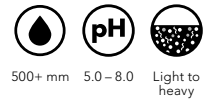


Tropical Grasses - Rhodes Grass

Diploid Rhodes Grass

Diploid Rhodes grass establishes and persists well, even at low fertility, having a higher tolerance for drought and a rapid growth rate compared to tetraploid Rhodes grass species. This species has moderate cold tolerance, being less affected by frost than tetraploid Rhodes grass types.

Endura Rhodes® Diploid Rhodes Grass

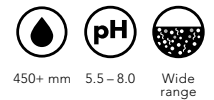


Endura Rhodes® Grass is well suited to tropical and sub-tropical production zones and will adapt to a wide range of soil types for exceptional grazing and hay production systems. With multiple tillering giving a high leaf to stem ratio, Endura Rhodes® grass provides extensive consumable dry matter for high quality hay, with conditioning and drying down traits significantly improved. Maturity evenness provides high levels of protein later in the season. It has an aggressive, spreading, stoloniferous growth habit and is nematode resistant.

- Later flowering than Katambora Rhodes grass types
- Higher leaf to stem ratio, with a finer stem
- Highly suited to hay production – makes exceptional hay
- Aggressive, spreading, stoloniferous growth habit
- Nematode resistant – ideal rotational strategy option



Katambora Diploid Rhodes Grass



Leafy variety selected for Drought tolerance and persistence, Katambora is good under grazing and lower input hay operations.

- Highly stoloniferous, versatile and earlier flowering
- Ability to grow on lower fertility soils

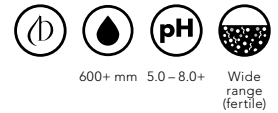




Tetraploid Rhodes Grass

Tetraploid Rhodes grass performs and persists best on soils of higher fertility and will respond exceptionally to higher input (fertiliser/irrigation). They often have higher quality attributes compared to diploid species. Tetraploids are sensitive to day length and flowering occurs in response to shortening day length.

Mariner Tetraploid Rhodes Grass

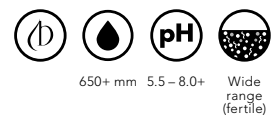


Mariner is specifically selected for superior growth characteristics including increased production, persistence and greater forage quality value over Callide. It has significantly better feed quality and digestibility against diploid varieties and also Callide, so stock get more out of every mouthful. Mariner is a tough tetraploid variety and can perform under very trying conditions.

- Later flowering than Samford or Callide
- Higher leaf to stem ratio, with a finer stem
- Highly palatable, producing high quality feed
- Aggressive, spreading, stoloniferous growth habit
- Highly suited to both grazing and hay making.

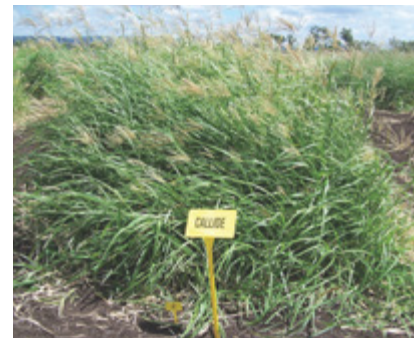


Callide Tetraploid Rhodes Grass



An older tetraploid variety, but still a productive variety suited to grazing and haymaking. Selected for improved quality

- Late flowering, maintains quality
- Highly stoloniferous and competitive

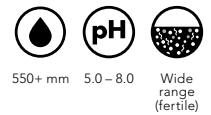


Tropical Grasses - Panic Grass

Panic Grass

Panicum maximum species are widely adapted from high rainfall, coastal environments through to marginal inland regions. With rapid response to rainfall and fertility they are highly productive. As a perennial clumping grass, it is a great companion for creeping grasses or climbing legumes.

Megamax[®]059 Panic Grass

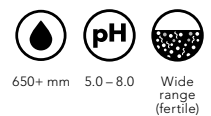


The newest perennial C4 grass suited to tropical and sub-tropical environments. A Gatton Panic type, it has superior growth, persistence and quality characteristics than other Panic Grasses. A very high quality grass, it maintains quality longer into the season than other panic grasses. It suits a wider range of soil types and can handle much tougher conditions than traditional Gatton Panic.

- Higher Quality, longer into the growing season of all panic cultivars
- Higher leaf to stem ratio and high dry matter production
- Exceptional cold tolerance and production
- Exceptional grazing tolerance and persistence.



Gatton Panic Panic Grass

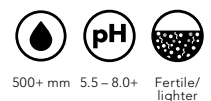


Perennial grass that is widely used in many cattle grazing systems. Gatton is highly palatable with good forage quality. Maintains quality considerably longer than Rhodes. A tussocky style growth habit, it suits tropical and sub-tropical areas with fertile, well drained soils.

- Great companion for legumes and creeping grasses
- Good quality later into the season



Green Panic Panic Grass



Perennial grass that is more suited to lighter soil types. Suited to higher rainfall regions, however can still perform in tougher environments. It requires good fertility similar to other Panic Grasses. Green panic is very tolerant of shady conditions and has very good palatability

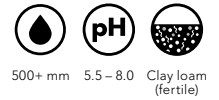
- Tolerant of shady conditions
- Suits lighter soil types.





Panicum coloratum species such as Bambatsii suit heavier clays, self mulching soils that have high water holding capacity. These species have the ability to handle periodic flooding but are well known to withstand long periods of dry. These species are very palatable and desirable under grazing.

Bambatsii Panic Grass



A highly productive summer perennial grass suited to heavier, fertile soils. With great salt tolerance, Bambatsii has good drought tolerance, and can handle prolonged waterlogging. An erect tussocky grass that also can spread by Rhizomes to more than 90cm in diameter and 1-1.5m in height. Distinguished by its bluer appearance and white midrib on leaf, its an important inclusion on any clay soil type.

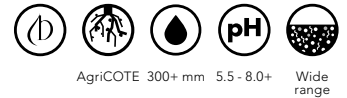
- Suited to heavy soil types
- Great quality
- Hardy and persistent.



Buffel Grass

Buffel Grasses suit a large proportion of central and southern QLD's climate and soil type. Buffel is renowned for its ability to bounce back after drought and impressive production under marginal rainfall conditions.

Lakota Tetraploid Buffel Grass

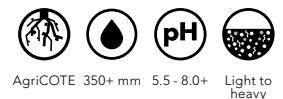


Lakota is a tetraploid apomictic hybrid. It is a new buffel grass variety generated from a buffel grass breeding program in Texas USA. This strongly perennial variety was specifically selected for buffel leaf blight resistance, cold tolerance and improved agronomic performance such as forage yield and winter active regrowth. Leaf blades are thin, resulting in much finer textured vegetative growth compared to other commercial varieties. Maturity evenness of this variety provides higher protein feed late in the season. Lakota demonstrates exceptional recovery after grazing or cutting. Later flowering than other buffel grass types provides Lakota the ability to maintain feed quality longer and out yield similar varieties in the market place.

- Higher forage yield than Gayndah and USA Buffel
- Higher leaf to stem ratio compared to commercially available buffel varieties
- Handles a wide range of soil types
- Buffel leaf blight resistant
- Excellent cold tolerance at all growth stages
- Early season growth – exceptional winter bounce back
- Longer production growing season.



Biloela Diploid Buffel Grass



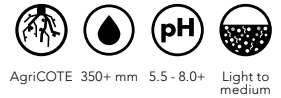
Is a taller height variety growing 1.5m tall. Is more suited to heavy soils. It has good salt tolerance, but poor ability to handle waterlogging.

- Taller and Later maturing
- More suited to heavier soils





Gayndah Diploid Buffel Grass

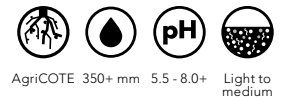


Medium height variety however has much the same climatic adaptation of Biloela. Due to its height it can be more suited to sheep grazing compared to Biloela. It grows more prostrate and densely tillered, and has greater leafiness.

- Intermediate in maturity (between American and Biloela)
- Intermediate in plant height (between American and Biloela)
- Suited to light or medium texture soils.



USA Diploid Buffel Grass



Medium height variety with the fine stems and dense foliage of Gayndah, but flowers much earlier. It has very similar characteristics to Gyandah. USA has greater seedling survival on acid soil types compared to other cultivars.

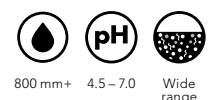
- Earlier maturing and shorter than Gayndah or Biloela
- Seed heads are light purple coloration
- It is more suited to the light and medium texture soils.



Brachiaria Grasses

Brachiaria grass species the single most important genus of forage grass for pastures in the tropics. Brachiaria cultivars can grow in low-fertility and can handle acidic soils, but are extremely responsive to any fertiliser addition.

Signal Grass Brachiaria

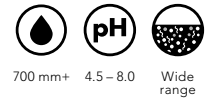


Signal grass is an aggressive tropical plant that has the ability to grow in many soil types. It is commonly used for good groundcover and regeneration activities and is very persistent under heavy grazing. Can provide quality feed, especially if coupled with a tropical legume

- Forms a dense, high yielding sward, tolerates heavy grazing
- Has an aggressive stoloniferous root system and long trailing stems
- Best suited to humid tropical, high rainfall regions.
- Can handle seasonally dry conditions



Hybrid Brachiaria



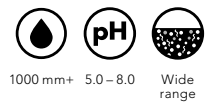
Hybrid Brachiaria varieties are the result of three generations of crosses that result in a three-way hybrid, (Brachiaria decumbens x ruziziensis x brizantha). Being apomictic, the hybrid remains true to type, is genetically stable and does not segregate or divide from one generation to the next.

Hybrid Brachiaria are well suited to tropical, sub-tropical and warm temperate coastal regions. These varieties are commonly grown in the wet and seasonally dry tropics, but will extend into the sub-tropics. They are well suited to a wide range of soil types, performing best on well-drained soils of medium to high fertility but can also grow in less fertile soils, particularly low phosphorus soils and weathered tropical soils characterised by low pH (acid) and high aluminium saturation. Plants regrow after fire and following frost when warmer conditions return.

- Well adapted to acid soils and tolerates high aluminium (Al) levels
- Tolerant of short-term flooding
- Strong persistence, even under seasonally dry conditions
- Maintains green leaf of relatively high nutritional value into seasonally dry periods
- Highly productive – can sustain very high stocking rates
- Requires good grazing management to maintain best quality.



Humidicola Tully grass



Tully grass is suited to tropical lowland environments with temperatures between 30-35°C and 1500mm + rainfall. Humidicola replaces Signal grass in areas prone to waterlogging.

- Persistent and vigorous growing perennial
- Low growing perennial with stoloniferous growth habit
- Widely adapted to tropics and sub-tropics and grows best at 30° - 35°c with 1,500mm annual rainfall condition.

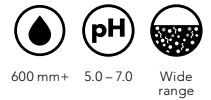




Bluegrass

Bluegrasses are hardy, persistent grasses that are generally tolerant of poorer soil types, lower fertility and have good drought tolerance.

Creeping Bluegrass (Bisset/Hatch)

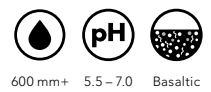


Combination of Bisset and Hatch cultivars to provide better production outcomes. A strong stoloniferous grass suitable for extensive grazing, Bisset provides later maturing and longer season production than hatch whilst hatch gives the mix better drought tolerance and persistence.

- Good drought and close grazing tolerance
- Bisset Finer in the stem, later maturing and more stoloniferous than Hatch
- Hatch is more hardy, and will tolerate low fertile soils
- Effective ground cover to combat erosion, whilst providing good grazing production.



Floren Bluegrass

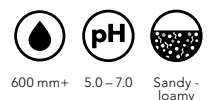


A highly palatable productive variety of Bluegrass also called Angleton grass. A tufted species suited to heavy soil types and cracking clays with neutral to alkaline pH. Thrives in watercourse country and handles periodic flooding.

- Can survive flooding. Survival up to 8 weeks has been recorded in Queensland.
- Produces a dense competitive sward, which is important for control of persistent weed
- Drought tolerant



Indian Bluegrass (Keppel)



Indian bluegrass is a moderately yielding, low-growing, perennial grass. It produces many stolons which root readily at the nodes. It is adapted to a wide range of soil types but prefers soils with a high clay content. Persists on moderate to low fertility soils more successfully than other grasses

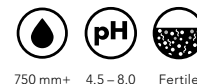
- A hardy, free seeding plant
- Tolerant of heavy grazing
- Suitable for permanent pasture on poorer soils



Paspalum Grasses

Paspalum grasses are suited to both tropical and sub-tropical regions. They typically require higher rainfall and suit a wide range of soil types with good fertility. Paspalum respond well to moisture and fertiliser, and gives a quick return after grazing.

Dilatatum *Paspalum*

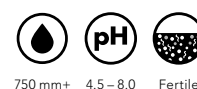


Has moderate cold tolerance and provides very quick return after grazing. It grows as a tufted perennial and has good palatability.

- Palatable, tufted perennial grass
- Best suited to high fertility soils, moderate frost tolerance
- Good grazing tolerance, with quick return after grazing.



Wettsteinii *Paspalum*

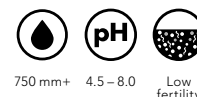


A highly productive, palatable grass with stoloniferous growth habit. Is tolerant of a wide range of soil types, but can thrive in poor drainage and waterlogged conditions. Handles flooding, frost and is very shade tolerant

- Stoloniferous habit with moderate frost tolerance
- Good flooding tolerance
- Very good shade tolerant



Pensacola *Bahia*



Can be very invasive and persistent. Bahia (*paspalum notatum*) is a low growing highly stoloniferous variety that is very tolerant of grazing. Suited to low fertility, light-textured soils. Do not grow it on or near fertile soils as it may become a weed. Intensive grazing management is essential to prevent Bahia dominating the pasture and to maintain feed quality. Generally the lowest palatability out of the paspalum species

- Good drought tolerant
- Persistence under intense grazing.





Setaria Grasses

The Setaria family of grasses is generally suited to wetter higher rainfall environments. Setaria grasses are well known for rapid tall growth with high dry matter production. They have reasonable quality when young, but quickly drop in palatability and feed quality when older. High oxalate levels make setaria unsuitable for horses and donkeys.

Splenda Setaria

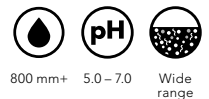


Bred by the CSIRO as a hardy palatable high-yielding, later flowering variety of Setaria. Splenda is very palatable to stock and stems are grazed up to and post flowering. Stems after grazing can produce aerial tillers that have the ability to root and establish if trampled into the soil.

- Hardy, high yielding and Late maturing
- Highly palatable and will tolerate heavy grazing
- Relatively Frost tolerant and will withstand some waterlogging.



Narok Setaria

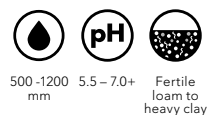


Narok is noted for its good frost tolerance, and ability to maintain green leaf during mild frost conditions, however as it is C4 grass overall growth during winter is still limited. Not as high yielding as Splenda

- Good cold and frost tolerance
- Tolerates heavy grazing.



Purple Pigeon Grass Setaria

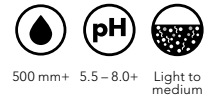


Purple pigeon is a larger seeded member of the Setaria family that is well suited to heavier clay soils. The large seed size allows easier establishment into heavier black, self-mulching, cracking clays. Very tolerant of both waterlogging and drought conditions, Purple Pigeon displays very vigorous seedlings and high growth early in the season. It requires high soil fertility, and strict grazing management to maintain quality.

- Large seed, easier to establish on cracking clays
- Drought tolerant, can handle lower rainfall situations
- Can handle periodic waterlogging.



Premier *Digitaria*

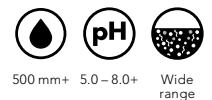


Digit is a highly productive, robust tufted perennial well adapted to inland environments with lower rainfall and colder winters. Digit will grow on a range of soil types but persists best on lighter to medium country. Extensively used throughout the sub-tropical temperate cross over zone.

- Highly productive and palatable
- Good cold tolerance
- Drought tolerant
- Low in oxalate.



Sabi Grass *Urochloa*

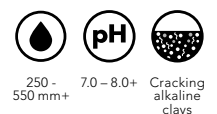


Sabi Grass is a losley tufted perennial. Noted for its toughness it is very drought tolerant but will not tolerate flooding or waterlogging. Sabi will grow on a wide range of soil types, from clay loams to sandy soils. Sabi grass is very palatable and can withstand close grazing. It hays off rapidly as the soil dries out and forage quality declines rapidly in the dry season. Very responsive to rainfall, and can flower quickly as a survival mechanism for tougher environments

- Palatable, hardy, reliable and quick to establish
- Extremely suited to the dry tropics
- Effective for rapid establishment, ground cover and erosion control.



Mitchell Grass



Mitchell grass is a densely tufted perennial with stout rhizomes that handles extremely tough environments. Suited to alkaline clay soils only, and has excellent drought tolerance, providing standing feed over the dry season under low rainfall and low humidity. Drought dormancy allows survival during extended dry periods. Has low tolerance of continual overgrazing (needs rest) and longer term waterlogging or flooding.

- Fast responsiveness to rainfall following grazing or wet season break
- Tolerant of heavy grazing (suited to rotational grazing with adequate rest)
- Extremely tough- suits marginal conditions
- Drought dormancy for persistence through extended dry periods.





Tropical Grass Sowing Guide

	Enterprise			Region						Typical Annual Rainfall Range				
	Finishing (Intensive)	Breeding (Extensive)	Irrigation	Sub-Tropics	Wet Tropics	Dry Sub-Tropic Rangeland	Dry Tropic Rangeland	Dry Tropic Coast	Sub Tropic Coast	350-500mm	500-700mm	700-800mm	800-1000mm	1000mm +
Bambatsii	Green	Green	Green	Green	Orange	Yellow	Orange	Yellow	Green	Orange	Green	Green	Yellow	Orange
Buffel Grass - Lakota, Biloela, Gayndah, USA	Yellow	Green	Orange	Yellow	Orange	Green	Green	Orange	Orange	Green	Green	Yellow	Orange	Orange
Indian Bluegrass - Keepel	Orange	Green	Orange	Yellow	Orange	Green	Green	Orange	Yellow	Orange	Green	Yellow	Orange	Orange
Creeping Bluegrass- Bisset, Hatch	Green	Green	Orange	Green	Orange	Yellow	Orange	Orange	Yellow	Orange	Green	Green	Orange	Orange
Floren Bluegrass	Green	Green	Orange	Green	Orange	Yellow	Orange	Orange	Yellow	Orange	Green	Green	Orange	Orange
Humidicola- Tully Grass	Green	Green	Green	Orange	Green	Orange	Orange	Yellow	Orange	Orange	Orange	Yellow	Green	Green
Hybrid Brachiaria	Green	Green	Green	Yellow	Green	Orange	Orange	Green	Green	Orange	Yellow	Green	Green	Green
Megamax Panic	Green	Green	Green	Green	Green	Yellow	Orange	Green	Green	Orange	Green	Green	Green	Yellow
Panic Grass- Gatton, Green	Green	Green	Green	Green	Green	Yellow	Orange	Green	Green	Orange	Yellow	Green	Green	Yellow
Paspalum- Dilatum, Wettsteinii	Green	Green	Yellow	Green	Orange	Yellow	Orange	Green	Green	Orange	Orange	Green	Green	Green
Premier Digitaria	Yellow	Green	Yellow	Yellow	Orange	Yellow	Yellow	Yellow	Yellow	Orange	Green	Green	Green	Yellow
Purple Pigeon Grass	Orange	Green	Orange	Green	Orange	Yellow	Yellow	Orange	Orange	Orange	Yellow	Green	Green	Green
Rhodes- Diploid Endura, Katambora	Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Yellow	Green	Green	Green	Green
Rhodes- Tetraploid Mariner, Callide	Green	Green	Green	Green	Green	Green	Green	Green	Green	Orange	Yellow	Green	Green	Green
Setaria- Splenda, Narok	Yellow	Green	Yellow	Orange	Green	Orange	Orange	Green	Green	Orange	Orange	Orange	Green	Green
Signal Grass	Yellow	Green	Yellow	Orange	Green	Orange	Orange	Green	Yellow	Orange	Orange	Orange	Green	Green
Sabi Grass	Orange	Green	Orange	Green	Orange	Green	Green	Orange	Orange	Green	Green	Green	Green	Yellow
Mitchell Grass- Curly	Orange	Green	Orange	Orange	Orange	Green	Green	Orange	Orange	Green	Yellow	Orange	Orange	Orange

Sowing Rates (kg/ha)	
Marginal Dryland (Rangelands)	6
Good Dryland (Sub-tropics)	10
Semi-Irrigated (Sub-Tropic Coastal)	15
Irrigated (Tropic Coastal)	20

Key

- = Suitable
- = Suitable in some cases
- = Not recommended



Soil Texture			Soil pH							Notes
Light/Sandy	Medium/Loam	Heavy Clay	Acid 4.5-5.2	Slightly Acid 5.2-5.10	Neutral 6.0-7.6	Alkaline 7.6 +	Waterlogging	Cold	Drought	
Orange	Yellow	Green	Orange	Orange	Green	Green	Green	Green	Green	Prefers heavy clay soils, and can handle periodic waterlogging. Tolerant of heavy grazing and good cold tolerance
Green	Green	Yellow	Orange	Yellow	Green	Green	Orange	Green	Green	Blue Grasses and Lucerne become sensitive at lowering pH
Green	Green	Green	Orange	Green	Green	Yellow	Orange	Green	Green	hardy persistent grass, wide ranging soil type and tolerates lower fertility
Green	Green	Green	Yellow	Green	Green	Green	Orange	Yellow	Yellow	hardy persistent grass, wide ranging soil type and tolerates lower fertility
Orange	Green	Green	Orange	Yellow	Green	Green	Green	Yellow	Yellow	Extremely suited to alluvial floodplains
Green	Green	Green	Green	Green	Green	Green	Green	Orange	Orange	adapted to wetter areas than signal grass. Very competitive
Green	Green	Green	Green	Green	Green	Green	Green	Yellow	Yellow	Buffels Sensitive to low pH, Stylos sensitive to high pH
Orange	Green	Green	Orange	Green	Green	Green	Orange	Green	Green	Improved quality, persistence and cooler season growth than other panics
Yellow	Green	Green	Orange	Green	Green	Green	Orange	Yellow	Green	Requires higher fertility, gatton requires 650mm+, Green only requires 500mm+ and is more shade tolerant
Yellow	Green	Green	Green	Green	Green	Green	Green	Green	Orange	Palatable likes wetter environments, coastal and waterways, wettsteinii is stoloniferous and can handle shading
Green	Green	Yellow	Yellow	Green	Green	Green	Yellow	Green	Green	Perennial tufted grass with good cold tolerance, very persistent
Orange	Orange	Green	Green	Green	Green	Green	Green	Yellow	Green	Only suited to self mulching clays, requires high fertility and strict management to maintain quality
Green	Green	Green	Yellow	Green	Green	Green	Yellow	Green	Yellow	Quick to establish and good early season growth. Endura has exceptional cold tolerance
Green	Green	Green	Yellow	Green	Green	Green	Yellow	Yellow	Yellow	Higher quality than diploid rhodes, Mariner has exceptional quality attributes over callide
Green	Green	Green	Yellow	Green	Green	Green	Green	Green	Yellow	Hardy, and High yielding. Needs good grazing management
Green	Green	Green	Green	Green	Green	Yellow	Green	Orange	Green	Aggressive tropical grass with stoloniferous growth habit, tolerant of heavy grazing
Green	Green	Green	Yellow	Green	Green	Green	Yellow	Orange	Green	Responds quickly after rainfall, well suited to dry tropics, and can handle low rainfall situations due to this responsiveness
Orange	Green	Green	Orange	Orange	Green	Green	Orange	Orange	Green	Fast responsiveness to rainfall following heavy grazing, drought dormancy allows survival in dry season and prolonged dry

Tropical Legume Sowing Guide

	Enterprise			Region						Typical Annual Rainfall Range				
	Finishing (Intensive)	Breeding (Extensive)	Irrigation	Sub-Tropics	Wet Tropics	Dry Sub-Tropic Rangeland	Dry Tropic Rangeland	Dry Tropic Coast	Sub Tropic Coast	350-500mm	500-700mm	700-800mm	800-1000mm	1000mm +
Burgundy Bean - Presto														
Centro- Cavalcade														
Desmanthus - Spellgrazer, Ray														
Glycine - Cooper														
Glycine - Tinaroo														
Greenleaf Desmodium														
Milgarra Butterfly Pea														
Shaw Creeping Vigna														
Wynn Cassia														
Stylo- Caribbean - Amiga														
Stylo- Shrubby - Siran, Seca														
Stylo- Fine Stem														
Lucerne														

Sowing Rates (kg/ha)		
Marginal Dryland (Rangelands)	1 to 3	
Good Dryland (Sub-tropics)	2 to 5	
Irrigated (Tropic Coastal)	5 to 8	
Fecael seeding (kg seed/ton of lick)	Maintenance	5
	Building	10
	Boosting	25

Key

- = Suitable
- = Suitable in some cases
- = Not recommended



Soil Texture			Soil pH							Notes
Light/Sandy	Medium/Loam	Heavy Clay	Acid 4.5-5.2	Slightly Acid 5.2-5.10	Neutral 6.0-7.6	Alkaline 7.6 +	Waterlogging	Cold	Drought	
										Highly productive, hard seeded and drought tolerant, extremely palatable
										Well suited to higher rainfall monsoonal areas of Northern Australia, suitable for pasture and hay production
										Hardy, persistent drought tolerant legume suited to alkaline heavy soil types
										Cooper is fast to establish and has good drought tolerance, quicker to flowering
										Tinaroo pushes longer into the cooler months than cooper but is slower to establish
										Suits high rainfall and coastal regions, strong taproot and good early and late season growth
										Hard seeded allowing for persistence, performs best in heavy soil types. Requires rotational grazing management for persistence.
										Requires rainfall above 1100mm, persistent on poor fertility and can compete with tropical grasses
										Hardy, non-bloating legume. Has rapid establishment and heavy seeder, can regenerate easily and be spread by livestock
										Amiga is hardier and more cold tolerant than most caribbean types, and is anthracnose resistant
										Very large taproot and very good drought resistance, highly productive and broadest adaptation range
										Exhibits tolerance to cooler temperatures, thrives under heavy grazing but prefers higher rainfall areas with free draining soils
										Lucerne is deep rooted, hardy and drought tolerant and has very good cold tolerance and growth into winter months, however requires higher fertility

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Contact your local
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For more information please contact
your local Territory Manager:



Greg Forsyth

North Queensland/Northern Territory
T 0437 867 567
E gforsyth@barenbrug.com.au

Kate Ludwig

Central Queensland
T 0427 010 757
E kludwig@barenbrug.com.au

Craig Constance

South East Queensland
and Burnett
T 0413 442 816
E cconstance@barenbrug.com.au

Chris Collyer

South West Queensland
and Darling Downs
T 0427 007 900
E ccollyer@barenbrug.com.au

Sam Adams

North Coast New South Wales
T 0497 252 146
E sadams@barenbrug.com.au

Marty Conroy-Jaeger

Northern New South Wales Slopes
and Tablelands
T 0427 010 854
E mconroyjaeger@barenbrug.com.au

Cara Metcalf

Central West New South Wales
T 0487 535 267
E cmetcalf@barenbrug.com.au

Reece Hardwidge

Northern Victoria and
Western Riverina
T 0428 178 719
E rhardwidge@barenbrug.com.au

Adam Meusburger

Hunter Valley and South Coast
New South Wales
T 0428 760 301
E ameusburger@barenbrug.com.au

Shayne Mathews

Southern New South Wales
and North East Victoria
T 0409 709 455
E smathews@barenbrug.com.au

Sebastian Leith

Western and Central Victoria
T 0413 442 804
E sleith@barenbrug.com.au

Angus Olding

Gippsland
T 0438 736 943
E aolding@barenbrug.com.au

Aston Barr

South Australia
T 0439 496 026
E abarr@barenbrug.com.au

Tim O'Dea

Western Australia
T 0429 203 505
E todea@barenbrug.com.au

Dwayne Schubert

Tasmania
T 0437 952 112
E dschubert@barenbrug.com.au

Kerry McKenzie

Summer Crop Specialist
T 0456 255 127
E kmckenzie@barenbrug.com.au

Adam Firth

Comercial Manager
Northern Region
T 0413 442 809
E afirth@barenbrug.com.au

Tim Pepper

Comercial Manager
Southern Region
T 0417 500 911
E tpepper@barenbrug.com.au

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