




Product Guide

6th Edition

 **BARENBRUG**

A photograph of two men standing in a grassy field. The man on the left is wearing a blue short-sleeved button-down shirt and khaki shorts, smiling broadly. The man on the right is wearing a dark blue short-sleeved button-down shirt, light blue jeans, and a pink and white baseball cap, also smiling. In the background, a large sprinkler system is active, spraying water across the field. A brown horse is partially visible behind the man on the right. The sky is overcast.

We will be the partner of choice for innovative and sustainable forage and turf solutions, by sharing our global expertise with our customers locally. We put the customer at the heart of our business, making the Barenbrug experience outstanding at every level.

That is our commitment, our yellow promise.

 **BARENBRUG**

Make Life Beautiful

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Global Footprint

Farmers, children, home owners, football players—no matter who you are, and no matter what continent you are on, you deserve the best foundation. Healthy beef cattle in Argentina, happy tourists in Central Park, New York and successful golfers at St Andrews or Pebble Beach: our presence on six continents enables us to think globally and act locally. North or south, drought, wet or cold...

We provide fields of production and joy!

In the past 100 years, we have seen a gazillion soils. From enchanting city gardens to exhilarating sports fields. From strong Dutch dikes to endless cattle pastures in Brazil and New Zealand. Different worlds with different demands. So many needs, so many solutions!

Sharing knowledge, creating solutions

We have research facilities in all the important climate zones. We are at your service on six continents with 18 branch offices and 22 research and development locations in more than 20 countries. Our R&D experts connect and exchange insights to create the exact solution you need. Our presence on the African continent creates a valuable source of tropical grass varieties all over the world. It also means that dairy producing countries like the Netherlands and New Zealand can benefit from each other's insights on nutrient boosting forage. Healthy cattle, happy farmers!

Integrated approach

Our secret? We match excellent breeding and research with the skills of strong partners in the field. The result: the latest scientific insights are integrated thanks to the advice of professionals with intimate knowledge of your business and region. Whether you are involved in agriculture, sports or recreation, we encourage you to bring out the best in yourself. To give you a competitive advantage, we never stop learning. We organise internal training for our staff and have set up the Barenbrug academy to train external partners.

All this serves to offer you the best foundation.



6
continents

15
languages

800
employees

20
countries



2,100,000

Beef steers in Argentina
enjoy Barenbrug pastures

More than 14,440,000

Sheep in Australia enjoy
Barenbrug grass

18,000,000

People in the US enjoy Barenbrug
grass on their home lawn

1,928,000

Golfers in the UK play on
courses with Barenbrug grass

Our mission

As Barenbrug we have an important mission: "Increase animal productivity to help feed the world and enhance the enjoyment of green spaces".

Fostering innovation

How can we help you take the next step? What are your needs? In this ever-changing world with its constantly shifting demands, Barenbrug wants you to be the best. That is why we invest in new technologies, new partnerships and innovation. We are thrilled by bold ideas!



Overview

Royal Barenbrug

A world of possibilities—that's what Joseph Barenbrug pictured when he saw grass. He initiated the development of varieties for different purposes that is still ongoing today. These varieties are suitable for a wide range of climates. Tasty and healthy forages with high nutritional value for cattle, fine leaved and attractive green grass for parks and gardens, slow-growing grass for lawns, strong grass for sports pitches and recreation. If you can imagine it, we can create it!

Customers first

Helping customers deal with all kinds of challenges was Joseph's mission. Frank and Bastiaan continue that tradition as the fourth generation. Today, the Barenbrug Group is the leading worldwide creator of turf and forage solutions. A family business to the core. Thanks to Joseph, Joop and Bert we can serve you with 117 years of experience!

Royal

In 2004, Barenbrug was granted the 'Royal predicate', a distinction awarded only to companies with extreme prestige and importance in their field, that have existed for more than a hundred years, have sustainable management, and an excellent reputation. We are proud of our royal distinction.



Here at Barenbrug SA we put the customer at the heart of the business, making the Barenbrug experience outstanding at every level. That is our commitment, our Barenbrug promise.

We believe success starts from the ground. This is why we offer you the best foundation. A foundation for opportunities, to find new answers and to discover innovative technologies.



Pasture Grasses

 **BARENBRUG**



Perennial Temperate Grasses

Perennial Ryegrass
Tall Fescue
Soft Leaf Tall Fescue
Cocksfoot
Prairie Grass

Temperate (cool season, C3) perennial grasses have been evaluated and grown in South Africa for quite some time now. Perennial ryegrass, tall fescue and cocksfoot are the major pasture grasses used in temperate regions of the world. In South Africa their use has unfortunately been limited by unsuitable soils, dry summers and incorrect grazing practices.

Temperate grasses have demonstrated high winter and spring growth rates in South Africa and have high nutritive value if managed correctly. Summer-active temperate grasses can provide out-of-season green feed.

These grasses are mostly suited to permanent pasture/irrigation systems in medium to high rainfall zones and are best grown on relatively fertile soils that have moisture at depth in summer. Most species require some form of rotational grazing to persist.



Perennial Ryegrass (*Lolium perenne*)

Perennial ryegrass is a cool season grass used in cool, temperate climates throughout the world. It has many worthy attributes and has been considered the best overall pasture grass for many areas. The inflorescence is a spike with alternately arranged spikelets attached edgewise directly to the central axis. Leaves of perennial ryegrass are folded in the bud. Blades are bright green, prominently ridged on the upper surface, and sharply taper-pointed. Lower surfaces are smooth, glossy, and hairless. Leaf margins are slightly rough to the touch. Ryegrasses, in general, grow best on fertile, well-drained soils but perennial ryegrass can tolerate wet soils better than many other grasses. Generally, it does not tolerate drought or extended periods of extreme temperatures well. Perennial ryegrass does well in fertile summer-irrigated or sub-irrigated soils. It is not very persistent or productive on lower fertility summer-dry soils. Perennial ryegrass establishes rapidly, has a long growing season, is high yielding under good environmental conditions and proper fertilization, contains high quality nutrients, recovers well after grazing, tolerates traffic, and is valuable as hay, silage, and pasture. It is often used in mixtures with white and red clover. Perennial ryegrass is highly digestible for all types of ruminant animals.

Tyson

Tyson is a very early-flowering, diploid perennial ryegrass, with tremendous early spring growth and excellent overall yield. With a -7 day heading date, it is the earliest heading perennial ryegrass on the market. Tyson is a terrific fit for most systems, where additional dry matter available earlier in the spring means more feed available for milk and meat production. Capturing this advantage in your farm system will translate to more milk being produced, and higher lamb and beef weight gains.

Tyson has an excellent total DM yield, similar to Trojan ryegrass, but it's in early spring that it really shines with an 18% higher yield than other perennial ryegrasses. This is extremely valuable for several reasons:

- Start your season earlier with less supplements
- Early lamb drafts usually fetch better prices
- Extra feed is freed up for other livestock

Provides more pasture for lambing and calving

Tyson's outstanding early spring growth helps overcome feed deficits typically associated with this period and is ideal for early lambing and calving systems.

Optimises spring productivity

Tyson is particularly suited to farm systems that need to maximise spring pasture and animal growth before the possible arrival of drier conditions.

Seeding rate

- 25kg/ha



Tyson is the standout paddock

Key features

- Very early heading date (-7 days)
- Outstanding early spring growth
- Very high annual DM yield

Breeding

Tyson has been bred from our best early season perennial ryegrasses, Meridian and Arrow. Meridian was a very early cultivar we released several years ago with an exceptional early spring yield. The improvement we have achieved with Tyson is to capture the best of this and combine it with the best of Arrow. This gives both exceptional early spring growth and a very good year-round yield.

Viscount

Viscount is a standout tetraploid perennial ryegrass from Barenbrug New Zealand's plant breeding programme, with more early spring growth and better total yield than Bealey. Added to this is an improved rust resistance and better summer feed quality too. The biggest gain with Viscount is in its early spring growth, during calving or lambing when feed is most valuable. For dairy farmers extra grass at this time of year has been of great value too.

Three reasons to sow Viscount perennial ryegrass:

1. More feed when you need it.

Viscount has a flowering date of +19 days (6 days earlier than Bealey). It has a very good total DM yield but importantly has improved early spring growth – a time when feed is of the highest value in pastoral systems.

2. Animals love it.

Viscount has all the features animals love in a pasture;

- the excellent palatability of a tetraploid
- upright growth for ease of harvest
- high quality with reduced aftermath heading and improved rust tolerance
- clover friendly

3. Excellent companion variety.

Viscount performs extremely well in mixtures with red and white clover, as well as with diploid perennial ryegrasses like Governor and Tyson.

Viscount - the next stage in pasture development!

Governor

Governor combines genetics from two of Barenbrug New Zealand's most popular previous varieties to set a new standard for perennial ryegrass persistence. With outstanding survival and excellent DM yield on the shoulders of the season, Governor delivers feed when it's needed most.

Genetic legacy

Barenbrug New Zealand has produced several superior ryegrass varieties over the years and two of them – Bronsyn and Tolosa - have been crossed and selected to create this new variety. The persistence of Bronsyn, combined with the high DM yield and palatability of Tolosa, make Governor ideal for dairy, sheep and beef systems.

Persistent

Governor has shown remarkable survival through drought and high insect pressure under grazing on farm trials across the country. Fine, densely tillered and diploid, it will become the premium variety of choice for persistence.



Seeding rate

- 27kg/ha

Seasonal growth

A key feature is Governor's ability to grow more DM on the shoulders of the season, in early spring and autumn, when it is most needed.

Best all rounder

With a +5 days heading date, low aftermath heading (similar to Alto) and better rust resistance than its parents, Governor is a reliable and persistent allrounder.

Seeding rate

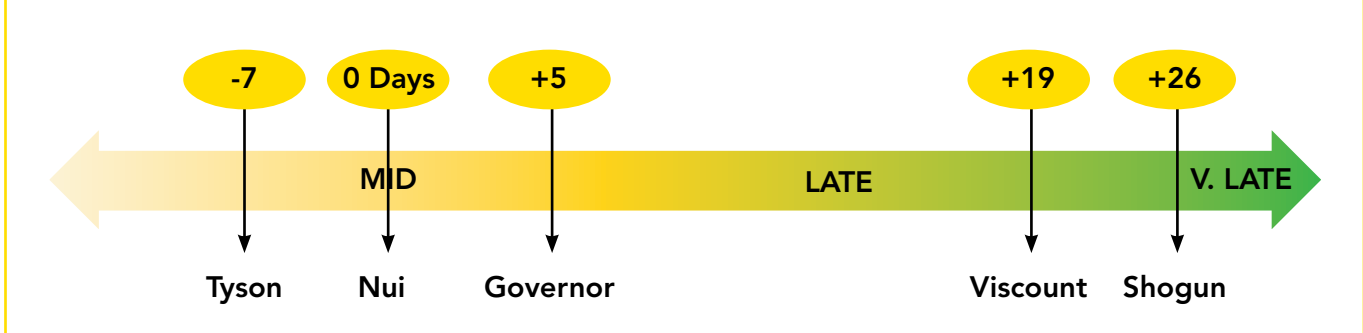
- 25kg/ha



Barenbrug Perennial Ryegrass Classification

Tyson (D)	Viscount (T)	Governor (D)
All systems - Arrow's replacement	Maximum performance - Bealey's replacement	All rounder
High yields, very persistent	Combines well with Hybrid ryegrass	High seasonal yields, very persistent
Early spring quality feed	Spring and summer yield	Early Spring plus Autumn
Intensive/extensive farming	Intensive farming	Intensive/extensive farming

Flowering Dates



Seasonal Summary

	DO	DON'T
Winter	Spray weeds.	Pug your ryegrass - have strategies in place to avoid damage.
Spring	Maintain consistent residuals - your new ryegrass will grow rapidly and needs frequent grazing. Take care grazing in wet periods.	Let your pastures get too long. Make hay or silage in the first season.
Summer	Have strategies in place if the weather turns dry. Look after ryegrass - sacrifice your poor paddocks first.	Overgraze/restock your ryegrass too early - let it recover and build its reserves.



Fescue Grasses

Fescue is a widely adapted cool season grass. In the transition zone, fescues are used extensively due to its superior summer production. Fescues generally have a better drought, salinity, and waterlogged tolerance than ryegrass. To successfully establish fescues, make sure that planting commences during March.

Tall Fescue (*Festuca arundinaceae*)

Royal Q-100 **NEW**

Royal Q-100 is a cross between mediterranean and continental genetics, showing higher winter production than the continental cultivars and more even production through the year than the mediterranean cultivars. It has high forage quality and digestibility levels in late spring and summer, similar to ryegrass.

Key features

- High yields all year round
- Better autumn & winter production
- Excellent heat tolerance
- High forage quality
- Excellent rust resistance

Seeding rate

- 25kg/ha

Benefits

- Better fit to fodder flow systems
- More feed when needed compared to some continental types. Variety suited for dairy production
- Higher summer forage yields.
- Increased persistence
- Higher intake by grazing animals
- Increased quality feed



Royal Q-100



Soft Leaf Tall Fescue (*Festuca arundinaceae*)

These days there is a new generation of tall fescue available with much more palatable leaves, called soft leaf tall fescues.

Palatability

Palatability is hard to measure, but we do know a few things. In a sheep grazing trial conducted in France, soft leaf tall fescues were the only varieties the animals preferred. Sheep would eat the soft leaf tall fescues into the ground and waited for hours before starting to graze 'rough-leaved' varieties like Kentucky-31.

Improved rust resistance

Rust is fungus that can attack fescue and other species. Rust is completely harmless to livestock, yet it affects the palatability of plants and dry matter production. The newer soft-leaved tall fescues have been bred to be more rust resistant.

Soft Leaf Tall Fescue

- Late maturing
- Softer leaves
- More palatable
- Better rust resistance
- Winter-hardy

Later heading date

Varieties with later heading dates are much easier to manage. They produce less and later seed heads in the spring, allowing for a longer grazing/harvest window. Later maturing varieties also show less re-heading during the season.



Palatability of the Soft Leaf Tall Fescue



Baroptima

Baroptima

Establishment and management

In order to maximize the benefits of these soft-leaved fescues, they should be managed correctly. The recommended seeding rate is 25-30kg/ha in a well-prepared seedbed. Brillion seeders or broadcasting the seed followed by a cult packer works best. If a regular drill is used, we suggest planting bi-directional. This means crossing the field twice, at an angle.

Soft-leaved tall fescues are very well suited for intensive grazing, as well as cutting for hay or grass-silage. When planted for grazing, planting together with white clover is recommended. White clover fixes nitrogen, increases DM production and increases forage quality. Ideal in mixtures with perennial ryegrass, cocksfoot, phalaris, brome, perennial clovers and lucerne.

Cocksfoot (*Dactylis glomerata*)

Adremo

The leading cocksfoot in forage yield

Key features

- Late heading cocksfoot
- Constant high forage production throughout season
- Especially suitable for hay production
- Excellent persistency
- Very resistant to cold and drought

Adremo, a highly palatable cocksfoot variety, is the latest release in South Africa with exceptional dry matter results in the Southern Cape and KwaZulu-Natal trials. Cocksfoot is a very persistent perennial grass that tolerates dry summer conditions, moderate soil fertility, insect attack and set stocking. Cocksfoot is used to enhance the growth and persistence of permanent pastures in summer dry areas. It also adds variety to the stock diet. Traditionally seeding rates of cocksfoot were kept low in mixtures, because cocksfoot can dominate pastures, reducing clover levels and digestibility. New fine leaved cocksfoot cultivars like Adremo are much more compatible with ryegrass and other pasture species, allowing better long-term pastures. Cocksfoot is moderately slow to establish and has lower digestibility than most other grasses. Cocksfoot has limited winter- but good summer growth.

Seeding rate

Cocksfoot is most commonly sown at 4-6 kg/ha as a component of a ryegrass-based seed mix. It can be seeded at a higher rate of 15 kg/ha as a specialist pasture, particularly in dry conditions where other grasses struggle to persist.

Grazing management

Cocksfoot should be kept short and leafy throughout the spring to maintain feed value. If traditional cocksfoots become clumpy or stemmy they are unpalatable to stock. In grazing trials, where cocksfoot has been kept short and leafy, animal performance is reasonably good. Maintaining good legume content in cocksfoot pastures will improve animal performance.

Prairie Grass (*Bromus catharticus*)

Bareno Brome

Growing Bareno

Bareno pasture brome is a standout persistent pasture for summer dry free-draining soils. In these situations, it is more persistent than perennial ryegrass, is palatable, high yielding and legume friendly. Bareno can be rotationally grazed or set stocked with better late spring quality and summer growth. Bareno is slower to establish than ryegrass. If you spend a little extra time on correct



Cocksfoot

sowing and early management, you'll be rewarded with good dry matter results. Cultivation ensures a fine, well compacted, weed-free seedbed to allow correct seed depth and soil moisture retention for fast germination. Direct drilling has proven to be very successful.

Bareno is best sown when soil temperatures are above 12°C, during late summer or early autumn. This gives plants time to adequately establish before winter. Its establishment is much slower in cool conditions.

Sow seedshallow, at 10 - 20 mm. Bareno should not be overgrazed in its first year to allow plants to fully establish. Bareno can set seed quickly so growth needs to be kept under control in late spring. Post-grazing covers of 3-4 cm will ensure persistence and regrowth through summer. Remember the plant's reserves in grasses are above the ground (not in the roots).

Seeding rate

- 20 - 25kg/ha



Hybrid Ryegrass

Hybrid ryegrass (*Lolium x boucheanum*), also known as 'short rotation' ryegrass, is generally produced by plant breeders crossing Italian or annual ryegrass with perennial ryegrass. Hybrid ryegrasses fall between Italian and long rotation ryegrasses in growth and persistence. Hybrid ryegrass gives better winter production than perennial or long rotation ryegrass, and in summer wet areas most cultivars will persist for up to 2 years. In summer dry environments hybrids generally last for 1 - 2 years.

- Perennial x Italian/Annual
- Winter growth = many Italian ryegrasses
- Out-yields most perennials during Summer & Autumn

Using a Hybrid

Pure sward or undersowing

Year 1: Viscount or Tyson

Year 2: Hybrid

Year 3: Hybrid

Hybrid Ryegrass (*Lolium x boucheanum*)

Shogun

Over a 12-month period, Shogun has the highest DM yields of any ryegrass we have tested. It produces more than most perennial ryegrasses in summer and autumn, and in winter and early spring its growth is comparable to an Italian. This level of feed supply frees up more paddocks for renewal. The increased profitability Shogun can generate also helps fund investment in regular pasture renewal.

Fast establishment

Shogun's fast establishment is comparable to that of an Italian ryegrass. This allows paddocks resown with Shogun to be brought back into the grazing rotation quicker than those renewed with perennial or other hybrid ryegrass. Less down time means larger areas of pasture can be renewed without compromising production.

Ideal for over-sowing

Shogun is ideal for over-sowing (drilling seed into pasture without a herbicide spray). This is a key technique for reviving large areas of pasture on some farms. It has an outstanding persistence for a hybrid.

Winter growth with flexibility

Traditionally, annual or Italian ryegrass varieties have been used to achieve extra cool season pasture growth, but the extent of their use is limited by their persistence. Shogun however provides similar levels of winter growth with the flexibility of a longer-lasting pasture, typically persisting for two years. Shogun also has the flexibility of being seeded in a range of mixtures (e.g., with white clover, red clover or chicory) as the situation requires.

Management

The key to getting the best persistence out of tetraploids, including Shogun, is pasture management in two areas:

- During extended dry periods don't overgraze as their palatability makes them more susceptible to being overgrazed.
- During periods of wet weather, the open growth habit of tetraploids makes them more susceptible to pugging damage with cattle.

Seeding rate

- 25 - 27kg/ha



Barsenna

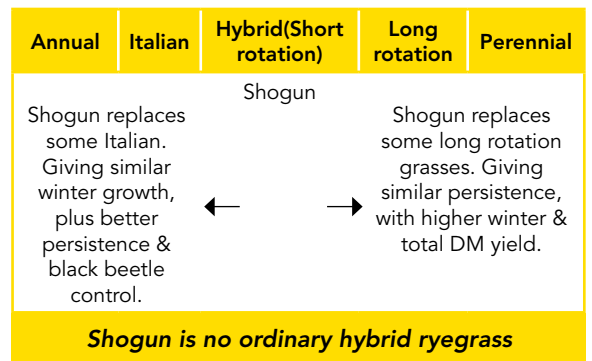
Barsenna is a diploid variety from Barenbrug's breeding program in Southern- France. This variety is especially suitable for Mediterranean areas, because of its winter-active growth habit will provide a long growth season. Barsenna can be used in highly productive, intensive mixtures, with perennial ryegrass, tall fescue and clovers. Ideal to drill into existing pasture.

Winter active for intensive use

- High productive variety
- Its winter growth is suitable for areas with very mild winters

Seeding rate

- 25kg/ha





Annual Temperate Grasses

Italian Ryegrass

Autumn planting / Feb. – Apr.

Produce early winter feed but grows less active during the coldest months. Best DM production during Spring. Seed production stimulated by a cold period (winter). Growth stops during November/December.

Diploid varieties: Tabu+

Tetraploid varieties: Barmultra II

Italian Ryegrass

Spring planting / Aug. – Sept.

Flowering and seed production only after about 15 months. DM production usually high during Spring, Autumn, and the next Spring..

Diploid varieties: Tabu+

Tetraploid varieties: Barmultra II

Westerwold Ryegrass

Autumn planting / Feb. – Apr.

Long photoperiodic day lengths stimulate flowering and seed production – normally around October. This results in a decrease in DM production and less palatable pasture. Good production during Autumn and early Winter.

Diploid varieties: Ribeye

Tetraploid varieties: Maximus

Italian Ryegrass (*Lolium multiflorum*)

Barmultra II

After 50 years of fame the good old variety Barmultra has been replaced by Barmultra II. Barmultra II offers better dry matter yields, better disease resistance and better persistency.

Barmultra II is very suitable for both autumn- and spring seeding and can be used for seasonal production or bi-annual forage production. Barmultra II can be grown on all types of soil with good water supply. Peaty soils and soils with high groundwater tables are less suitable.

Key features

- Fast germination and establishment
- Quick soil coverage
- Extended green material production
- Quick spring growth after winter
- Broad leaves
- Very good frost tolerance in springtime
- Dense growth resulting in less invasion of weeds
- Fast regrowth after each cut

Tabu+

Tabu+ is nutritious, has explosive establishment speed, exceptional winter and early spring growth and produces high year-round growth. Tabu+ is suitable as a winter crop, or for under sowing into run out pasture to boost winter-spring growth. In dense pastures spraying before drilling is recommended.

Stock Type: Dairy, Sheep, Beef

Seeding rate

- 25kg/ha

Key features

- Quick establishment
- Very high DM yield
- Diploid Italian - very persistent
- Provides a dense cover
- Upright growth habit
- Ideal for over-sowing



Barmultra II



Tabu+



Westerwold Ryegrass (*Lolium multiflorum*)

Ribeye

Ribeye is an earlier producing, earlier maturing, and winter-hardy diploid variety that has proven itself in yield, quality and grazing tolerance. The forage quality of Ribeye is excellent both in nutritive value and low rust infection. Ribeye has also been given high marks for winter-hardiness in cold injury ratings. Ribeye has performed exceptionally well in the Cedara trials with high dry matter yields and aggressive regrowth.

Key features

- Excellent for overseeding
- High forage production
- Withstands high grazing pressure
- Excellent forage quality
- Rust resistant & cold tolerant

Seeding rate

- 25-30kg/ha

Maximus

Maximus is an elite mid flowering tetraploid annual ryegrass with more even seasonal growth, good heat tolerance and good rust resistance. Maximus sets a new standard for high performance tetraploid annual ryegrasses. Developed from a Mexican background, Maximus has good heat tolerance and good rust resistance.

- Tetraploid annual ryegrass
- Excellent for overseeding and mechanical harvesting
- High yields
- Very high quality
- Early production
- Winter-hardy
- Good rust resistance

Seeding rate

- 25-30kg/ha



Ribeye pasture in KwaZulu-Natal



Ribeye



Sheep and cattle grazing on Maximus near Vryburg

Management of Annual Grasses

Annual ryegrass is normally planted from March to May. The recommended seeding rate is 20-25 kg/ha in a well-prepared seedbed. The ideal seeding depth is 2 cm. Broadcasting and no-till are two of the most popular planting methods.

Once established, grazing the pasture should commence at a four-leaf stage. Rotational grazing will provide the best yield results, however, ryegrass can tolerate close and continuous grazing. Ryegrass responds to Nitrogen and tolerates moderate soil acidity. In high rainfall areas, high production can be expected throughout the winter. To increase winter forage availability, annual ryegrass can be planted with a companion, such as a cereal crop or forage brassica.

Management of Temperate Grasses

For sustainable food/forage production, you must be able to produce food/forage that is compliant with the following criteria:

- High dry matter (DM) production
- High quality
- High DM intake
- High palatability

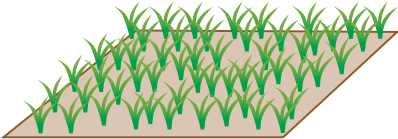
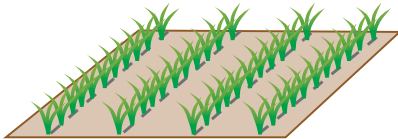

Pasture Management

Goal: Get as much ME/ha directly into animals.

How: Improve what currently grows (quality and quantity). Grazing more of it (utilisation).

Pre-sowing

Seeding Methods

<h4>Spreading seed evenly</h4> <p>E.g. roller-drill, broadcast seed, drill with narrow row spacing</p>  <ul style="list-style-type: none">• Seed well spread over ground surface• Good ground gives weed control• More space for seedlings helps slower establishing clover	<h4>Drilling in rows</h4> <p>E.g. standard or direct-drill sowing in rows</p>  <ul style="list-style-type: none">• Seed placed tightly in rows• Where rye grass and clover are drilled together in the same row, clover suffers• Space between rows for weeds	<h4>Cross-drill or diamond-drill</h4> <p>E.g. sow with direct-drill in two directions</p>  <ul style="list-style-type: none">• Better ground coverage than one drill pass (better weed control)
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Pasture Conditioning Scoring

Rank	Description	Pasture	Suggested action
5	The whole paddock has a dense sward of desired grasses and clovers.		No action required. Would be happy if whole farm is in this state.
4	Parts of the paddock show signs of low level damage and some less vigorous grasses.		Check fertility. Apply summer N to encourage tillering. Paddock probably OK for coming season.
3	Majority of paddock has low level damage, weeds, and less vigorous grasses.		Apply summer N. Undersow in the autumn with perennial ryegrass containing the appropriate endophyte.
2	Parts of the paddock have severe damage. A lot of weeds and bare soil.		Either: <ol style="list-style-type: none"> 1. Sow into summer crop this spring and sow in perennial pasture in autumn 2. This spring oversow chicory with fertiliser 3. Undersow paddocks with chicory, and plan to renew in the following 6-12 months
1	Entire paddock severely damaged.		Sow into summer crop this spring and plan to sow in perennial pasture in autumn.

Basic steps for establishment

Aim: for strong, healthy plants prior to summer. Sow early, establish before winter.



Do a soil analysis before planting.



Take climatic conditions into consideration.
For example: wind if you broadcast seed.



Seeding depth has a huge impact on establishment.



Rolling after planting is very important.



Be aware of insects and the damage it can cause to seedlings.



Use a herbicide program to control weeds effectively.

Growth Management - Persistence

First Graze

- Administer pull test
- 4 - 6 weeks after planting
- Stock must graze pasture as quickly as possible to approximately 8 cm (imitate mower action). This will stimulate regrowth. It is only possible in multi camp systems.



Summer Management

- Leave > 4-5 cm residuals (plant reserves are in the base of tillers, lowers soil temp and shades summer grasses)
- Assist pasture growth by applying nitrogen and irrigating
- Don't overgraze (especially new pasture). Feed supplements, long rotation (ration cows), destock
- Other: Good soil fertility; allow to gain cover before grazing after dry



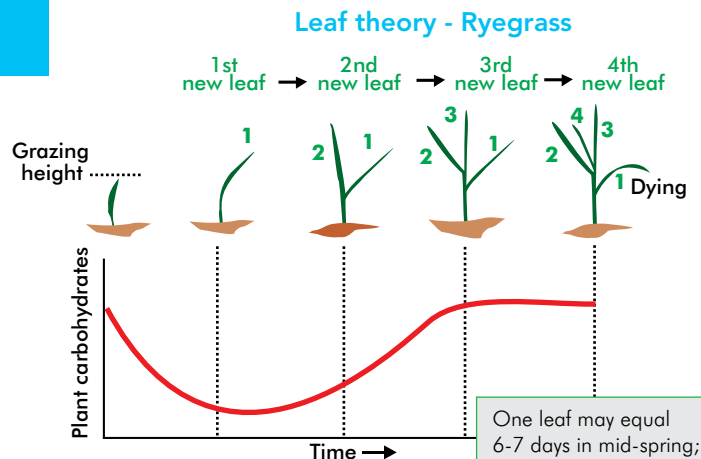
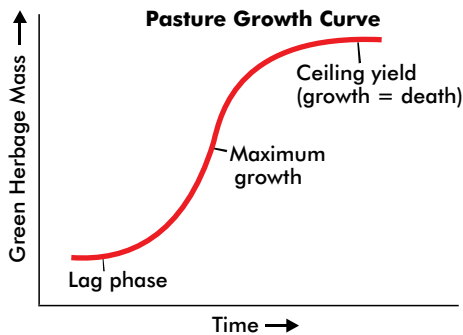
Winter Management

- Avoid pugging (tetraploids especially) – sacrifice poor paddocks first or use holding areas
- Manage pugging damage immediately
- Ensure good soil fertility to grow more grass – fertilising is important
- "It takes grass to grow grass" - leave reasonable residuals





Graze at the correct time - avoid lag phase and build up of dead material



Monitor your pasture. If you don't monitor it, how can you manage it!

Pasture quality

Pre-sowing

- Choose appropriate species/varieties
- Consider tetraploid ryegrass
- Take note of flowering date

Management

- Limit grass seeding in spring – graze at the correct time (refer to leaf theory diagram)
- Graze to a residual of 1500 kgDM/ha (4-5 cm)
- Aim for a high clover content, avoid shading and manage the soil pH

High Utilisation

- The pasture's condition at grazing is a result of how it was managed during the previous grazing
- Graze to consistent residuals

Pasture species for quality and persistence:

White Clover
Red Clover
Lucerne
Chicory
Plantain
Perennial Ryegrass
Short Term Ryegrass
Tall Fescue
Bromus
Cocksfoot

Pasture is: Low cost. Profitable. Environmentally friendly – animals eat it themselves.

But it's: Variable in supply. Doesn't keep. Loses quality when seeding. Paddocks tend to deteriorate over time.

It needs to be: Grazed at the correct time and residuals. Monitored (feed wedge). Renewed when required.

Do all this and you: Maximise the amount of ME/ha consumed by the animals...which is highly profitable!



Tropical Grasses

Brachiaria Hybrid

Brachiaria brizantha

Megathyrsus maximum

Tropical pasture grasses cover a wide range of species. The environments in which they are grown include the wet tropics and the semi-arid tropics. Most of the species are perennials and are characterized by processing the efficient C4 photosynthesis pathway. They are primarily used by grazing animals for meat, milk, or fibre production. Tropical grasses offer high water use efficiency, high production and improved sustainability outcomes. They have the potential to produce large amounts of plant dry matter in a growing season, provided that they have adequate soil water and nutrients.



Brachiaria Hybrid

Sabiá NEW

Sabiá hybrid brachiaria adapts to various environmental conditions. Its robustness and low canopy height for grazing management are valuable functional benefits, which provide adaptability and reliability. In ideal conditions, with fertile soils and adequate management, it presents a high forage production potential and animal productivity. It is a variety that stands out!

Key features

- Low canopy height for grazing management
- Higher production in dry season
- Intense tillering for excellent ground cover
- High annual dry matter production
- Higher animal productivity compared to older varieties, like Marandu

High performance in dry season

A key benefit of this hybrid is its increased production in the dry season. On average it produced 47% more than Marandu in the dry season of the year, having concentrated 34% of annual production in this season. In summary, in comparison with Marandu, Sabiá performs much better in the dry season. Thus, in the rainy season, the recovery of production is much faster.

Cayana NEW

Focusing on the needs of tropical agriculture production, we bring a great innovation: Cayana Hybrid Brachiaria. This hybrid is the right choice for those looking for greater productivity, profitability, and success. The hybrid was developed by Barenbrug, a global leader in the forage market. Tradition and leadership in this sector reinforce our commitment to tropical agriculture production. We are the only private company with a strong and established tropical forage breeding program.

Key features

- Excellent response to high fertility
- Excellent tillering capability
- High leaf/stem ratio
- High forage quality
- In average of two years of evaluation, it delivered 42.2% more animal productivity compared to Marandu



Sabiá

Exclusive Coating Technology

The seed is coated, providing protection as well as stimulation of development in its early growth stages.

Seeding rate

- 10-15 kg/ha (coated)



Cayana

Exclusive Coating Technology

Cayana's seed is treated with Barenbrug's exclusive technology, known as Yellow Jacket®. This industrial treatment, performed in layers, contains macro and micronutrients, fungicide, insecticides and bio stimulants. Thus, the grass has greater protection in the early stages of development.

Brachiaria brizantha

Marandu

Key features

- Good persistence under grazing
- More compatible with legumes than some other Brachiaria
- Tall type - well suited to cutting
- High seed production potential
- Best adapted to the humid and sub-humid tropic areas

Megathyrsus maximum

Mombaca

Mombaca is characterized by its high nutritional content and it responds very well to intense fertilization. It is greatly used as a forage grass by beef producers. Mombaca is highly recommended for intense grazing systems and is a good alternation for pasture diversification with Brachiaria like Marandu. It requires fertile soils and is not recommended to be planted on slopes.

Key features

- Tufted perennial with deep root system
- Low resistance to drought and water logging
- Requires fertile soils
- Rotational grazing recommended
- It produces between 12% and 14% crude protein
- It is recommended for milk production and intensive fattening
- Has production potential of 14 to 16 ton dry matter

Grazing management

It can be either rotationally grazed or set stocked. Some farmers also prefer to cut-and-carry. Graze/cut every 40-45 days in the wet season and 60-70days in cool season. The preferred grazing height is between 10 and 15 cm.

Seeding rate

- 6-10 kg/ha (coated)



Marandu



Mombaca



Sabanera NEW

Sabanera is a new variety of Guinea grass, which serves as forage for cattle, beef or dairy. Ideal for use in grazing, under a rotational paddock system for medium to good fertility soils, that are well drained.

Key features

- Excellent forage in dairy and weaner systems
- High production potential
- High leaf: stem ratio
- Good shade tolerance, well adapted to silvopastoral systems

High Performance in dry season

- Carrying capacity potential of up to 4 LSU/ha/year (LSU - large stock units)
- Average weight gain with 4 LSU/ha = 725 g/LSU/day
- Average meat production with 4 LSU/ha = 1 058.5 kg/ha/year.
- Milk production: 9.4 l/LSU/day.
- Sabanera has a higher gross dry matter production, generating higher profits than Mombaca
- Nutritional quality at 21 days or regrowth - crude protein: 13.3% and digestibility: 60.7%

Management

Sabanera can be used for cutting and carrying systems, silage, haymaking, and for direct grazing. It usually takes 3-4 months to reach first grazing. It is recommended to manage grazing in a rotational system, in which the period of occupation is not more than three days, and the rest period is 21-24 days. There should be a minimum residual of 10-15 cm, allowing recovery of the pasture to be rapid.

Seeding rate

- 5-10 kg/ha (coated)



Sabanera



Sabanera



Subtropical Grasses

Rhodes Grass

Smutsfinger Grass

Blue Buffalo Grass

Bottle Brush Grass

Weeping Love Grass

Sabi Grass

White Buffalo Grass

Small Buffalo Grass

Kikuyu Grass

Bermuda Grass

Bahia Grass

Subtropical (warm season, C4) perennial grasses are traditionally grown in summer rainfall environments. However, they can be successfully grown in the Mediterranean environments due to a combination of drought tolerance and the mild winter conditions in coastal districts. Well adapted species can survive extended dry periods and resume growth rapidly after summer-autumn rainfall. They can increase production on poor sandy soils and provide year-round groundcover to minimise the loss of topsoil as a result of strong winds. The feed quality depends on grazing management and nitrogen fertilisation, while most species require some form of rotational grazing to persist. Most of the species are tufted grasses and perform well in mixtures with other species with similar growth habits.



Rhodes Grass (*Chloris gayana*)

Rhodes grass is utilized more for grazing than for hay. It is not considered a high-quality grass but is suited where ease of establishment is more important than good quality. It establishes easily with a creeping growth habit and good seed production. It is adapted to most soil types, with an ideal pH-range of 5,5-7,0 (KCl) and areas with a relatively low rainfall.

Establishment

- October/November or February/March
- Do not plant/cover seed deeper than 25 mm

Soil preparation

- Early preparation helps retain moisture
- Seedbed: clean, even, free of weeds and well rolled
- Many failures occur when seedbeds are too loose and powdery
- Rolling before and after sowing ensures good establishment
- Rhodes grass can be sown on dry soils where the soil is inclined to form a hard crust after rolling
- Subsequent rain will wet the seed for germination
- A light shower of rain followed by long dry period could result in poor establishment

Seeding rate

- 5-10kg/ha (uncoated); 12-20kg/ha (coated)

Katambora

A diploid, tufted grass. Leafy, densely growing, with long, relatively thin stolons. Selected for drought tolerance and very rapid growth rates. Establishes and covers soil rapidly, persisting well, even at low fertility. Katambora has a high seed yield ability and is classified as a Nematode resistant type.

Tolgar NEW

Tolgar is the first multi-use rhodes grass variety to be bred for amenity, revegetation and soil conservation purposes, as well as first class forage and hay production, maintaining drought tolerance but exhibiting an aggressive creeping growth habit rather than being erect. Tolgar has fine textured vegetative growth which is very palatable and is later flowering, giving it the ability to out-yield most other Rhodes grass varieties in the market, while being much more salt tolerant.

Endura NEW

Endura is a diploid Rhodes grass that was bred in Australia. This perennial variety was selected from the market leading variety, Tolgar, taking the greatest characteristics of this long-standing variety

and significantly improving forage quality. Leaf blades are thinner again, resulting in finer textured vegetative growth, with a reduced amount of stem. The enhanced multiple tillering ability of Endura produces a higher leaf to stem ratio, providing more consumable dry matter than Tolgar and Katambora. The result of intensive breeding selection work from Tolgar has resulted in Endura grass ability to make top quality hay, with conditioning and drying down traits significantly improved. Less stem results in more even dry down rates and the ability to capitalise on quick initial leaf dry down gains. Maturity evenness of this variety provides higher levels of protein feed later in the season that has higher utilisation rates. Endura demonstrates exceptional persistence and recovery after grazing or cutting. It flowers later compared to Tolgar and Katambora, providing Endura the ability to maintain feed quality longer into the season.

Key features

- Significantly later flowering than Tolgar and Katambora
- Greater synchronisation and uniformity of flowering over other varieties
- Higher leaf to stem ratio and finer stem compared to Tolgar and Katambora
- Highly suited to hay production – makes exceptional hay
- Well suited to grazing, reclamation and soil conservation activities
- Highly palatable due to less stems – greater feed utilisation
- Higher salinity tolerance than Katambora
- Nematode resistant – ideal rotational option
- Moderate drought, frost, cool season and acid tolerance

Smutsfinger Grass (*Digitaria eriantha*)

Smutsfinger is a sweet grass and keeps its palatability until late in winter – even after being killed by frost. It is an excellent pasture grass that can be utilized from mid-late summer/autumn. It can also produce good quality silage if it is chopped fine enough. It is well adapted to medium and low potential soil in areas with rainfall higher than 500 mm. It is also successful on soils with a high clay content but cannot withstand waterlogging.

Establishment

- November, January, and February are the best seeding months
- Stop 8 weeks before the first frost is expected
- Where weeds are not a serious problem, you can plant during September/October
- Invasion of *Eragrostis* can pose a problem for the lifespan of Smutsfinger grass



Endura



Smutsfinger Grass



Smutsfinger Grass

Utilization

- Protein content can vary depending on the age of the plant, the season and amount of N applied
- Heavy grazing later in the season (especially February to May) can result in poor production in the following season
- It prefers long rest periods and DM production increases with longer cutting intervals compared to shorter intervals
- The protein content and the digestibility also decrease with longer intervals, but the total protein/ha will be higher as an effect of the higher DM production
- Does not like heavy grazing
- Should be grazed before piping for the highest crude protein
- Used in summer – CP about 10%
- Used in winter – CP about 8%
- Withdraw animals after December for winter usage

Soil preparation

- Soil surface must be dry. Germination will take place with the first rains.
- The subsoil must contain sufficient moisture. This will be beneficial if dry weather is experienced after germination.

Seeding rate

- 3-7kg/ha (uncoated); 12-20kg/ha (coated)

Seed mixtures:

- 2 kg/ha rhodes + 4 kg/ha smutsfinger
- Works well with lucerne (in rows), but bloating is still a possibility
- Four grass mix: smutsfinger, rhodes, bottlebrush and Panicum maximum at 1 kg/ha each (uncoated seed)

Irene

A diploid, tufted perennial with a high palatability. Well adapted to most well drained soils and grows well in mixtures with rhodes grass. These mixtures can however lead to difficulties during seed production.

Tiptop

A diploid, tufted perennial, selected from 'Irene' by ARC for seed quality and homogeneity. It has an upright growth habit and is early flowering, with a better leaf: stem ratio and rust resistance. It tolerates very cold winters and grows well on shallow, stony soils.



Blue Buffalo Grass (*Cenchrus ciliaris*)

Blue buffalo is a grass that is adapted to warm, low rainfall areas in SA, having a relatively good drought resistance. It is widely adapted to soil types, except light sand, and prefers alkaline soils. It has very deep roots of up to 1 500 m and has rhizomes that allow it to produce more tillers. It is normally used for cattle but can also be utilized by sheep and horses or used for making hay.

Establishment

- November, February and March are the best seeding months
- Rolling the soil is essential

Soil preparation

- Reacts favourably when soils are loosened before the summer rains
- Heavy soils that crack during winter need less loosening than lighter soils
- Cultivation should not be done in winter, seeing that it can lead to dying off of the grass

Utilization

- Grazing normally starts in November for mature Buffalo grass when the grass is 300 mm long
- It is best if the grass is either lightly or completely grazed down
- If not, the result would be a mix of new leaves and old stalks, reducing palatability
- It can be utilized as both a very quick rotation and a relative long grazing period
- At the beginning of summer, the grass grows quicker, making it more challenging to implement grazing systems
- It is recommended to make hay or be rested during winter
- Remove all the old material at the end of winter
- Keep it as leafy as possible

Seeding rate

- 5-10kg/ha (uncoated); 12-20kg/ha (coated)

Gayanda

Fine, medium-short, tufted, non-rhizomatous type, to 90 cm tall (commonly 30-60 cm), mid-season flowering, suitable for light to medium textured soils. It has very good stock acceptance and is characterised by its dense tillers. It has a lower growth height than Molopo, making it a better option for sheep.

Molopo

The variety comes from the North West Province of South Africa. It is a tall, rhizomatous grass with distinctly grey leaves and straw-coloured seed heads. It is cold tolerant and grows longer into the cool season. It is well adapted to heavier soils and has a good seed production if adequately fertilised with N. Its upright and tall growth habit makes it better suited for cattle than Gayanda.



Blue Buffalo Grass



Bottle Brush Grass (*Antephora pubescens*)

Bottle brush is a very palatable and excellent fodder grass that is widely adapted to most soil types and climates. It is heat and drought tolerant, growing in areas with a rainfall of 350 mm or higher. It is relatively easy to establish and is less sensitive to low soil fertility than other grasses, flourishing on sandy soils.

Establishment

- Establish: October/December or February/March
- Soil pH: 4.8-5.8 (KCl)
- Planting depth: <25mm
- Seeds are woolly – palletisation is essential
- The seed can be broadcasted or drilled

Utilization

- Strict rotational grazing is required due to its high palatability

Alternatively, it can be left during its growing season to be utilised during winter and early spring

Production potential

- A good utilisation potential compensates for the relative low production potential
- It is a low-cost grass for dry areas
- Achieves economic animal production at a semi extensive level
- $\pm 0.75\text{t/ha}$ per 100mm rain

Seeding rate

- 3-5kg/ha (uncoated); 12-20kg/ha (coated)

Wollie

Originates from Swartruggens in the North West Province of South Africa. It was selected from a commercial seed field of the “common” variety for a more uniform growth habit.

Weeping Lovegrass (*Eragrostis curvula*)

Weeping lovegrass is mostly utilised as a hay crop, performing best in summer rainfall areas that receive 650 mm/year or more. It is widely adapted but prefers sandy soils. Its quality is dependent on the fertility of the soil, therefore fertilisation is the key to good quality fodder production. Where it is utilized as a pasture it is best to graze it early in the season, seeing that the quality and quantity decreases later in season. In areas where frost occurs the grass normally dies back, regrowing early spring.

Establishment

- Establish: October/November or February/March
- The seedbed should be fine, firm and free of weeds – due to its seed being very small
- The seedbed should be rolled before and after seeding
- Use Teff (4-6kg/ha) with *Eragrostis* where weeds are a problem but then an early cut is essential

Hay production

- To ensure a high protein content it should be cut before it flowers
- For a higher DM yield it should be cut later but not later than early flowering
- Take note of its leaf stage to ensure the highest CP, digestibility and intake



Weeping Lovegrass

Seeding rate

- 5-8kg/ha (uncoated); 8-12kg/ha (coated)

Ermelo

Ermelo is the most popular variety being used in South Africa, especially in the colder summer rainfall areas. It can survive severe frost and will grow on almost any soil, even on sandy soils with a low pH. It prefers higher rainfall areas, but does not adapt well to wet, waterlogged soils.





Sabi Grass (*Urochloa mosambicensis*)

Sabi NEW

Urochloa Sabi grass is native to Africa. A perennial, loosely tufted grass sometimes rooting and branching from the lower nodes, variable in size and habit, occasionally with stolons and rarely rhizomes. It is mostly used as a permanent pasture but also makes good hay. It is effective for erosion control and other applications where rapid establishment and good ground cover is advantageous.

Key features

- Palatable, hardy and quick to establish
- Well suited to the dry tropics
- Responds well to rainfall and grows in a range of well-drained soil types

Management / Agronomy

Sabi grass can tolerate very heavy grazing, stock will selectively graze it when young and still find it more palatable than many other warm-season grasses when mature. It also recovers well from fire. Sabi grass combines well with legumes, although it can dominate in the short term if well fertilised. Good ground cover and rapid seedling development contribute to suppression of annual weeds. Despite growing naturally on soils with low available phosphorus, large responses to applied P have been measured. On very low fertility soils, applications of up to 35 kg/ha P may be necessary to maximise production. A critical P level in the tissue of 0.2% of the DM is proposed. It can also survive on low N soils by virtue of non-symbiotic nitrogen fixation in the rhizosphere. However, it does respond well to applied N.

Seeding rate

- 5-10 kg/ha (coated)

Buffalo Grass (*Panicum maximum*)

Panicum is a summer growing perennial grass that is widely used in cattle grazing systems. It is characterised by summer dominance and usually requires rainfall of 600 - 1 000 mm per year. It does not tolerate very wet, heavily structured soils or sandy soils with a poor fertility. It does however tolerate frost and soil acidity to a certain extent.

Establishment

- Establish: Late summer or early autumn but not later than February
- It is sensitive to weed competition
- Can withstand frost to a certain degree

Utilization

- Heavy grazing can have great negative effect on *Panicum* compared to other grasses, especially before the winter
- It should not be grazed or cut below 30 cm, to improve persistence and to achieve the maximum yield
- It should be allowed to grow out well after heavy grazing to maintain excellent production
- It is not suitable for sheep, seeing that their grazing habit is too low
- It has a better late season production and is more palatable than Smutsfinger grass

Seeding rate

- 3-8kg/ha (uncoated); 8-15kg/ha (coated)

Gatton

Gatton is a very palatable, shade tolerant grass with broad green leaves. It is well accepted by most livestock, with particularly high intakes of its young leafy growth.

Small Buffalo Grass (*Panicum coloratum*)

Panicum coloratum is a species of grass known by common names like small buffalo grass or klein grass. It is a tufted perennial grass that usually has rhizomes. Its firm, usually erect stems grow up to 1.4m tall. The leaf blades are 10 to 30cm long and has a green to waxy blue-green colour. It is used as a pasture grass and/or to make hay. It produces a large amount of forage for animals and does well in hot and colder climates.



Buffalo Grass



Buffalo Grass

Klein Verdi

Key features

- Well adapted to heavy, self-mulching, black clay soils
- Tolerates temporary waterlogging and flooding
- Drought tolerant
- A moderate soil salinity tolerance
- Very persistent once established
- Cold tolerant
- High forage quality
- Lower N-requirement than *Panicum maximum*



Small Buffalo Grass

Establishment

Seed can be broadcasted on the surface or planted in rows at a seeding depth of 1-2 cm. Rolling after planting improves establishment. Rolling before planting to compact the seedbed slightly can be valuable in heavier soils, which have less tendency to crust if rolled prior to broadcasting and then lightly covering the seed. *Panicum coloratum* is generally slow to establish, competing relatively poorly with weeds and other pasture species during early growth. In warmer environments, early or late season planting is therefore preferred to avoid competition from vigorous mid-season weeds. In cooler subtropical environments where early plantings may encounter competition from spring weeds, it is best to plant when there is the greatest probability of experiencing several consecutive days of rainy weather.

Utilization

It is mostly used as a pasture, but larger types are suitable for making hay and silage. It grows well with legumes and other grasses but it may be selectively grazed if combined with less palatable species. Its palatability declines as it matures, as with most subtropical grasses. Stoloniferous types are ideal for erosion control.

Seeding rate

- 3-6kg/ha (uncoated); 6-10kg/ha (coated)

Kikuyu Grass (*Pennisetum clandestinum*)

Kikuyu is an aggressive and vigorous perennial grass that spreads by surface and underground stolons. It normally creates a dense mat of stolons and stems, outcompeting many other species in the long run. Its soft stems grow relatively upright and produce a high number of leaves relative to other grasses. Kikuyu is capable of high summer growth, but milk production can be limited by its relatively low quality. Thus, to maximise production of cows per hectare, it is essential to maximise the quality of the pasture consumed. Grazing at the 4.5 leaf stage provides the highest proportion of leaves and therefore increases quality. Grazing past this stage increases its stem growth, allowing the stem fraction to accumulate with each grazing. To provide winter to spring forage kikuyu is commonly oversown each autumn with annual ryegrass or less commonly with oats, brassicas or clovers. A smooth transition from the summer kikuyu phase to the winter forage at both the establishment and heading of the annual forage is essential. It should be planted in a well-prepared field, under favourable conditions of adequate moisture and soil fertility.

Seeding rate

- 2-5kg/ha (uncoated); 5-10kg/ha (coated)

Bermuda Grass (*Cynodon dactylon*)

It is predominantly used in permanent pastures for grazing or cut-and-carry but can also provide useful stand over or deferred feed. It is a valuable and hardy turf type grass for soil conservation as it provides excellent ground cover.

Key features

- Widely adapted to soils and climates
- Palatable
- High nutritive value when young
- Tolerates heavy grazing
- Can be used to make hay and silage
- Tolerates salinity as well as short periods of flooding

Establishment

Seed is best sown onto a well prepared, fine and weed-free seedbed, which is rolled in. Seedlings usually root down quickly. It grows on a wide range of soils, but does best in relatively fertile, well-drained soils. It is adapted to a broad range of soil pH (4.5-8.5) but it grows best when the pH is above 5.5.

Utilization

It is extremely tolerant of heavy grazing, but it is more productive if correctly managed. Regular grazing and nitrogen fertilisation are necessary to maintain quality. It is very palatable if kept short in growth and fertilized. A stubble height of 5-10 cm under grazing or cutting allows good regrowth and maintains sward density.

Seeding rate

- 8-12kg/ha (uncoated); 20kg/ha (coated)

Bahia Grass (*Paspalum notatum*)

Bahia grass is one of the earliest species adopted as a permanent sown pasture. It is also suitable for making hay and silage but should be cut before flowering to avoid hay being spoiled by presence of ergot- infected seed heads. Once established, it provides a good stable ground cover to combat erosion, particularly that caused by water movement.

Key features

- Palatable when young
- Ability to withstand heavy grazing and trampling



Bermuda Grass



Bahia Grass

- Legume compatibility
- Waterlogging tolerance

Establishment

Seeds should be drilled or broadcasted into a well-prepared, fine, weed-free seedbed. It should preferably be planted less than 1.5 cm deep. It grows best on deep, moist, fertile, sandy loams and clays usually of alluvial or basaltic origin. Such soils are subject to compaction under intensive grazing. It has little tolerance of salinity but is very tolerant of poor drainage. It can be planted at any time from spring to late summer, although it is best planted just before the expected rainy season since germination and establishment can be slow.

Seeding rate

- 8-12kg/ha (uncoated); 20kg/ha (coated)



Annual Summer Grasses

Sweet Sorghum
Forage Sorghum
Hybrid Millet
Pearl Millet
Teff

Cool-season grasses produce ample forage in the spring and fall, but high temperatures and short-term drought stress often limit growth during the summer months. Therefore, there is a need for additional grazing, hay or green chop during July and August. Warm-season annual grasses can fill this gap with relatively high-quality forage when properly managed. Advantages to using annual summer grasses include fast germination and emergence, rapid growth, high productivity, and flexibility of utilisation. Warm-season grasses can be grazed as needed and excess growth can be harvested as hay or silage. Disadvantages include the high cost of annual establishment and the increased risk of stand failure due to variable rainfall in late spring and early summer.

 **BARENBRUG**

Sweet Sorghum (*Sorghum vulgare*)

Barsweet

Barsweet is a sweet sorghum x sweet sorghum hybrid which is perfectly suited for making silage and hay. It is also suitable for grazing at a mature stage, being leafy with an excellent palatability. It is an excellent stand over feed for late grazing into autumn and winter.

Key features

- Stand over feed: Very Good
- Stand Over: Excellent
- Hay Making: Good
- Green Chop: Excellent
- Silage – Pit: Excellent
- Silage – Plastic Wrap: Excellent
- Its late flowering reduces ergot risk

General comments

- Establish: Spring to Summer - when soil temperatures rise above 16°C
- Planting depth: 20 – 40 mm
- Roll the area after seeding/planting – this ensures good seed-soil contact
- Fertilise according to a soil analysis
- First cut when plants reach a height of 750 – 1000 mm

Seeding rate

- 4-7kg/ha (marginal dryland)
- 8-12kg/ha (good dryland)
- 15-25kg/ha (irrigation)

Forage Sorghum (*Sorghum spp.*)

Sweet Choice NEW

- Sorghum X sudan hybrid
- Very leafy with an excellent leaf to stem ratio
- Good sugar levels compared to other forage sorghums
- Very palatable = high animal intake
- Ideal for grazing systems but making hay and silage are possible
- Rapid regrowth + good leaf ratio ensures a high yield potential
- Days to 50% flowering = 65-72 days
- First cut/graze when plants reach a height of 750 – 900 mm
- Graze down to a height of no less than 200-250 mm

Seeding rate

- 10-15kg/ha (dryland); 20-25kg/ha (irrigation)



Barsweet



Ideal for baling

Take note for sorghums:

- Take prussic acid precautions when sorghums are grazed. Therefore, do not utilise if plants are under stress.
- Gradually expose hungry animals to sorghum
- Not suitable for horses



Bargrazer

Bargrazer is a forage sorghum X sudan hybrid variety that has proven itself time after time. It is widely adapted, doing well on sandy-, loam-, and clay soil. It provides good quality grazing and is ideal for making hay.

General comments

- It requires seasonal rainfall of more than 500 mm
- Cows can start grazing at 75 cm and sheep at 50 cm
- Graze down to a height of no less than 200-250 mm
- When making bales it should be cut before stems get too thick. 3 to 4 cuts are possible if done at 75-90 cm
- Establish: October to December – soil temperature must be 16°C and rising
- It reacts positively to Nitrogen applications

Seeding rate

- 20-25kg/ha (irrigation); 12.5-18kg/ha (dryland)

Hybrid Millet (*Hybrid Pennisetum*)

Pearler

Pearler is a high-quality forage that can provide livestock productivity in summer comparable to that of oats in winter. It has digestibility and protein levels similar to that of oats, ryegrass and dolichos.

Establishment

Although Pearler can produce exceptional livestock productivity, it does require suitable soil and the correct management. Being a forage pennisetum, a good well-drained soil is required and a soil temperature of 16-18°C or more. Seeing that Pearler has small seed (60,000 - 80,000 seeds/kg) it is important to plant into a well-prepared seed bed where good soil to seed contact can be achieved.

Grazing management

Pearler poses no risk of prussic acid poisoning, therefore it can be grazed at a much earlier stage than forage sorghum. For the best results graze early - as soon as the plants are not easily pulled out of the ground. There may not appear to be a lot of feed at this stage, but due to quick regrowth and high tillering ability, feed supply is good. Early grazing will maximise its protein and energy content, boosting animal productivity. Pearler's quick regrowth and lack of prussic acid means it can be grazed heavily for long periods, allowing high stocking rates.

Seeding rate

- 8-15kg/ha (irrigation); 4-8kg/ha (dryland)



Bargrazer



Pearler



Pearler

Pearl Millet (*Pennisetum glaucum*)

Babala

Babala is a common variety of pearl millet that is easy and quick to establish. It can either be grazed or used for silage and is ideal to fill gaps in any fodder flow system. It is a drought tolerant crop and poses no risk for prussic acid poisoning.

Management

- Establish: October to January
- Rainfall requirement: >400 mm
- Graze at a height no longer than 500 mm for the best quality
- No Prussic acid precautions needed
- Suitable for sand to loam soils, prefers well-drained soil and can grow in poor fertility soil
- Suitable pH: acid, neutral and alkaline soil

Seeding rate

- 25kg/ha (irrigation); 15-20kg/ha (dryland)

Teff (*Eragrostis Teff*)

Teff is a self-pollinated, warm season annual grass which can be harvested multiple times during the growing season as dry hay, silage or pasture. As a fast-growing crop, Teff combines excellent forage quality with high yields during a relatively short growing period. It is adapted to all of South Africa and can be utilized for dairy, beef and horses.

Management

Plant from late spring/early summer into a firm seed bed at a seeding depth of no deeper than 0.6 cm. Soil temperatures at planting should be at least 16° C and rising. Teff does not tolerate frost. Therefore, planting dates should be well beyond historic first spring frost dates. Teff grows best when air and soil temperature are warm. Early spring plantings during cool periods may result in slow growth and crop stunting. Teff should be cut before heading for best forage quality and leave a minimum of 10 cm stubble. Multiple cut systems may require split applications of nitrogen for maximum production. Delaying harvest until heading may adversely affect the yield of subsequent cuts and the total seasonal yield.

Seeding rate

- 8-12 kg/ha (dryland)
- 20 - 25 kg/ ha (irrigation)



Babala



Babala



Teff



Tiffany

Tiffany Teff grass is a fine stemmed annual grass that has large crowns and numerous tillers, with a shallow, massive fibrous root system and a uniform plant height at harvest maturity. It was one of the very best forage producers in a USA breeding program. Based on its impressive results it was selected and tested in SA with great success. Its seasonal yield can range from 5 - 15 tons of dry hay per hectare depending on growing conditions and the number of cuttings. It is a cost-effective crop that requires minimal pest and weed control.

Key features

- It normally outyields SA Brown
- Multiple harvests during the season
- Excellent forage quality compared to other C4 grasses
- A very palatable "soft" forage for livestock
- No prussic acid concerns
- First crop in 45-55 days and 28-35 days between subsequent cuts
- A very palatable "soft" forage for livestock

SA Brown

- Excellent for hay production – especially in the higher rainfall areas
- It can be used for grazing and should be grazed at an early stage to improve palatability
- It is also very effective as green manure crop and to suppress weeds
- Plant from October to December
- Average rainfall: >500 mm
- Widely adapted to soil types – from sand to clay
- Fertilizer applications positively effect dry matter production



Tiffany



Tiffany







Legumes

 **BARENBRUG**



Legumes

Medics

Pink Serradella

Annual Clovers

- Arrowleaf
- Balansa
- Crimson
- Persian
- Subterraneum

Perennial Clovers

- White Clover
- Red Clover

Vetch

- Woolly Pod Vetch
- Common Vetch

Lucerne

Poor Man's Lucerne

Faba Beans

Lupines

Forage Peas

Grain Peas

Birdsfoot Trefoil

Sainfoin

Sweet Clover

Sunn Hemp

Cowpea

Dolichos

Legumes drive pasture production by producing nitrogen. They must be carefully inoculated to ensure success. Adequate pasture nutrition is important for maintaining the dominance of improved species in a pasture. Nitrogen is one of the most important elements of pasture nutrition. Protein levels and the digestibility of pastures are improved by legumes, resulting in improved livestock performance.

Factors to consider when choosing a suitable legume:

- Rainfall or irrigation
- Soil depth and profile
- pH - alkaline or acid
- Longevity of the pasture/legume
- Grazing systems
- Harvesting plans



Medics (*Medicago spp.*)

Medics grow best during the warmer conditions of autumn and spring, but a wet autumn can provide a good amount of feed during winter. This free-seeding annual legume has a creeping and prostrate growth habit but does not root from its nodes. Barrel medics flower in spring after a 'vernalisation' period of cold weather, producing small, yellow flowers that give rise to a spiral burr containing 6-10 seeds. The burr has straight spines and can be combed from wool. Medics are adapted to a Mediterranean climate with dry summers. They survive wet summers in the subtropics because of their hard seed, but with enough softening to allow re-establishment in autumn. In permanent pastures, medics suffer from competition in autumn from the summer growth of grasses. Reducing this by heavy grazing in autumn, summer drought or by cultivation improves seed germination.

Seeding rate

- 10-15kg/ha (pure); 1-4kg/ha (mixtures)

Scimitar

- Early to mid-maturing burr medic – approximately 90 days to flowering
- Erect growth habit with a high herbage and seed yield
- Maturity is 7 days later than Santiago
- Adaptable variety which grows on wide range of soils
- High percentage of soft seed (24%) compared to Santiago (8.5%)
- Increased salinity tolerance over other medics
- Better waterlogging tolerance

Santiago

- Early to mid-maturing burr medic – approximately 85 days to flowering
- Adaptable variety which grows on a wide range of soils
- Very hard seeded (91%)
- Outclassed by Scimitar

Jester

- Hard seeded (90%) barrel medic
- Mid-maturing (110 days to flowering)
- Similar maturity to Paraggio
- Jemalong hybrid with improved performance
- Vastly improved aphid resistance
- Retains distinctive leaf blotch of Jemalong
- Regenerates well after cropping phase of 1-3 years

Soil type: Sandy loam to clay loam

Soil pH: (CaCl₂) 5.7 - 8.5

Rainfall range: 350 - 550mm



Medic



Medic roots



Medic pods (Truncatula)

Medic Cultivars

Type	Variety	Soil pH	Rainfall	Hard seeding rating	Insect tolerance	Days to flower
Polymorpha	Scimitar	Moderate acid-alkaline	350-450	8	Mid-high	80-90
Polymorpha	Santiago	Moderate acid-alkaline	325-425	10	Susceptible	80-85
Truncatula	Jester	Neutral-alkaline	350-550	9	High	105-110
Truncatula	Parabinga	Neutral-alkaline	250-350	8	Mid-high	80-88
Truncatula	Paraggio	Neutral-alkaline	350-450	8	Mid-high	95-100

Pink Serradella (*Ornithopus sativus*)

Emena

Serradella is adapted to deep, well drained, sandy soil with a low pH and fertility level. It is particularly tolerant of low phosphorous levels. It can also tolerate moderate to severe aluminium and manganese levels, of which both reduce the productivity and persistence of other legumes such as clovers and lucerne. It also has a relatively good resistance to insects and disease.

Serradella has a deep root system that allows it to continue growing actively during early to mid-Summer, when other annual legumes have finished their growth cycles. Pink serradella has an erect growth habit and pink flowers. It is an annual that germinates in autumn/early winter and produces during winter, spring and early summer. Serradella is non-bloating and contains condensed tannins. These tannins protect protein in the rumen, which increases protein absorption and digestive efficiency in ruminants. Pink serradella is soft seeded.

Seeding rate

- 15-25kg/ha



Pink Serradella



Pink Serradella pods



Annual Clovers

Arrowleaf Clover (*Trifolium vesiculsum*)

Zulu II

Key features

- Upright growth habit
- A low bloat risk
- Suited for a range of soil types providing they have a pH of 5.0 - 7.0
- Intolerant of waterlogged soil
- Very sensitive to red-legged earth mite as a seedling
- Very slow to establish with little winter growth
- The seed should be sown in autumn into a well prepared, weed free seedbed
- The seed is small and is very sensitive to being sown too deep (<10mm)

Seeding rate

- 8-10kg/ha (pure); 2-4kg/ha (mixtures)

Balansa Clover (*Trifolium michelianum*)

Balansa clover is well adapted to most soils in the pH 5.2 - 8.0 range, but not deep sands. It is highly tolerant to water logging and tolerates mild salinity. It is an effective substitute for sub clover in the right conditions. Balansa is very hard seeded which is useful with cropping phases and harsh summers. Grazing the pasture during summer and autumn will help soften the seed and improve germination.

Balansa clover has a semi erect growth habit and has proven to be very satisfactory as a monoculture or as a companion with annual grasses and cereals. It is an aerial seeder, therefore deferring grazing during flowering and seed set is necessary to create a good seed bank. This is critical during its first year, allowing regeneration in future seasons.

Seeding rate

- 5-6kg/ha (pure); 1-2kg/ha (mixtures)

Paradana

Key features

- Mid-season maturity, approximately 120 days to flowering
- High winter/spring dry matter production and nitrogen fixation
- Highly suited for hay production
- Tolerates water logging and mild soil salinity
- Excellent regeneration from hard seed
- Recovers strongly from heavy grazing



Arrowleaf Clover



Balansa Clover

Crimson Clover (*Trifolium incarnatum*)

Crimson clover is a soft seeded winter annual, herbaceous legume. The leaves and stems of crimson clover resemble those of red clover, but the leaves are round tipped with more hair on its stems and leaves. Seedlings grow rapidly from the crown forming a rosette.

Seeding rate

- 10-15kg/ha (pure); 1-4kg/ha (mixtures)

Kardinal

Key features

- Early to mid-season maturity
- Shows good early vigour & winter production
- Good winter hardiness and frost tolerance
- Excellent pioneering plant, especially on acid soils
- Adapted to a large range of soil types, grows well in light soils
- Suitable for grazing fodder and green manure
- Provides large red flowers through spring with a brilliant colour

Persian Clover (*Trifolium resupinatum*)

Persian clover is mostly used as an annual forage due to its excellent regrowth. It is slow to cure as hay, therefore roller conditioning may be advantageous when utilized as hay. Persian clover has very small seeds which require a fine, weed free seed bed and it should be sown no deeper than 10mm. Its ability to reseed varies depending on external factors and the variety. It has low levels of oestrogen but can be a bloat risk if not managed correctly. It is intolerant of acid and sandy soils and is very susceptible to red-legged earth mite and lucerne flea.

Seeding rate

- 6-10kg/ha (pure); 2-5kg/ha (mixtures)

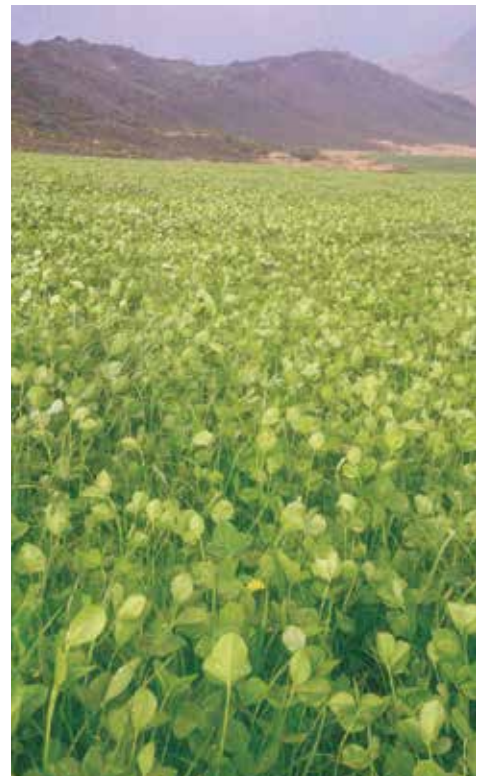
Shaftal

Key features

- Late season maturity – approximately 160 days to flowering
- Soft seeded
- Historically known as Shaftal clover
- Vigorous and erect growth but susceptible to rust
- Can be sown with oats or tetraploid ryegrass
- Tolerates waterlogging and mild soil salinity



Crimson Clover



Persian Clover near Kokstad



Subterranean Clover (*Trifolium subterraneum*)

- Dependent on seed for the following years growth
- Very drought tolerant
- Shallow rooted so cannot utilise deeper soil moisture
- Susceptible to red-legged earth mite and lucerne flea
- Poorly tolerant of water logging
- Highly productive in spring but no summer production
- Not suited for spring seeding

Seeding rate

- 10-15kg/ha (pure); 2-6kg/ha (mixtures)

Dalkeith

Key features

- Early season maturity – 97 days to flowering (AUS)
- Good early root growth and establishment
- Good hard seed levels
- Demonstrates good persistence



Subterranean Clover

Dalkeith belongs to the *Trifolium subterraneum* ssp. family and demonstrates a prostrate to semi-erect growth habit. It persists well on various soil types and has early maturity, requiring a minimum growing season of four months. It has a high hard seed level, which in combination with its early maturity, makes it well suited to low rainfall cropping rotations. Dalkeith has taken up well in the 350 to 600 mm rainfall zones. It will be able to provide good early herbage production in low rainfall zones. Care must be taken with new sown pastures so as not to overgraze too early, as plants can be pulled from the ground.

Annual Clover Cultivars

Type	Variety	Soil pH	Rainfall requirements	Hard seeding rating	Insect tolerance	Days to flower
Arrowleaf Clover	Zulu II	Moderate Acid-Alkaline	400-575 mm	10	Low	125-130
Balansa Clover	Paradana	Moderate Acid-Alkaline	450-550 mm	10	High	115-120
Crimson Clover	Kardinal	Moderate Acid-Alkaline	550-750 mm	3	High	120-125
Persian Clover	Shaftal	Moderate Acid-Alkaline	650-800 mm	3	Low	160
Subterranean Clover	Dalkeith	Moderate Acid-Alkaline	450-750 mm	3	Low	97

Hard Seeded Rating: 1 = Few to no hard seeds; 10 = 90% hard seeds;
Soil quality: Alkaline = pH8.5; Neutral = pH6.5; Moderate acid = pH5.0; Acid = pH4.5

Perennial Clovers

White Clover (*Trifolium repens*)

A perennial legume, capable of very high production if fertility is high and moisture adequate. Its ability to fix atmospheric nitrogen makes a substantial contribution to the growth of companion grasses. It is very suited to irrigation and has a poor drought tolerance, making it of little use in low rainfall areas. However, a small amount is often added to pasture mixes in these drier areas in the hope it will survive in damp spots. White clover can also behave as an annual in drier areas, regenerating from seed when conditions are favourable. White clover uses stolons to expand the size of plants and put down new roots.

Seeding rate

- 6-10kg/ha (pure); 2-4kg/ha (mixtures)

Storm

Storm, an Australian bred white clover, is a tall type that can aggressively compete and actively grow up through the sward. It offers excellent total forage production with exceptional yield potential across all seasons. Fast to establish, Storm is quick out of the ground, providing better competition with grasses. It is also persistent under grazing with a high stolon density for a large leaf type clover. It provides high production in winter and summer.

Key features

- Mid maturity, large leaved type
- A tall plant type that can aggressively compete in a mixed sward with ryegrass
- Storm has excellent seedling vigour and is quick to establish
- Excellent year-round growth and very high yield potential
- A high stolon density compared to other large leaf types
- Storm has shown persistence under cutting, remaining dense



White Clover and Ryegrass mix

Haifa

Key features

- Medium to large leaved, upright perennial clover
- Adapted to a wide range of soils
- Good persistence under high stocking rates
- Performs well in moderate and subtropical regions
- Excellent heat tolerance and seeding ability

Durana NEW

Durana is a small leaved, dense perennial clover. It is an excellent permanent cover crop, working especially well in orchards due to its low growth and shade tolerance. It requires low maintenance, providing erosion control and weed suppression. It has a shallow root system and does not compete for moisture if grown under trees. Durana has a long flowering period allowing it to attract pollinators and beneficial insects such as natural predators.



White Clover



Red Clover (*Trifolium pratense*)

Red clover is an upright, short-lived perennial. It has a strong taproot that allows it to use subsoil moisture in summer better than white clover. It does not tolerate dry conditions or drought, or poorly drained soils. Red clover provides extra feed in late spring and summer in high rainfall areas, irrigated pastures or on naturally summer-moist soils that are well drained. It can be sown as pure swards as a specialist crop for hay, as silage or grazing. Rotational grazing will promote plant longevity and persistence. Most cultivars do not persist beyond 2 to 3 years.

Seeding rate

- 8-12kg/ha (pure); 3-6kg/ha (mixtures)

Barduro

Barduro is a persistent red clover named for its hardiness and durability. It is extremely drought and heat tolerant, making it the perfect choice for dry or sloped pastures. Barduro has proved competitive in stands of fescue and Bermuda grass, making it an excellent choice for overseeding pastures. It has a high yield potential, making Barduro an excellent choice for hay production. Due to its persistent nature and durability, Barduro is also well-suited for grazing.

Key features

- Large leaves and rapid establishment
- Drought and heat tolerant
- High yields
- Excellent forage quality; palatable and nutritious
- Fixes nitrogen, reducing fertilization costs
- Most widely adapted red clover on the market today!



Barduro



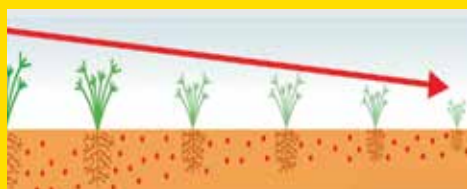
Red Clover

Perennial Clover Cultivars

Type	Variety	Soil pH	Rainfall requirements	Hard seeding rating	Insect tolerance	Days to flower
White Clover	Storm, Haifa Durana	Moderate Acid-Alkaline	700-800mm+	3	High	-
Red Clover	Barduro Kenland	Moderate Acid-Alkaline	650-750mm+	3	High	-

Hard Seeded Rating: 1 = Few to no hard seeds; 10 = 90% hard seeds;
 Soil quality: Alkaline = pH8.5; Neutral = pH6.5; Moderate acid = pH5.0; Acid = pH4.5

Benefits of clover legumes in grass



Grass only pastures

Declining pasture DM and available soil nitrogen
 Declining soil fertility with long term grazing
 Declining paddock protein over time with a sharp decline during drought and winter months
 Reduced carrying capacity and liveweight gains over time



Grass and legume pasture

Sustained pasture DM and available soil nitrogen
 Legumes provide increased paddock protein and maintains protein in drier and/or colder months
 Pasture will sustain higher stocking rates and/or liveweight gains

Vetch (*Vicia sativa*)

Vetch is an annual pasture/forage/grain legume, extremely palatable at all growth stages, from early green shoots, as dry matter/hay or silage through to seedpods and seeds over summer. It has a very high feed value for animals as green plants and dry matter as well as grain. Vetch can offer substantial improvements in soil fertility, structure and organic matter as well as offering a weed and disease break for cereals in a crop rotation. Vetch fixes atmospheric nitrogen in the soil, that is beneficial for subsequent cereals or grasses in both yield and quality. Growing vetch as a pasture or hay in crop rotations can be a very good strategy for controlling problem grass weeds,



Vetch



Woolly Pod Vetch (*Vicia villosa*)

Haymaker Plus

Haymaker Plus, also referred to as grazing vetch, was derived from selections out of Namoi. It demonstrated mid maturity along with a semi erect growth habit. Haymaker Plus is suited to a wide range of soil types, performing better on lighter soil types, compared to other vetch species. It is well adapted to low rainfall situations and selected for its improved winter growth and dry matter production. It also provides the added benefits of moderate drought tolerance while also being a highly efficient and effective nitrogen fixer. Mature plants form a dense canopy providing strong weed competition. Haymaker Plus is ideal as a break crop and is well suited for grazing, hay production or turned in as a green manure crop to improve soil health.

Key features

- Has greater total dry matter production than Namoi
- Very hard seeded (80-90%) for improved persistence
- Better adapted to light soils than other vetches
- More winter growth than Namoi
- Offers a disease break in cropping rotations
- Resistance to Spot, Rust and Ascochyta

Seeding rate

- 20-25kg/ha (pure); 7-12kg/ha (mixtures)



Haymaker

Common Vetch (*Vicia sativa*)

Morava NEW

Morava is a high performing 'common' vetch which is suitable for grazing, green manuring, making hay/silage and as a disease break in cereal farming rotations. Morava is soft seeded and produces high levels of dry matter while still providing high grain yields. Good disease resistance makes Morava the best vetch option for areas receiving greater than 300 mm annual rainfall.

Key features

- Resistant to rust and tolerant to ascochyta
- Soft seeded, non-shattering
- Improved soil health through increased nitrogen fixation
- High yield potential – 17% over Rasina in trials
- Replacement for current varieties in areas with average rainfall above 300 mm
- Suitable for green manuring and grazing
- Vigorous early plant growth and good grazing palatability

Seeding rate

- 25-30kg/ha (pure); 10-15kg/ha (mixtures)



Morava



Lucerne (*Medicago sativa*)

Lucerne is a perennial with a woody crown and an erect growth habit. It is suited to fertile, deep, well drained, neutral to alkaline soils. Its deep tap root can access moisture deep in the soil profile, providing extraordinary summer growth and drought tolerance. Careful management, including grazing control as well as weed and pest control, is usually required for a stand of lucerne to persist. Lucerne is mostly used as a perennial hay or fodder crop. It provides high quality forage that is readily saleable as hay or useable as a high protein addition to livestock diets. Because of the high value of the lucerne forage and its excellent summer production, lucerne is perfectly suited for irrigation. Lucerne may be grown as part of a mixed pasture sward, but the conditions must suit it. Rotational grazing is usually necessary to ensure its survival.



Lucerne

Winter Active Lucerne

Winter active lucernes are the most versatile, providing good growth into late autumn and holding their quality longer than highly winter active varieties. Best suited to medium-term mixed farming situations that require grazing tolerance and the ability to make reasonable quality hay. They are ideal for irrigated or dryland production and are useful as a pure stand or as a perennial legume component in pasture blends for regions with 450-650 mm winter dominant rainfall. These lucernes also make excellent permanent summer forage crops in the high rainfall dairy regions because they provide feed over a longer period than summer brassicas without the same insect problems.

Seeding rate

- 18-25kg/ha (irrigation); 4-10kg/ha (dryland)



Scan for
lucerne video



BAR 7

BAR 7 (SARDI 7 Series 2) is the next generation winter active lucerne. It is even more versatile, broadly adapted and persistent than Sardi 7, offering a greater performance in cold, wet environments where older varieties can struggle. It has been bred specifically to perform well in both dry land and irrigated systems. It offers superior performance where persistent, high-producing lucerne stands are required and in grazing situations where winter produced feed can be utilised.

Key features

- Dormancy 7 variety
- High yielding
- Multipurpose
- Excellent persistence
- Strong pest and disease resistance
- Good grazing tolerance
- Improved performance in cold, wet environments
- Well suited to grazing and hay production with a broad crown and high leaf to stem ratio
- Better sustainability than other 7 dormancy lucerne (5-8 years)



BAR 7

BAR 7 is the next generation winter active dormancy lucerne, its more versatile, more adaptable and more sustainable than other dormancy 7 varieties in the market today.

Highly Winter Active Lucerne

Highly winter active varieties are bred for late autumn/early winter planting and have excellent seedling vigour for oversowing. They have a more upright crown, erect growth habit and are well suited to a 2 - 4 year rotation system in 300 - 500 mm rainfall zones under permanent irrigation. They provide maximum growth from winter dominant growing season rainfall. Some of the newer Australian-bred varieties in this group have increased grazing tolerance because they were selected from and developed for broadacre grazing systems.

Seeding rate

- 20-30kg/ha (irrigation)



Lucerne

BAR ST NEW

BAR ST is a highly winter active variety with a dormancy rating of 9. Developed with elite germplasm from the USA and Argentina, it provides excellent forage quality, performance and persistence. BAR ST offers improved salt tolerance for germinating seedlings over other traditional lucerne varieties. This allows for potentially better establishment in regions where moderate salt levels can limit plant establishment.

Key Features

- Dormancy 9 variety
- Salt tolerance demonstrated in establishing lucerne
- Strong plant vigour and establishment
- Highly resistant to fusarium wilt, phytophthora root rot and pea aphid
- Resistant to anthracnose
- Soil preference: light to medium and heavy, deep, well drained soils
- Suitable for hay, grazing and cut and carry



BAR 10



BAR 10

Key features

- Dormancy 10 variety
- Suited to cropping rotations, pasture mixes and year round hay production systems
- Improved forage production and persistence over SARDI 10
- High winter growth and a leader in grazing tolerance for a highly winter active lucerne
- Very good seedling vigour
- Highly productive 3 - 5 year rotation

BarALFA 10 NEW

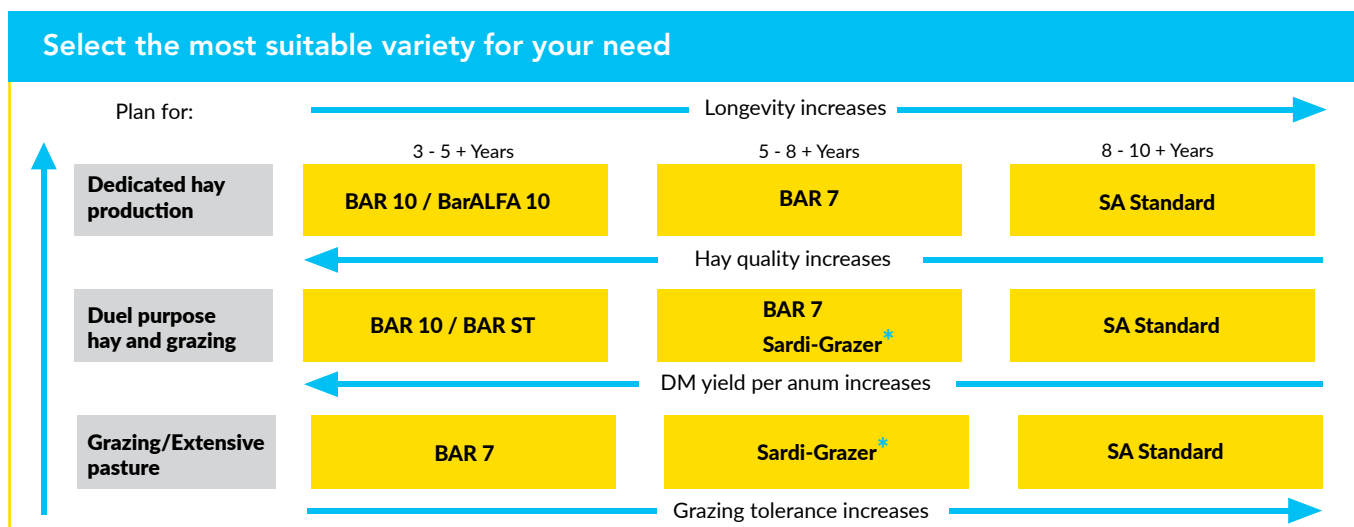
Perfectly suited to cut and carry operations, BarALFA 10 is a high performing, highly winter active variety bred from elite parent material from Australia and the USA. It demonstrates extremely fast establishment and provides high year-round forage yield, which means it can be adapted to various farming systems that demand high performance products.

Key features

- Dormancy 10 variety
- High yield potential, exceptional trial results in AUS, US and SA trials
- Bred for improved persistence and productivity over traditional dormancy 10 varieties
- Good all-round pest and disease resistance/tolerance
- Very high yielding in desert environments
- Superior establishment and reduced time to first cut compared to older varieties
- BarALFA 10 had a 35% higher first cut over older varieties in US trials

BAR 10

BAR 10 (SARDI 10 Series II) benefits from excellent winter growth and is a leader in grazing tolerance for a highly winter active lucerne. During its development, the breeder was successful in focusing on improving the very popular SARDI 10. The greatest emphasis was on increasing forage production and quality, pest and disease resistance, persistence and grazing tolerance. A key physical feature is the greatly improved leaflet density down the length of each stem.



*Experimental variety still under evaluation

Seeding Rates				
Annual rainfall	Marginal dryland (350 - 450 mm)	Dryland (450 - 600 mm)	Favourable dryland (600 - 800 mm)	High rainfall/irrigated (800 mm+/irrigated)
kg/ha	4 - 6	6 - 8	10 - 12	18 - 30

Utilization

As pasture mix

When planting lucerne in southern regions in a pasture mixture, establish it with a low vigour grass such as a winter active fescue or cocksfoot. It may be better to establish the lucerne first and introduce the companion varieties a season or two later, especially for producers unfamiliar with lucerne management. Lucerne can be oversown with annual ryegrass or oats as it starts to thin out towards the end of its lifecycle.

Cutting

Cutting lucerne needs to be done at or a bit before 10% flowering but note the height of new shoots at the base of the crop and ensure that they are not damaged as they will be the next crop (best method of assessing cutting timing). Conditioner rollers are useful for quick drying. Double conditioning has been used. Re-cutting depends on seasonality, climate and dormancy.

Dormancy	Days (potential interval under ideal summer growing conditions)
Winter dormant	30 - 34 days
Winter active	27 - 30 days
Highly winter active	25 days

Poor Man's Lucerne (*Sericea lespedeza*)

Sericea lespedeza is a drought-tolerant, non-bloating perennial legume; it is resistant to diseases and is rarely attacked by insects; and mature plants are quite competitive with grasses. It is much more tolerant of soil acidity than most other legumes and is also very tolerant of low fertility. Forage yields of *sericea* are good, and forage quality is better than most warm season perennial grasses.

It is a surprisingly economical forage crop to grow due to the fact that it does not require any nitrogen fertilizer, It has also been well documented that *sericea* is an excellent soil builder. *Lespedeza* will grow on almost any soil. It does well on sandy and loam-type soils. *Sericea* is a deep-rooted perennial that also does well on shallow soils with drainage restrictions. *Lespedeza* will tolerate lower pH (more acid) soils than clover. *Sericea lespedeza* is normally planted in mid-summer.

This plant has poor seedling vigour and thus is normally planted in pure stands. However, where adapted, a cool season perennial grass such as tall fescue can be drilled into established *sericea* with high probability of obtaining a mixed *sericea*/grass stand. It is imperative to inoculate seed, since this bacterial culture enables the *lespedeza* plant to make its own nitrogen. Use a strain of inoculum recommended for *lespedeza*. Properly inoculated *lespedeza* will need no nitrogen application. The earlier the planting date the better.

Seeding rate

- 15-25kg/ha (pure)

Faba Bean (*Vicia faba*)

Fiesta

The Faba bean plant is tall (can grow to over 1m under optimum conditions), erect and multi-stemmed from basal branches. It has a well-developed taproot which produces an extensive fibrous root system. Plants can flower profusely, and flowering may last for up to 5 weeks, depending on soil moisture and air temperature. However, as few as 10-20% of flowers produce pods as flowers require cross-pollination.

Faba bean is best suited to well-structured soils in medium to higher rainfall districts. It tolerates some waterlogging, competes well with a range of weeds and is relatively easy to harvest. Pods containing two to three seeds form from about 20cm above ground level and continue to nearly the top of the plant. A distinctive feature of the crop is that it turns black at maturity. Faba bean roots need to be inoculated with the appropriate strain of rhizobia (*Rhizobium leguminosarium*), allowing it to fix nitrogen in the soil. This bacterium will colonise the plants roots, stimulating root nodule development. It should be inoculated



Poor Man's Lucerne



Faba Bean



Faba Bean



Bitter Lupines

when the faba beans are being grown in a field for the first time or where they have not been grown in the past 4 years.

Faba beans are used primarily as a cover crop. Faba beans can also be used for silage and seed production.

Seeding rate

- 130-150kg/ha (pure)

Lupines (*Lupinus angustifolius*)

Narrow Leaf Sweet and Bitter Lupines

Sweet lupines are used as a supplement in poultry, ostrich, dairy, beef, horse, sheep and goat rations. It contains approximately 32% protein and 10% oil and has an energy value of approximately 11 MJ/kg. Sweet lupines are especially sensitive to high temperatures during flowering and pod formation and are therefore planted during winter. Legumes such as lupines fix nitrogen into the soil, therefore one can expect large grains crop yields if they are planted in soil that was planted to lupines the previous season. Lupines prefer full sun and grows best in sandy soils with a slightly acidic pH.

- Sweet lupines are characterized by its white florescence
- Bitter lupines are characterized by its blue/purple florescence
- Best suited to winter rainfall areas
- Prefer sandy, well drained soils
- Does not tolerate waterlogged soil



Sweet Lupines

- Mainly cultivated for seed production
- Ideal as a cover crop or green manure
- Bitter lupines are more vegetative than sweet lupines
- Not recommended for grazing
- Must be inoculated for effective nitrogen fixing

Seeding rate

- 50-80kg/ha (pure)

Forage Peas (*Pisum sativum*)

Arvika

Arvika is the most famous worldwide variety of forage pea. It is suited for producing fresh fodder, hay, and can also be used as a cover crop or green manure. High protein content ensures good feeding quality in most fodder systems. Arvika also enriches the soil with nitrogen harvested from the air and is ideal for crop rotation.

The ideal planting time is from the end of April to mid-June but is moisture dependant. Forage Peas can be susceptible to leaf and stem disease with early establishments.

Seeding rate

- 100-120kg/ha (pure)

Key features

- Grows well with most forage cereals like oats, triticale and barley
- Rapid establishment
- Adaptable to most well drained soil types
- Medium-late flowering variety
- High quality and palatability forage
- Good disease resistance

Forage Peas are an important component of autumn and winter forage and cover crop mixtures with cereals.



Arvika



Exceptional nodulation

Grain Peas (*Pisum sativum*)

Gambit NEW

Key features

- Early maturing – approximately 72 days to flowering (white flowers)
- Higher grain yield than Arvika
- Good lodging resistance
- A tall variety, making it easier to harvest
- Well balanced health (exceeding most varieties)
- High grain protein content (23.2%)
- Commonly used for grain production

Seeding rate

- 100-120kg/ha (pure)



Gambit



Birdsfoot Trefoil (*Lotus corniculatis*)

Lotus corniculatis is a high quality, non-bloating, perennial legume adapted to acid and waterlogged soils. Birdsfoot trefoil is most successful in areas where white clover is unable to perennate due to an extended summer drought and Lucerne is unable to be productive due to low soil pH and/or winter waterlogging. It is used primarily in combination with cocksfoot on acid soils and can be used with fescue on waterlogged soils. It is cold and frost tolerant and requires a rainfall of 600 mm. Birdsfoot can be cut or grazed and will spread if it is allowed to set seed.

Key features

- Fixes nitrogen and increases the quality of pastures
- Ability to flourish under conditions where other legumes are unsuccessful
- Seedling establishment is slow and it should be given time to build up reserves before the first grazing
- Great companion crop for temperate grasses

Seeding rate

- 6-10kg/ha (pure); 2-4kg/ha (mixtures)



Birdsfoot Trefoil

Sainfoin (*Onobrychis viciifolia* Scop)

Sainfoin is an introduced, non-bloating legume that can be cut as hay and used in a grass-legume pasture mixture or as a monoculture. It is commonly included in mixtures containing sainfoin, brome, birdsfoot trefoil and cocksfoot. Sainfoin is highly palatable to sheep and cattle. It is drought tolerant. Sainfoin has deep, penetrating roots, allowing it to draw moisture from a great depth. Being leguminous (able to fix N) it can leave huge quantities of N in the soil, making it ideal for the next crop in the rotation. Therefore, it also needs no nitrogen fertiliser.

Establishment

Sainfoin should be drilled to 2 cm and rolled afterwards to increase soil moisture contact with the seed. Sainfoin may be included in seed mixtures in the same way that clovers are grown with grasses. A typical inclusion rate would be 12 kg/ha.

Utilization

Sainfoin provides bloat-free forage for ruminants which is a real advantage over other legumes such as clovers and lucerne which can cause bloat. Only a relatively small quantity of sainfoin in the diet is required to prevent bloat. Sainfoin is palatable to horses, sheep, cattle, goats and all commonly farmed animals.

Seeding rate

- 65-90 kg/ha



Sainfoin

Sweet Clover (*Melilotus alba*)

Melilotus alba is a perennial legume sometimes grown for forage. It is well adapted to a wide range of soils, but not acidic soils. Sweet white clover is tolerant of alkaline and saline soils. It is characterised by a rapid growth rate, which slows down after defoliation, and its upright growth habit.

Management

A well-cultivated, uniform and firm seed bed is required for good results. Seed is usually drilled or broadcasted. The optimum planting depth is 15-20 mm with good seed-soil contact. It has a high nutritive value during its vegetative growth stage when grazed, at its pre-flowering stage for silage, and at its early-flowering stage for hay. It is favoured for honey production and for its nitrogen fixing ability while preparing agricultural soil for future crops.

Seeding rate

- 9-12kg/ha (pure); 4-5kg/ha (mixtures)



Sweet Clover

Sunn Hemp (*Crotalaria juncea L.*)

Sunn hemp is an annual cover crop that can increase organic matter, fix nitrogen, grows in low fertility sandy soils, and does not harbor nematodes. It has been used extensively as a soil improvement or green manure crop in the tropics because of its ability to produce large amounts of biomass in as little as 60 to 90 days. Because of this, it has the potential to build organic matter levels and sequester carbon in a short period of time.

Key features

- Rapid growth and relatively short growing season requirement
- It grows best on well-drained soils with a pH from 5 to 7.5
- Used as a cover crop, sunn hemp can improve soil properties, reduce soil erosion, conserve soil water, and recycle nutrients
- Suited to the warm summer rainfall areas (or irrigation)
- Plant as soon as soil temperatures are higher than 16°C (October – November)



Sunn Hemp

Seeding rate

- 40-50kg/ha (pure)

Black Sun Hemp	Red Sun Hemp
Fast establishment	Medium-fast establishment
Short growing season	Long growing season
Seeding rate @ 50kg/ha	Seeding rate @ 20kg/ha
High in fibre content making it more difficult to manage as a green manure	Low in fibre, fast deterioration as a green ma-nure
Highly winter active	25 days



Cowpea (*Vigna unguiculata*)

Cowpea is an annual summer legume, ideal as a high-quality summer forage for sheep and cattle, allowing multiple grazing opportunities throughout the growing season. Cowpea is a fast growing and versatile legume providing good grazing, silage and hay for producers.

Key features

- High quality forage for summer finishing feed
- Improved stem and root rot resistance
- Great source of N-fixation in summer rotation
- Nil prussic acid poisoning issues
- Can be used as a companion crop with millets and forage sorghums
- Excellent soil improvement as green manure crop

Seeding rate

- 15-20kg/ha (marginal soil); 25-30kg/ha (fertile soil)

Bets Wit

- Bred as a superior, more prostrate, forage type
- Its prostrate growth habit withstands harder grazing and provides multiple grazing opportunities
- White-cream coloured seed

Dolichos (*Lablab purpureus*)

Dolichos, otherwise known as lablab, is one of the most ancient crops among cultivated plants. It is a late maturing, vigorous, herbaceous, annual or short-lived perennial legume. It has a twining growth habit, primarily used as a forage or fodder crop. It is suited for areas with average rainfall of 650 mm, although it is very drought tolerant once established. Well drained soils are essential for good growth, being highly susceptible to waterlogging. Dolichos can be sown in mixtures with millet and forage sorghums. In pure swards it generally produces 6-10ton/ha of herbage.

Key features

- High forage quality
- Generally higher producing than cowpeas
- Can be utilized by grazing or making hay
- Restores soil fertility as a cover crop (green manure)
- Good insect and disease resistance
- Poor frost tolerance

Seeding rate

- 15-30kg/ha (pure)



Cowpea

Dr. Saunders

- Upright growth habit
- Relatively small, red-brown coloured seed

Glenda

- Semi prostrate type
- Red-brown coloured seed



Dolichos

Highworth

- Shorter growing season
- More of an upright growth habit than Rongai - easier to harvest

Rongai

- Long growing season
- Vigorous twining growth habit

Inoculation

Management

- Rhizobium bacteria are important because they convert nitrogen gas from the atmosphere into a form of nitrogen that is readily used by plants (nitrogen fixation).
- It allows legumes to fix their own nitrogen, allowing it to create more biomass, but also for a better quality (especially protein content) pasture.
- As a cover crop where no or only some of the material is removed it can increase nitrogen availability for the follow up crop or perennial crop (vineyards and orchards) already present.
- Less inorganic nitrogen needed, reducing soil acidification and nitrogen leaching.
- New strains are much more effective and efficient. Natural occurring rhizobium regularly inoculate lateral roots, where if you inoculate with rhizobium, it normally inoculates the main root, leading to more nitrogen being fixed.
- The cost of inoculants is easily compensated for by all the benefits.



Rhizobium

How to apply the inoculants (liquid)

1. Place the seed on a cement floor, in a mixing container or a cement mixer
2. Pour the inoculant over the seed
3. Mix until all the seed is covered
4. Let it dry for about 1 to 2 hours
5. For the best results, plant the seed preferably on the same day



Which inoculants to use

Rizo-Liq Peas & Vetch – Forage peas and faba beans (50kg seed/packet); vetch (25kg seed/packet)

Rizo-Liq Lucerne – Lucerne, barrel medics (*truncatula*) and sweet clover (*melilotus*) (25kg seed/packet)

Rizo-Liq Lupins & Serradella – Lupines (50kg seed/packet); serradella (25kg seed/packet)

Rizo-Liq Clover – White-, red-, subterranean- and other clovers (25kg seed/packet)

Rizo-Liq Polymorpha - Burr medics (*polymorpha*) (25kg seed/packet)

Rizo-Liq Groundnut & Cowpea – Cowpeas, dolichos, sunn hemp, groundnuts, velvet beans, mung beans and pigeon peas (50kg seed/packet)



Herbs and Brassicas

 **BARENBRUG**



Herbs and Brassicas

Chicory

Plantain

Turnips

Radish

Rape

Fodder Beet

Forage brassicas are high quality and yielding, fast growing crops that are particularly suitable for grazing by livestock. Both the tops (stems and leaves) and roots (bulbs) can be grazed and are very nutritious. Most members of the brassica family, such as turnips and rape, produce forage of exceptionally high digestibility (often 85-95%). While brassicas have been successfully used for centuries all over the world as livestock feed, the following precautions should be noted. Brassicas are very high in crude protein and energy, but extremely low in fibre. Their low fibre content results in rumen action similar to when concentrates are fed, thus the need for proper roughage supplementation is important.

Brassicas therefore should never comprise more than two-thirds of the forage portion of livestock diets with the remainder provided by grass hay or stockpiled pasture. Likewise, all brassicas contain low levels of glucosinolate compounds. Again, adequate grass forage supplementation seems to prevent it from causing animal health problems. Excessive fertilization of both nitrogen and potassium should be avoided. Most dairymen have avoided off-flavours in milk by preventing brassica consumption two hours before milking. Others prefer to only feed rapes to lactating dairy animals in combination with adequate grass roughage.

Brassicas offer a means for producers to produce high quality forage either during the critical summer period of slowed pasture growth and/or to extend grazing into the late fall-early winter period.



Chicory (*Cichorium intybus*)

Commander

Commander is a winter active chicory, providing great year-round growth, improved root rot resistance and excellent grazing. Chicory is a persistent leafy herb lasting 2-3 years with a large tap root. It performs best in fertile, free draining soils in regions of greater than 550 mm rainfall. Chicory requires a well-prepared seed bed and soil temperatures of greater than 10°C for successful establishment.

Broadleaf weeds can be difficult to control in chicory stands, therefore the paddock should be free of broadleaf weeds prior to seeding and a pre-emergent herbicide should be used. Chicory should be rotationally grazed on a 4-6 week rotation and will require added nitrogen for maximum performance.

Key features

- High quality forage option for dairy, beef and sheep
- Leafy and erect growth habit for easier grazing
- Performs year-round, including winter
- Fast establishment and regrowth after grazing
- Excellent drought tolerance and root rot resistance
- Resistant to diamond-back moth & cabbage butterfly
- Low crown gives good persistence over 2 to 3 years

Combined Lucerne and Chicory Pasture

- Chicory may contribute to weed control by providing good ground cover
- Lucerne and chicory have complementary growth habits
- Lucerne is a legume providing nitrogen back into the soil
- Chicory is a leafy, deep rooted perennial herb using nitrogen
- Chicory in the pasture may help reduce worm burden and red gut in animals

Seeding rate

- 6-8kg/ha (pure); 1-2kg/ha (mixtures)



Commander Chicory/Grass mix



Commander Chicory and Red Clover



Commander Chicory, Lucerne and Fescue

Plantain (*Plantago*)

Captain

Captain is a narrow-leaved, winter active plantain variety. Persistence trialling has shown Captain performs well as a component of a perennial pasture for the first 3 years. Captain has a very erect growth habit with narrow leaves, which complements the growth habit of ryegrass and clovers, making it an exceptional fit for multi-species pastures.

Key features

- Winter active
- Narrow leaved erect growth habit
- Overall DM yield similar to Tonic
- Suited to dairy, sheep and beef systems
- Great compatibility with ryegrass

Seeding rate

- 8-10kg/ha (pure); 2-3kg/ha (mixtures)



Plantain

Forage Turnip (*Brassica rapa*)

Within the Brassicas family, turnips are the quickest species to establish. Turnips have the potential of being grazed multiple times. The first grazing however, will be the most important one. Both sheep and cattle can graze turnips. It is important not to graze too large of an area at once. Strip-grazing prevents both yield and quality losses due to trampling and polluting. It is also important not to overfeed the cattle when they are allowed to graze the turnips at first. Extremely high intake of turnips (and other brassicas) can cause animal health problems. Therefore, cattle should be allowed to adjust to the change of diet. Supplementing with other forages that contain less protein and sugars can prevent problems.

Seeding rate

- 3-5kg/ha (increased leaf production, medium to large bulb size)
- 2-3kg/ha (increased bulb size)



Forage Turnip



Barkant

Barkant is a truly improved forage turnip variety. Bred for leaf production, it out yields most other turnip varieties available. A very vigorous diploid turnip variety with a purple tankard root, Barkant turnips have a high bulb yield, and good top growth. A high sugar content provides winter-hardiness and increased palatability.

Key features

- Summer-type forage turnip
- Good leaf & root yield
- Ideal for grazing
- High energy feed
- High sugar & DM content
- Multiple harvest potential

Planting and establishment

Barkant requires good soil drainage and a pH of between 5.3 and 7.5. Seed should be planted in a firm, moist, seedbed. Barkant can be broadcasted or drilled. It is very important not to plant the seed too deep. Brassicas should be planted no longer than 2 consecutive years to prevent disease and pest problems. Ideally planted from October to November.

Mammoth Purple Top

Widely adapted, older variety, hard flesh turnip, high yielding, suited to sheep, dairy and beef in drier areas. Both leaf and bulbs are utilised by grazing animals. The turnip bulb is a large storage organ that develops in the first year. Regrowth is possible from a light first grazing if the leaf growing points attached to the bulb are not damaged.

Key features

- Winter-type forage turnip
- 12-14 weeks to maturity
- Most widely used variety
- Produces a large round bulb



Barkant



Turnip Bulbs



Mammoth Purple Top



Radish (*Raphanus sativus*)

Radish is a fodder/green manure crop that breaks through hard, compacted soil layers that have broken many a gardener's back. It mechanically opens channels for water and roots to penetrate. Softening soils is not the only reason to use radish as a cover between fall and spring. Its deep roots recycle the previous year's nitrogen, catching it before it leaches out. Seeing that Radish decomposes so quickly in areas where its lifecycle ends naturally, nitrogen is released in time for the next season's use.

Establishment

The land should be cleared of weeds before soil preparation, especially perennial weeds. A fine seedbed is essential before broadcasting or drilling the seeds. The planting depth should not exceed 2 cm and the soil should be kept moist to help with germination. Autumn plantings are recommended for the best results, but it can also be planted in Spring.

Utilization

Fodder Radish is one of the main components in our COVERGRAZE™ systems due to its versatility. It has the ability to produce high quality spring feed, but also has all the benefits of a green manure cover crop. It should be cut as green manure before flowering to ensure softer stems, allowing quicker decomposition, retaining more beneficial nutrients and are easier to incorporate into the soil.



Radish

Seeding rate

- 5-7kg/ha (pure); 1-2kg/ha (mixtures)



Cordoba NEW

Cordoba is our latest **Fodder Radish** variety with an excellent nematode resistance, replacing the well-known Tajuna. It is a very quick growing green manure crop that can be used as quality feed as well. It has the ability to draw up nutrients from the subsoil and also penetrate compacted soils with its strong deep rooting tap root. Fodder radish also produces large amounts of foliage which when incorporated into the top layer of soil adds large amounts of leafy organic matter, helping to improve its moisture holding capacity, fertility and soil structure. Due to Cordoba's nematode resistance and poor host status, it is an excellent rotation crop for susceptible crops, such as potatoes. It is a part of the brassica family and should be treated as such for crop rotation purposes.

Nooitgedacht

Nooitgedacht fodder radish, commonly known as **Japanese Radish**, is useful as a late autumn/early winter feed in the cooler eastern areas of South Africa. It may be used in the drier western areas but may require supplementary irrigation. It can be used as a fodder bank or source to supplement temperate and tropical pastures.

- Very good cold and drought tolerance
- Best suited to sandy and loam soils
- Time of establishment: normally January/February
- Can be planted in December in the cooler eastern areas
- Shows good reaction to phosphate and potassium fertilizer
- Excellent rotational crop for maize systems
- Can be used as stand over feed for the winter

Daikon

Daikon **Drilling Radish** has the ability to produce a large taproot and penetrate compacted soil layers in an effort to increase soil aeration, water infiltration, decrease compaction and provide better rooting depth opportunities to successive crops. These type of tillage roots do their work right where it is needed, in the soil. It tills and aerates to improve soil structure as it grows.

When its lifecycle ends, its roots add organic matter to the soil in massive amounts, with minimal loss and no mechanical digging required. Considering the cash crop that will be planted next is the first step in developing an effective cover crop management plan. Tillage radish is best suited to proceed summer crops. Ideally the following cash crop will be no tilled into the material of the terminated tillage radish.



Fodder Radish



Japanese Radish



Drilling Radish



Forage Rape (*Brassica napus var. napus*)

Interval

Interval rape is a rape-kale cross that is extremely vigorous, fast establishing and high-yielding. Interval rape has shown a very good leaf to stem ratio compared to other varieties on the market. Crops of Interval rape have measured 19% CP (crude protein) and 13.4 MJ/kg DM (energy). Excellent regrowth after grazing can be obtained through good management practices.

Key features

- Tall type
- High quality forage
- Good regrowth – two grazings are possible
- Flexible – summer or winter crop
- Good drought tolerance
- Good winter hardiness and frost tolerance

Using Interval

- Sowing date: Oct - Nov / Jan - Mar
- Maturity date: 90 -120 days
- Typical yield: Summer: 7-10 t DM/ha; Winter: 4-6 t DM/ha
- ME: 10-11 MJ/kg DM



Interval after grazing

Seeding rate

- 4-5kg/ha (pure); 1-2kg/ha (mixtures)

Fills the summer feed gap!



Fodder Beet (*Beta vulgaris*)

- High yield potential (20 ton DM/ha+), therefore you need less land to winter the same number of animals
- High ME value (12-13 MJ ME/kg DM) and utilisation (typically 90%), for improved animal performance
- Relatively low cost (R/kg DM) at high yields
- Unaffected by most brassica diseases
- Versatility

Fodder beet has several features which can benefit dairy, beef and sheep farmers. Whether grazed or lifted and fed out on pasture, the potential yield, feed value, utilisation and economics of this crop stack up well in many different farm systems. Fodder beet demands good management to reach its potential, and care must be taken with animal feeding.

If you are new to fodder beet, seek advice from our technical advisors well before seeding.



Fodder Beets - Exceptional high yields

Robbos

Robbos has very good leaf keeping ability through autumn, winter and early spring. This is important because the leaf comprises of a high percentage of the crop's protein.

- Best feeding method: Grazing (but can be lifted)
- Bulb DM content: medium (16-18%)
- Seeding rate: 80 000 seeds/ha

System Fit

Thanks to its ability to grow a large volume of high quality, high utilisation feed that can be used from autumn to spring, fodder beet suits several different farm systems. Its high yield potential also frees up land for other uses, which is a major plus. Alternatively, you can increase daily allowances for improved live weight gains. This crop provides flexible winter grazing and can also be used to extend dairy cow lactation by either grazing or lifting and feeding to stock on pasture. Successful grazing entails correct stock transition.



Fodder Beets

Tip: Fodder beet is highly sensitive to soil residues from commonly used agricultural chemicals. Before planting, check your field's history for chemicals used in the past two years, and confirm their withholding period.

'Stale seedbed' preparation is recommended, i.e., spray your paddocks with glyphosate, ideally 6 weeks before planting. Paddocks can then be ploughed to remove existing plant material and ensure no compaction issues. Cultivate to produce a fine, firm seedbed. Consult a chemical agent regarding wheat sprays for just prior to seeding.

Please take note of the transition phase before utilizing with livestock.

System Fit													
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Robbos													
Dairy	Precision planting							Extended lactation, early winter		Winter feeding fodder		Add to spring pastures	
Cattle/Sheep	Precision planting							High ME feeding for weight gain or maintenance from autumn to spring					
Maturity	Once herbicide withdrawals have been done. 170 + days to maximum yield												
Typical yielding	18 -24 tons DM/ha on average. 25 tons DM/ha+ possible with sufficient summer moisture and soil fertility												
Seeding rate	80 000 seeds/ha pastures. 100 000 seeds/ha lifting fodder beet to maximum yield												



Brassica Management

Seedbed

- Aim: fine, firm, and moist seedbed
- Control weeds: cultivation, pre-emergent spray
- Bury turf & past crop residues
- Depth: 1 - 1.5 cm
- Broadcast seeding rate is higher than drilling
- Seed-soil contact is important
- Consolidation: rolling is very important
- The correct plant population is critical for a good yield

Fertility – Overview

- Brassicas remove high levels of nutrients
- Every crop is different – fertilise based on expected crop yield and base fertility level
- Often “poor” paddocks – lift base levels for new pasture
- Nitrogen: Responds strongly to it, driving yield
- Phosphorus: critical for establishment but is relatively immobile, therefore band placing gives the best response
- Boron: mainly bulb crops, avoid seed burn
- pH: preferably over 5.6
- Do a soil test!





Weeds

- Have significant effect on yield
- Weed free seed bed is ideal for establishment
- Pre-emergent sprays – rainfall for activation
- Post-emergent sprays – spray when weeds are small
- Healthy fast-growing crops can out compete weeds

Pests

- Can cause major damage, especially at establishment
- Check every few days around establishment (springtails), then weekly
- Insecticides can be applied as a spray after emergence, or as a seed treatment

Grazing Management

- It takes approximately 4-6 weeks for rumen bacteria to adjust
- Introduce crops slowly – build intake over 10 days
- Avoid gorging: brassicas are consumed quick and easy,

therefore do not allow hungry animals access to large amounts

- Feed fibre before giving access to brassicas
- Frosted crops can cause bloat and cold forage causes a decrease in body temperature and an increase in energy requirement
- Provide plenty of water: a lack of water results in lower intake
- Nitrate poisoning due to late N application - allow time to adjust, reduce rate of intake
- Shift fences at least once a day for less trampling/wastage

Crop Measuring

- If you don't measure it – how can you manage it?
- Yield (kgDM/ha) = average fresh weight/m² (kg) x (DM%100) x 10,000
- DM % = dry weight (g) / wet weight (g) x 100

Agronomy Crops



 **BARENBRUG**



Agronomy Crops

Canola

Saia Oats

Forage Oats

Forage Barley

Silage Barley

Triticale

Forage Rye

Agronomy is the application of plant and soil science to crop production. As a science it considers how to grow crops effectively and profitably while conserving natural resources and protecting the environment. Agronomy emphasizes staple food crops, such as maize, beans, wheat and oil seeds like canola which are produced on a large scale and represent the foundation of our human food supply. Forage plants and hay crops are also considered agronomic crops and are the feed base for the ruminant livestock industry.



Canola (*Brassica napus*)

Canola is a winter crop that requires relatively cool, moist conditions for the best results, particularly during flowering, pod-development and seed setting stages. Canola can be cultivated in virtually all the areas of South Africa where wheat is cultivated, but it does not produce the same results everywhere. It is mainly used as a rotational crop with wheat, especially with the advantage of herbicide resistant varieties.

Benefits of a crop rotation system are:

- Reduces diseases
- More effective weed control
- Improved root system (bio-tillage)

Seeding rate

- 2-3kg/ha

Hyola 650TT

Hyola 650TT has been developed as a longer maturing, higher yield potential variety, showing great adaptability to growing regions where growers can achieve canola yields between 2t/ha to 4.0t/ha. Growers are rethinking herbicide technology performance because despite the known TT yield penalty, some of the new TT Hybrids with their improved breeding and genetics are yielding just as well and, in some cases, even better than other technologies.

- Herbicide resistance: Triazine Tolerant (TT)
- Blackleg rating: Resistant
- Blackleg group: ABD
- Days to 50% flowering: 100-110
- Windrowing maturity: Mid-late
- Plant height: Medium
- Oil potential: 6
- Plant biomass: 7
- Lodging resistance: 8
- Hectolitre weight: 8

Ratings: 1 = Poor 9 = excellent

Hyola 559TT

Hyola 559TT has shown to be one of the most adapted and popular Triazine tolerant varieties across the Western and Southern Cape areas of South Africa. It is characterised by high yield and high blackleg resistance.

- Herbicide resistance: Triazine Tolerant (TT)
- Days to physiological maturity: 160 – 164 (Medium)



Canola



Hyola 650TT



Hyola 559TT on the right

- Blackleg rating: Resistant
- Blackleg group: ABD
- Oil potential: Very high
- Vigorous seedlings
- Plant height: Medium
- Flowering uniformity: Excellent
- Stand ability: Excellent

Cereal Crops

Cereal crops are versatile crops that can be harvested for forage or grain. Cereal crops can be an excellent source of forage for dairy cows, sheep and beef. You can expect quality forage, similar to that of other cool season grasses. Cereal crops can provide a variety of feedstuffs for your animals. Selecting the appropriate species is based on your climate and personal preference. The type of feed harvested will be dependent on your feed needs in terms of a quantity and quality perspective. Cereal crops also make great companion- and cover crops.

Saia Oats (*Avena strigosa*)

BarSaia

Black oats or saia oats is one of the world's oldest cover crops, well-known for its hardiness. It is planted specifically for its high biomass production both above and below the soil, which is vitally important to increase the organic and carbon content of your soil. Combining it with vetch can produce some of the largest volumes of biomass that can be used as a green manure, mulch or as feedstock. Due to its dense tillering ability, it also serves as an excellent weed suppressor. It has a long growing season with a very good disease resistance. Saia is best planted in April/May and is well adapted to sandy soils.

Seeding rate

- 50-60kg/ha (pure)

Forage Oats (*Avena sativa*)

Forage oats is a winter forage crop that is very popular for its ability to produce good-quality feed when most pastures are dormant. Many farmers rely on oats to fatten livestock during the period from autumn to early spring. It is a fast-establishing autumn/winter growing fodder crop with a high leaf to stem ratio resulting in a high feed value. It is most popular for silage, hay and grazing. The ideal planting time is from March to May.

Wizard NEW

Wizard is one of the latest releases from the leading forage development partnership between the Queensland Department of Agriculture and Barenbrug Australia. Wizard presents a significant improvement in yield over other forage oats in the market. Wizard has an erect early growth habit with a medium plant height and good tillering ability. Wizard's leaf and stem thickness is slightly finer, containing less lignin. It also tends to recover better after cutting and grazing than other varieties. Wizard will provide growers with a high yielding forage option, with medium/ late maturity and excellent recovery in winter.



Saia Oats



Wizard Green chop

Seeding rate

- 50-60kg/ha (pure)



Key features

- Sets a new benchmark for yield in forage oats
- Good early growth, making it quick to initial grazing
- Excellent recovery
- Medium/late maturity
- Very good leaf rust resistance
- Excellent frost tolerance

Barley (*Hordeum vulgare*)

Barley is an annual cereal that is often used in semiarid areas because it is more drought tolerant than other cereals. It does not do well in humid areas where there are many problems with disease. Therefore, barley is a crop that is best adapted to cooler, drier areas. For the best quality feed and good regrowth, it should be cut or grazed at a 30-40 cm height. After each cut the crop should be fertilized to ensure good quality regrowth. Barley is widely used as a livestock feed.

Seeding rate

- 60kg/ha



SVG13 (left) & Moby (right)



Moby

Moby is an early maturing, 6 row, awnless **Forage Barley** with excellent winter growth and rapid establishment. Leaf size varies according to environmental conditions and is more comparable with oat varieties than traditional barley types. Moby can tolerate multiple grazings until the production of the first node. Being winter active, Moby offers an extended planting window, from mid-autumn to mid-winter, compared to forage oats.

Key features

- Developed for high vegetative dry matter production
- Very fast establishing variety
- Exhibits good cold tolerance compared to other varieties
- Excellent winter growth

Barforce NEW

Barforce **Silage Barley** is an excellent silage option due to its high grain yield that increases the quality. Its quick establishment and dense growth habit make it an excellent cover crop for weed suppression. Barforce has a medium growing season, making it an ideal option for lower rainfall regions.

Key features

- Vigorous growth throughout the season
- Higher grain yield, but less vegetative biomass than forage barley
- Flexible establishment due to its cold tolerance
- Very good weed suppression
- Good drought tolerance



Triticale (*Triticosecale*)

Triticale has been developed to incorporate the high yield potential and quality of wheat with the adaptability of rye, allowing it to be adapted to a wide range of soil types and environments. Triticale has an aggressive root system that binds light soils better than wheat, barley and oats. It is used to produce silage towards its milky dough stage and is also an excellent choice for grain production, which can be used as animal feed. Grazing normally occurs during the first 40 days after emergence. Triticale is primarily a source of energy, has a moderate protein content and has a high starch and other carbohydrate content. It is also a popular cover crop for vineyards and orchards, enhancing moisture retention and weed suppression.

Seeding rate

- 120-140kg/ha

US 2014

Key features

- Excellent biotic resistance, including stem rust, leaf rust, powdery mildew and aphid damage
- Dark green, broad leaves
- Long season grower that maximises available moisture
- Medium plant height (typically 110 – 120 cm)

US 2019 NEW

US 2019 is our latest triticale variety from Stellenbosch University's breeding program. It is a multiuse variety suitable for producing forage, grain, hay and silage.

Key features

- Easier harvesting compared to older triticale varieties
- Above average hectolitre mass (78kg/hl) compared to older triticale varieties
- Resistant to leaf rust, stem rust, stripe rust and Russian wheat aphid
- Reduced fertilizer requirement while maintaining high protein levels in combination with an above average starch content
- Excellent adaptation to the entire Western Cape production area
- Long growing season, allowing it to fully utilise available moisture
- Medium plant height (typically 100 – 110 cm)
- Lower seeding rate required while maintaining excellent biomass



US 2014 Triticale



Triticale



Forage Rye (*Secale cereale*)

Barpower

Barpower is a unique rye variety, bred for the forage market. It is more leafy than normal rye, having a higher leaf to stem ratio. Barpower has a slightly longer growing season than normal rye, allowing a higher yield potential. This versatile variety can be used for grazing, hay, silage as well as a grain feed.

Key features

- Densely tillered and very leafy - more prostrate growth habit
- Very quick establishment
- Proved to be highly palatable in grazing trials
- The grain is of great value to ruminants and has a crude protein of 10-13%
- Offers farmers greater fodder flow flexibility
- Ideal in "COVERGRAZE™" mixtures
- Drought tolerant and widely adapted

Management

- Do not plant too early, especially in warmer areas (April – Mei)
- Planting can start in March in cooler areas
- Early grazing will result in very good regrowth (30-35 cm)
- Rotational grazing for best results
- Often used as a nurse crop with early established ryegrass to increase total dry matter content



Barpower

Seeding rate

- 50-60kg/ha



Pollinators

 **BARENBRUG**



Pollinators

Phacelia

Mustards

Flax

Buckwheat

Cilantro

Marigold

Sunflower

Zinnias

Beneficial insects such as natural predators and pollinators benefit from nectar and pollen provided by flowering cover crops. Differences in flower morphology, such as shape, size and colour, will influence the type of beneficial insects attracted to it. A variety of flower morphologies provide resources to a diversity of beneficial insects.

- Flat, open flowers – pollen and nectar available to all shape and sizes of bees and predators
- Narrow, closed flowers – difficult for small bees and parasitic wasps to enter and obtain nectar and pollen



Phacelia (*Tanacetifolia*)

Phacelia is a cover crop and bee forage, rated among the top 20 honey producing flowers. It is comparable to buckwheat in many ways. Buckwheat germinates more rapidly, especially at higher temperatures, and phacelia is more tolerant of cold and drought. It grows well in dry soil. Phacelia has rapid establishment and is quick to flower (6-8 weeks) and flowers for up to 8 weeks. It reduces soil erosion and improves soil structure.

Utilization

- Use as a fall/winter catch crop/mulch. Produces abundant biomass and does a good job of catching excess Ca and nitrates before they leach into the ground water. Appropriate when it will be followed by a vigorous cash crop, like potatoes, in early spring.
- Ideal as a catch crop for oilseed rotations (non-host for club root disease)
- Intercrop option with maize and sugar beet (data shows phacelia reduces the population of the sugar beet nematode, *Heterodera schachtii*).
- Cover crop in vineyards and apple orchards (beneficial insects).
- Forage option in COVERGRAZE™ mixtures.
- Excellent pollinator value

Seeding rate

- 5-8kg/ha

White Mustard (*Sinapis alba*)

Venice NEW

Venice White Mustard has an extremely fast growth which forms a dense canopy to smother weeds. Its deep root system does a great job of recycling nutrients that may have leached past the root zone of cash crops. As with all brassicas, Venice is high in Sulphur, which can become available to the subsequent crop when the mustard is incorporated into the soil. It works extremely well as a nematode suppressor and as a natural bio-fumigant. It can be used in rotation with most grains and vegetables.

Key features

- Late maturing variety, allowing maximum biomass production
- Helps to suppress weeds and serves as a ground cover
- Its tap root can grow very deep, break up soil and scavenging for nutrients
- Works well as a bio fumigant and suppresses verticillium in potatoes
- High pollinator value

Seeding rate

- 8-10kg/ha



Phacelia

**Primary purpose:
Attracting pollinators
and predators of pest insects!**



Venice

Brown Mustard (*Brassica juncea*)

Scala

Scala has been selected for bio fumigation. After the bruising and processing of the crop, the active substances are converted into gases that are toxic to a large number of soil organisms. Bio fumigation is mainly aimed at combating soil fungi, such as brown rot in potatoes. Seed should be sown in very early spring for spring use and in the autumn for winter use. Brown mustard requires a good sandy loamy soil, with adequate N; P; K; S to ensure rapid establishment. This crop should not follow other Brassica crops in rotation. For disease control, it is best grown once every 3–4 years.

Key features

- Natural bio-fumigant of root-knot nematode
- Reduces soil crusting
- Improves soil infiltration
- Increases organic matter and the subsequent increase in beneficial microflora and microfauna
- Reduces effects of bacterial wilt on successive vegetable crops
- High pollinator value

Seeding rate

- 7-12kg/ha

Flax (*Linum usitatissimum*) NEW

Flax, also known as linseed, is a winter flowering plant commonly used as a cover-, seed- or fibre crop. It has a low nutrient demand and normally flowers about 7 weeks after planting, flowering for about 2 - 4 weeks. It has pale blue flowers that attract bees and natural predators.

The plant is adaptable to a variety of soils and climates but grows best in well-drained sandy loam and in temperate climates. In most areas planting of the same land with flax is limited to once in six years to avoid soil exhaustion. Seedbed preparation for flax is like that for small grains. Sow flax early enough that the plants will become well established before freezing temperatures occur. After plants have branched at the crown, cold-hardy varieties can withstand much lower temperatures without serious injury. Preference to autumn planting. A relatively shallow planting depth is recommended, but the depth depends somewhat on soil texture and moisture conditions. The way flax responds to fertilizer applications will depend on moisture conditions, the previous crop, and the fertility status of the soil.

Seeding rate

- 50-60kg/ha



Brown Mustard



Flax



Buckwheat (*Fagopyrum esculentum*) NEW

Buckwheat is a rapid growing broadleaf cover crop used to suppress summer annual weeds and build soil in short windows between warm season crops, or in the transition periods between winter- and summer annuals. It scavenges for phosphorus that is otherwise unavailable to crops and then releases it for the following crops as the residues break down. It has an excellent pollinator value and attracts other beneficial insects such as ladybirds, hover flies, tachinid flies, etc.

Seeding rate

- 50kg/ha

Cilantro (*Coriandrum sativum*) NEW

Cilantro, called coriander when harvested for seed, is a hardy short-lived annual herb with a preference for cool temperatures. It attracts beneficial insects such as ladybirds, lacewings, hoverflies, parasitic wasps, tachinid flies, pirate bugs, etc. It is a major source of nectar and pollen for honeybees, bumblebees and other bees. Planting cilantro/coriander will provide many biological benefits for you farm, while providing fresh herbs and spice (leaves and seed) to use in your own kitchen. Therefore, keeping pollinators, beneficial insects, and everyone around the dinner table happy.

Seeding rate

- 40-50kg/ha

Marigold (*Tagetes patula*) NEW

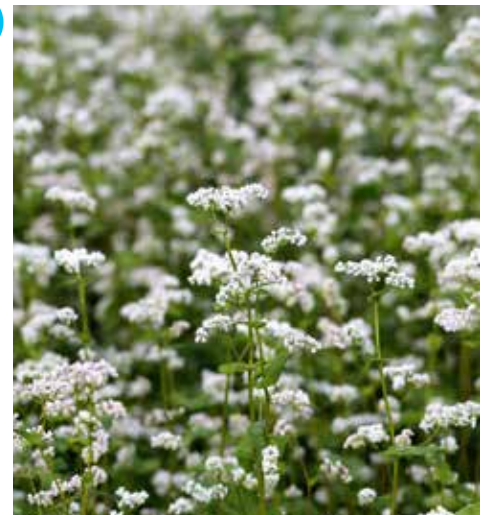
Marigold is an annual warm season, bushy plant with various combinations of orange, red and yellow flowers. Marigolds attract beneficial insects such as ladybirds, hover flies, parasitic wasps, etc.

Marigold is well known among nematologists for its ability to produce compounds such as terthienyl that are allelopathic to many species of plant-parasitic nematodes. *Pratylenchus* (lesion) and *Meloidogyne* (Root-knot) are most consistently affected. Marigold may reduce plant parasitic nematode (PPN) populations by several means:

- Acting as a non-host or a poor host
- Producing allelopathic compounds that are toxic or inhibit PPN development
- Creating an environment that favours nematode antagonistic flora or fauna
- Behaving as a trap crop

Seeding rate

- 2.5-3kg/ha



Buckwheat



Cilantro



Marigold



Sunflower (*Helianthus annuus*) NEW

Sunflower is a summer annual with a large yellow flower that sits on top of a tall stem. It adapts relatively well to a wide range of soil types. Sunflower has a deep and finely branched tap-root system which can utilize water from deep soil layers, even deeper than 2 m. Sunflower attracts beneficial insects such as ladybirds, pirate bugs, damsel bugs, etc.

Seeding rate

- 25kg/ha



Zinnias (*Zinnia elegans*) NEW

Zinnias are annual, summer flowering plants. Its flower colours vary from white and cream to pinks, reds, and purples, to green, yellow, orange and bronze. It grows easily and prefer well-drained, loamy soil and full sun. Zinnias attract beneficial insects such as ladybirds, hover flies, parasitic wasps, etc. It attracts bees, especially bumble bees, and has a long flowering period, providing nectar when other flowers are not available.

Seeding rate

- 2.5-3kg/ha

Other pollinator crops: sainfoin, lucerne, white clover, crimson clover, sweet white clover, vetch, canola & radish



Zinnias



Cover Crops

 **BARENBRUG**



Cover Crops

Cover crop selection

Cover crops for specific purposes

Cover crop challenges

Cover crops refer to any plant population established to benefit the soil, whether in rotation with cash crops or between rows of orchards or vines. The main purpose is to protect and enrich soils, leading to better soil health over time. A cover crop is a crop planted primarily to manage soil fertility, soil quality, water, weeds, pests, diseases, biodiversity and wildlife in an agro ecosystem (Lu et al. 2000), an ecological system managed and largely shaped by humans across a range of intensities to produce food, feed or fibre.



What are cover crops?

Cover crops refer to any plant population established to benefit the soil, whether in rotation with cash crops or between rows of orchards or vines. The main purpose is to protect and enrich soils, leading to better soil health over time. A cover crop is a crop planted primarily to manage soil fertility, soil quality, water, weeds, pests, diseases, biodiversity and wildlife in an agro ecosystem (Lu et al. 2000), an ecological system managed and largely shaped by humans across a range of intensities to produce food, feed or fibre.

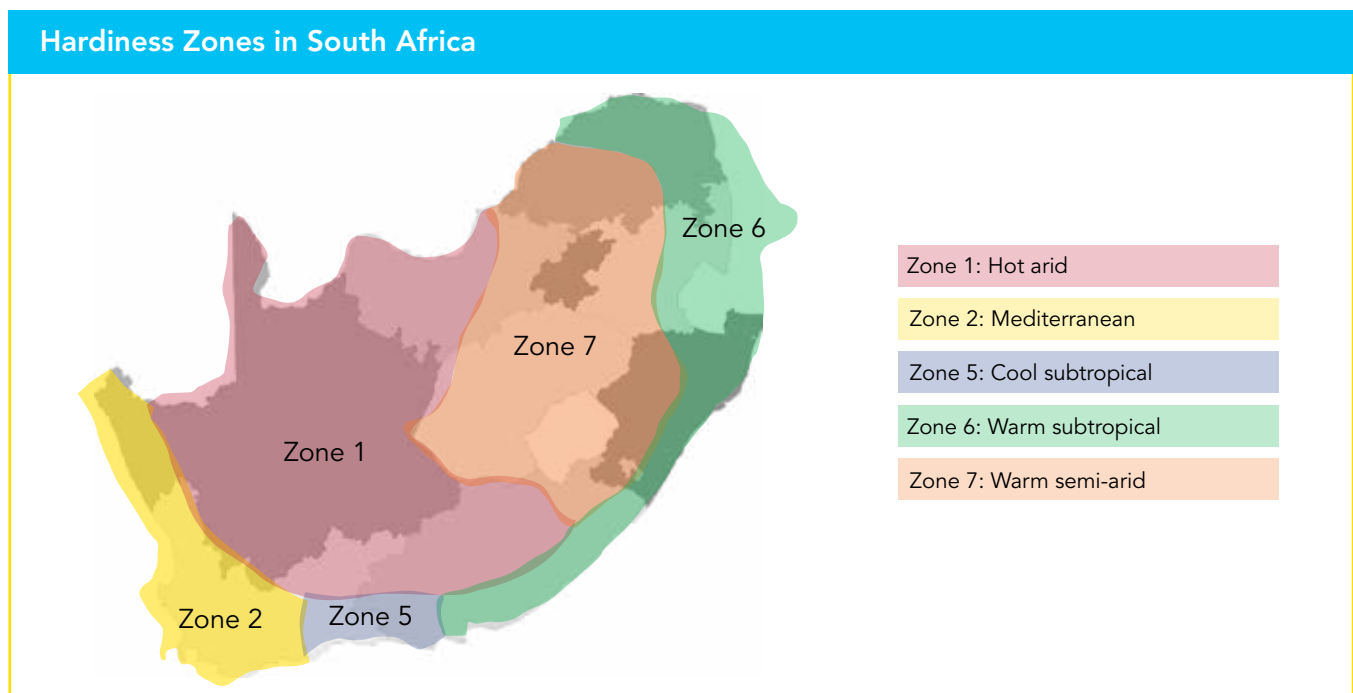
Cover crops are of interest in sustainable agriculture as most of them improve the sustainability of agro ecosystem attributes and may also indirectly improve qualities of neighbouring natural ecosystems. Farmers choose to grow and manage specific cover crop types based on their own needs and goals, influenced by the biological, environmental, social, cultural, and economic factors of the food system in which farmers operate (Snapp et al. 2005).

Cover crop selection

It is important to select the right species and varieties to ensure the best results. There are many species and varieties available, therefore it is extremely important to contact a cover crop specialist to assist you with the selection process. When selecting cover crops, the following factors should be considered:

Climate

The availability of moisture differs throughout South Africa. Generally, the rainfall is greatest in the east and gradually decreases westward with most of the country receiving it in the summer months. The exception is the Western Cape which has a Mediterranean climate receiving most of its rain in winter followed by a dry summer. The coldest days are normally during June to August.



Soil type

Some species are very specific to which soil types they prefer and other are widely adapted. A soil analyses is therefore recommended to determine what soil types and structures are present on your farm. Refer to the table on page 109 for the soil preferences of different species.

Goals

When monoculture or mixtures are selected, the end goal and what it is that you would like to achieve must be kept in mind. Here is a list of common goals:

- Weed suppression
- Biomass production
- Nitrogen fixation
- Alleviating compaction
- Erosion control
- Forage production
- Stimulation of microbial activity
- Bio fumigation
- Attracting natural predators and pollinators
- Low maintenance
- Decoration
- Moisture conservation
- Combatting soil disease

Challenges

Possible challenges should be kept in mind during species/variety selection. This includes:

- Wet soils
- Low or high pH soils
- Saline soils
- Compaction
- Nematodes
- Low rainfall
- Erratic weather patterns
- Soil temperature
- Weeds
- Infrastructure
- Equipment

Considering the above-mentioned during selection will help to achieve the best possible result. It also makes cover crops much more cost effective.



Biomass production



Forage production



Cover crops for specific purposes

Since cover crops have different functions, it is important to determine what the crop is expected to do. Is the intent to add organic matter to the soil? Perhaps to add nitrogen to the cropping system? To stimulate soil biological activity? Or to protect the soil during the winter months?

Cover crops for weed suppression

The main purpose is to suppress weeds in a natural way. Several cover crops are considered “smother” crops because they are used to control or suppress weeds. Crops that give the best results are those that are quick to germinate, provide rapid ground cover and form dense canopies.

- Vetch
- Saia Oats
- White Mustard
- Teff
- Phacelia
- Forage Rye
- Jap Millet
- Forage Barley
- Radish

Nitrogen fixing cover crops

The main purpose is soil improvement through nitrogen fixation. Legumes such as lupines, clovers, vetch and cow peas that can fix atmospheric nitrogen, are also able to supply nitrogen to subsequent crops. When sources of manure or compost are not readily available, legume crops can be inserted into a crop rotation to supply nitrogen to the cash crops.

Nitrogen fixing legume crops must be inoculated with rhizobium bacteria before planting (see inoculation guidelines). Legume crops require specific strains of fresh or well-preserved inoculants. Inoculation is particularly important if the legume crop has never previously been grown on the site. Also take note that legumes have different growth habits, especially when used in mixtures. Some are creepers and others have a prostrate growth habit.

- Lupines
- Vetch
- Medics
- Serradella
- Clovers
- Faba Beans
- Forage Peas
- Cowpeas
- Sunn Hemp
- Dolichos (Lablab)



Barpower and Haymaker mixture



Cardinal Crimson Clover

Low maintenance cover crops

Turf type grasses are popular cover crops used in orchards due to the low maintenance requirement. These grasses usually form a uniform surface that provides good ground cover as well as weed suppression. Although the idea is to help prevent soil erosion and waterlogging, suppress weeds and provide a good ground cover, the popularity remains the fact that it is a very persistent cover crop that requires little maintenance.

- RTF Fescue
- Creeping Red Fescue
- Paspalum notatum
- Durana - White Clover



Rhizomatous Tall Fescue (RTF)

Bio fumigation and non-host cover crops

To interrupt pest life cycles, it is important to select cover crops of a different family than that of the future cash crops so that they do not harbour pests or diseases that can negatively impact the following cash crops. Some cover crops can perform bio fumigation if it is chopped up and worked into the soil, other crops serve as non-hosts. The host status differs between species and varieties for different pathogens and diseases.

- White Mustard
- Saia Oats
- Brown Mustard
- Sunn Hemp
- Rhodes Grass
- Marigold
- Fodder Radish



Sito White Mustard

Cover crops for mulches

The properties of the cover crop residues are very important as they have a direct influence on the outcome of organic matter decomposition (humification and mineralization) and other plant nutrition dynamics. Young and succulent green manure crops with a low C:N ratio will feed soil micro-organisms, while a mature, fibrous green manure crop such as cereal straw will form stable organic matter but provide less stimulation of soil biological activity.

- Saia Oats
- Forage Rye
- Triticale
- Forage Barley
- Forage Sorghum
- Pearl Millet (babala)
- Rhodes Grass
- Panicum maximum
- Eragrostis curvula



Saia Oats and Haymaker Vetch



Natural predators and beneficial insects

Cover crops can attract beneficial organisms that prey upon or parasitize pests.

- Buckwheat
- Phacelia
- Radish
- Mustards
- Marigold
- Cilantro
- Zinnias

Cover crop challenges

The use of cover crops is not without some potential challenges. Many annual cover crops must be mowed before they produce viable seeds which could become weeds. Some cover crops have allelopathic properties that can have negative effects on the cash crops that follow. Large amounts of cover crop residues can cause significant problems during planting of the next crop. Precision planters are particularly sensitive to seedbed conditions with excessive crop residues.

Nitrogen can be tied up during decomposition of incorporated fibrous plant material to the detriment of the cash crop. Poorly selected cover crops can attract, stimulate or harbour pests that can negatively impact the following cash crop. Some cover crops can benefit pests that could have a negative effect on the current or follow-up crops. Therefore, it is very important to consult a Barenbrug technical advisor during your selection process.

A photograph of a flock of sheep grazing in a lush green field. The sheep are of various sizes, including several adults and a few lambs. They are scattered across the field, some looking towards the camera. The field is filled with tall, green grass and other vegetation. The sky is a clear, bright blue. The entire image is framed by a yellow border.

COVERGRAZE™

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COVERGRAZE™

“The beef community use a technology that produces high quality protein from solar energy locked within human inedible plants. This technology produces a natural organic fertilizer and is mobile without using fossil fuels. This technology self-replicates. The technology is cattle. Beef is the original plant-based meat” – Dr Sara Place

Barenbrug’s COVERGRAZE™ mixtures provide the solution to farmers that want to produce forage for their livestock and simultaneously look after their soil health. For years it was recommended that farmers should keep their animals off cash crop lands, but with COVERGRAZE™ this way of thinking has changed. Utilizing cover crops with animals present the opportunity to generate an income and not only improve your soil biology. The correct utilization of cover crops, with high producing animals in the summer rainfall areas, have regularly shown to be more profitable than the normal cash crop options.



Scan for
COVERGRAZE™ video



Introduction

The management of grazing intensity and intervals is of the utmost importance. Therefore, farmers often move their herd on a daily basis under an ultra-high stock density (UHSD) grazing system. With this system they replicate the grazing habits of large herds in nature and prevent compaction due to the limited time that the animals spend in one camp. The hoof action, manure, urine, saliva and even the CO₂ emissions of the herd is beneficial for microbes and plays a big role in the build-up of organic matter in our soils.

It should be kept in mind that providing enough drinking water is one of the biggest challenges of these UHSD grazing systems seeing that the livestock are moved regularly. Many creative solutions have presented itself to overcome this challenge.

With the help of your Barenbrug agronomist, COVERGRAZE™ mixtures can provide a complete fodder flow program tailor-made for your farm. This can ensure available pasture throughout the year in the form of green feed or standing hay. The idea is to establish species that will provide the highest amount of material of the best quality for a specific utilisation period. The growth period of different varieties and their potential regrowth must be kept in mind. The type of animal that will be utilizing the COVERGRAZE™ mixture also determines the species and variety best suited.





In most circumstances it is advised to manage your COVERGRAZE™ mixture for regrowth. Normally this is achieved by grazing the cover crop before the main component of the mixture goes into a reproductive growth stage and not grazing it past the desired post grazing residual. A good rule of thumb is to move your animals before you can see their hooves. By doing this enough of the “factory” is left behind for photosynthesis to enable quick regrowth for the next grazing. The idea is to graze the “cream” of the crop with UHSD grazing systems and then move the herd. There is some species and varieties that can endure severe grazing better than others like Pearler hybrid millet and annual ryegrass. Always remember that root reserves are depleted with heavy grazing, and it may take 2-3 weeks for regrowth to commence. This can give weeds the opportunity to present themselves. Herds can also be used to control weeds, terminate cover crops and even to establish cover crops with their trampling action.

Barenbrug is proud to offer COVERGRAZE™ specific products for cover cropping. Not only are these products perfect for non-grazing cover crop systems, they also offer superior forage production, digestibility and quality for grazing animals. If COVERGRAZE™ is part of your cover crop plan, choose Barenbrug products for performance that matches your needs.



Gert Jv Rensburg - Brits, North West

“We see soil life return in a relatively short period of time, which means we can cut back our fertilizer fairly quickly while the yield and quality improve. By utilizing it with my cattle we increase the working even further. After what we have seen for the last 3 years we are very excited about the role that mixed cover crops can play in our sustainability, profitability and competitiveness.”



- Weed suppression
- N-fixation
- Soil improvement
- Fibre
- Protein Boost

Cover crop periodic table

COOL SEASON PLANTS						WARM SEASON PLANTS		
GRASS		BROADLEAF PLANTS						GRASS
Ryegrass								
Barley								
Saia Oats	Canola	LEGUMES					Buckwheat	Pearl Millet
Forage Rye	White Mustard	Turnip	Forage Peas	Red Clover	Medic	Burgundy Bean	Chicory	Forage Sorghum
Rye	Rape	Jap Radish	Biserrula	Sweet Clover	Lucerne	Sunn Hemp	Flax	Sweet Sorghum
Triticale	Phacelia	Beet	Serradella	Crimson Clover	Faba Beans	Dolichos	Safflower	Teff
Forage Oats	Brown Mustard	Forage Radish	Vetch	Sainfoin	Lupin	Cowpea	Turnip	Hybrid Millet

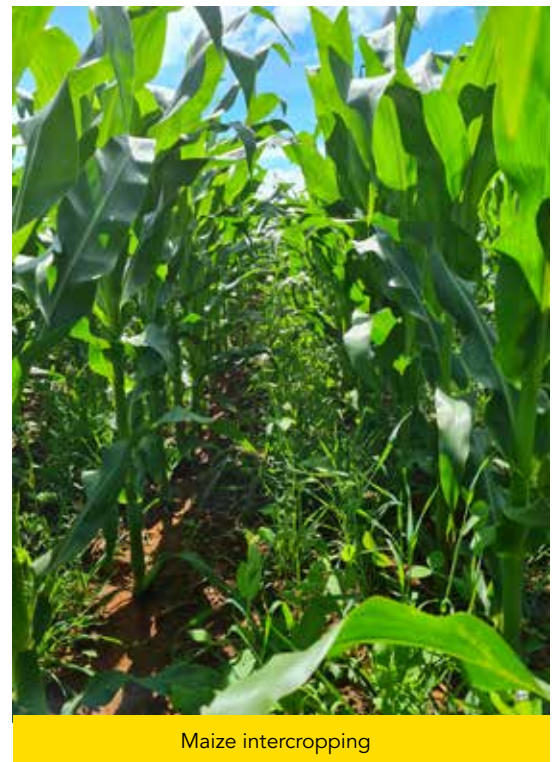
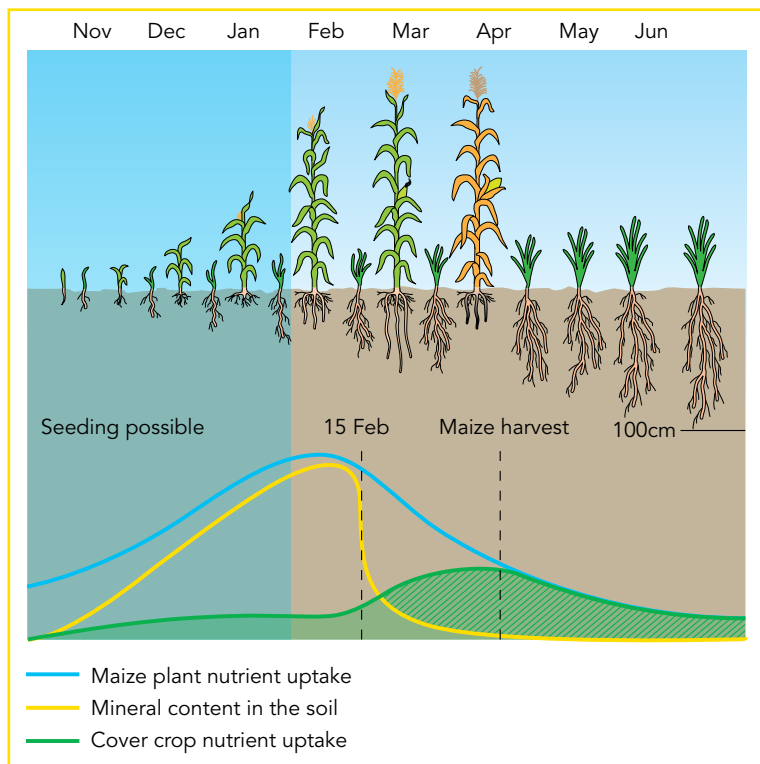
Intercropping

Intercropping is the establishment of a second crop, or cover crop(s), on a field where the previous crop is not removed yet. This is a new concept for most farmers, but something that is possible even in our challenging climatic conditions. For the simple reason that very little moisture is available at harvest of maize, it has become increasingly popular to establish the second crop during the maize's growing season. This allows the second/cover crop to utilize the moisture while it is available. For a cover crop to be able to grow with maize it should comply with the following rules:

- The cover crop species should be able to germinate and survive during the planned seeding date
- The cover crops should not excessively compete with the cash crop for moisture and nutrients
- The cover crop species should be able to survive in the shade of the maize until the maize starts to dry and then be able to utilize the available sunlight and moisture (normally March until May) to ensure enough growth
- It is also favourable if the cover crop can provide a living root through winter and provide quality grazing for livestock during winter

Factors that determine the success of intercropping:

- Method of establishment (planter vs. spreader)
- Soil coverage during establishment
- Seed sizes of cover crops
- Available sunlight (growth stage, row width and stance of maize)



Turf Grasses



 **BARENBRUG**



Warm season grasses

- Kikuyu
- Cynodon
- Paspalum notatum (Bahia)
- Dichondra Wonderlawn

Cool season grasses

- Perennial rye grass (turf-type)
- Annual rye grass (turf-type)
- Tall fescue (turf-type)
- Fine fescues – includes:
 - Creeping Red Fescue
 - Chewings Fescue
- Blue grasses – includes:
 - Creeping Bent grass
 - Colonial / Highland Bent

A full range of
Turf Grass species
are available

New Concepts



- Perennial ryegrass with pseudo-stolons
- Number one choice in intense wear tolerance such as tournaments
- Outperforms traditional perennial ryegrass
- Increased disease and insect resistance
- Trademark exclusive



- Annual turf-type ryegrass
- Overseeding made easy
- Easy transition and easy on your budget
- Huge improvement on turf characteristics e.g. colour and texture



- Rhizomatous Tall Fescue
- Marketed as Turf Saver
- Repairs itself. The rhizome roots fill in bare spots in a thinning lawn
- Produces a thick, even, lush, soft-to-the-touch turf
- Promotes deep-rooting plants with great tolerance to heat and dry conditions
- Saves on overseeding costs of damaged turf



- Yellow Jacket seed coating
- Significant improvements in germination and establishment
- Yellow Jacket less prone to diseases
- Reduced water consumption and establishment costs
- Makes seeding easier/more accurate



- Kentucky Blue Grass
- Eliminate summer Patch
- Thrives in heat
- Unrivalled traffic tolerance
- Exceptional spring green up
- Defeat Billbug and White Grubs



Pasture Summary

 **BARENBRUG**

Pasture Species Summary

	Specie	Seed count (seeds/kg)	Seeding Rate (kg/ha) **	Nutritional values * DM (%)	Nutritional values * ME (MJ/kgDM)	Nutritional values * CP (%)	Nutritional values * NDF (%)
Temperate Grasses	Perennial Ryegrass	± 353 000	25-30	16-18	11-13	20-25	38-48
	Tall Fescue	± 411 000	25-30	18-21	9-10.5	13-17	50-57
	Cocksfoot	± 1 285 000	15	18-22	9-10.5	15-18	54-60
	Hybrid Ryegrass	± 286 000	25-30	16-18	11-13	20-25	38-48
	Annual Ryegrass	± 215 000	25-30	16-18	11-13	20-25	38-48
Tropical Grasses	Brachiaria Hybrids	± 60 000	10-15 (ctd)	28-40	7-9	12-16	58-60
	Brachiaria Brizantha	± 80 000	10-15 (ctd)	28-40	7-8	9-12	60-62
	Panicum Maximum	± 985 000	6-10 (ctd)	28-40	7-9	10-14	68-72
Subtropical Grasses	Rhodes Grass	± 570 000	12-20 (ctd)	28-48	6-9	4-12	65-75
	Smutsfinger Grass	± 885 000	12-20 (ctd)	28-48	6-9	4-12	65-75
	Blue Buffalo Grass	± 65 000	12-20 (ctd)	28-48	6-8	4-12	65-75
	Bottle Brush Grass	± 38 000	12-20 (ctd)	28-48	6-9	4-12	63-75
	Weeping Love Grass	± 1 877 000	8-12 (ctd)	28-48	6-8	4-12	65-75
	White Buffalo Grass	± 977 000	8-15 (ctd)	28-48	7-9	4-12	65-75
	Small Buffalo Grass	± 888 000	6-10 (ctd)	28-48	7-9	4-12	65-75
	Sabi Grass	± 105 000	5-10 (ctd)	28-48	7-9	4-12	65-75
	Kikuyu	± 168 000	5-10 (ctd)	15-18	8-10	16-18	48-62
Annual Summer Grasses	Sweet sorghum	± 41 000	8-20	20-30	8-9.5	10-16	55-65
	Forage sorghum	± 49 000	20-25	20-30	7-9	10-16	55-65
	Hybrid millet	± 82 000	5-15	20-30	9-10	15-22	50-58
	Babala	± 60 000	15-25	20-30	7-8	8-15	58-68
	Teff	± 4 179 000	15-25	25-40	8-9	15-18	50-65
Annual Winter Cereals	Saia Oats	± 53 000	40-50	20-30	7-9	13-22	45-63
	Forage Oats	± 43 000	50-60	15-25	9-10.5	16-24	50-55
	Forage Barley	± 36 000	60-70	15-30	9-10.5	12-22	40-55
	Silage Barley	± 19 000	60-70	20-35	8-10	10-20	45-60
	Triticale	± 28 000	120-140	20-35	9-10.5	10-20	40-60
	Forage Rye	± 55 000	50-60	15-35	8-10	13-22	43-65
Legumes	Medics	± 299 001	10-15	20-24	10-11	15-29	30-55
	Serradella	± 352 000	15-25	20-24	9-10	20-26	35-55
	Crimson Clover	± 266 000	10-15	16-24	10-11	11-19	34-39
	Persian Clover	± 542 000	6-10	14-24	7-8	8-19	28-48
	Sub Clover	± 120 000	10-15	14-20	9-10	10-28	30-54
	White Clover	± 1 463 000	6-10	14-18	10-12	17-33	26-32
	Red Clover	± 491 000	8-12	14-20	10-12	20-30	34-45
	Woolypod Vetch	± 33 000	15-25	16-25	10.5-13	18-30	32-45
	Common Vetch	± 15 000	20-30	17-24	9.5-12	18-30	30-40
	Lucerne	± 392 000	18-30	20-28	10-11	18-30	30-45
	Poor Man's Lucerne	± 681 000	15-25	23-30	7.5-8.5	12-20	40-58
	Forage Peas	± 5 000	100-120	13-18	8-12	14-24	24-37
	Birdsfoot Trefoil	± 832 000	6-10	12-32	8-10	16-24	30-45
	Sainfoin	± 52 500	65-90	16-30	8-10	12-21	26-45
	Sweet Clover	± 622 000	9-12	14-30	8-10	13-17	32-50
	Cowpeas	± 17 000	20-25	18-22	9-11	16-20	36-44
	Dolichos	± 6 000	20-30	20-24	9-10	16-20	42-46
Brassicac & Herbs	Chicory	± 712 000	6-8	8-19	11-13	20-26	20-30
	Plantain	± 759 000	8-10	9-20	11-12	16-28	23-36
	Forage Turnip	± 400 000	2-5	9-11	11-13	12-18	22-28
	Fodder Radish	± 56 000	2-5	10-12	10-12	18-24	30
	Forage Rape	± 261 000	4-5	13-15	11-13	12-18	23-30
	Fodder Beet	± 39 000	80 000 seeds	14-20	12-13	14-16	11-16



DM Yield Potential (ton/ha) *	Utilization	Growing Duration	Planting Season	Soil Type
12-16	G S	Perennial	A/W	Sandy to clay
13-17	G S	Perennial	A/W	Loam to clay
10-14	G S	Perennial	A/W	Sandy to loam
12-16	G S	Perennial	A/W	Sandy to clay
12-16	G S	Annual, Long	A/W	Sandy to clay
25-28	G	Perennial	S/S	Sandy to loam, well-drained
20-25	G	Perennial	S/S	Sandy to loam, well-drained
26-30	G S	Perennial	S/S	Sandy to loam, well-drained
12-20	G H	Perennial	S/S	Sandy to clay
7-15	G H	Perennial	S/S	Sandy to clay, well-drained
7-15	G H	Perennial	S/S	Loam to clay
7-9	G	Perennial	S/S	Sandy to loam
8-15	G H	Perennial	S/S	Sandy to loam
12-20	G H	Perennial	S/S	Loam, well-drained
8-15	G H	Perennial	S/S	Clay
8-12	G H	Perennial	S/S	Sandy to clay
10-20	G	Perennial	S/S	Loam to clay
20-35	G H S	Annual, Long	S/S	Fertile, well-drained
10-18	G H S	Annual, Medium	S/S	Fertile, well-drained
12-18	G H S	Annual, Long	S/S	Sandy to clay
8-12	G H	Annual, Short-Medium	S/S	Sandy to clay
8-18	G H	Annual, Short	S/S	Sandy to clay
6-10	G H	Annual, Medium	A/W & S/S	Sandy to heavy clay
8-12	G H S	Annual, Medium to Long	A/W	Loam to heavy clay
5-9	G H S	Annual, Short	A/W	Loam to clay, well-drained
6-10	G H S	Annual, Short	A/W	Loam to clay, well-drained
6-9	G H S	Annual, Medium	A/W	Loam to clay, well-drained
5-9	G H	Annual, Medium	A/W	Sandy to clay, well-drained
3-6	G H	Annual, Long	A/W	Loam to clay
3-6	G H	Annual, Long	A/W	Sandy to loam
3-6	G H	Annual, Long	A/W	Loam to clay, well-drained
3-6	G	Annual, Long	A/W	Loam to clay
3-6	G	Annual, Long	A/W	Sandy to clay
7-9	G	Perennial	A/W	Loam to clay
9-11	G	Short lived perennial	A/W & S/S	Loam to clay
6-8	G H S	Annual, Long	A/W & S/S	Sandy to loam, well-drained
5-6	G H S	Annual, Medium	A/W	Sandy to loam, well-drained
15-25	G H	Perennial	A/W & S/S	Loam to clay, well-drained
6-10	G	Perennial	S/S	Loam, well-drained
8-10	G S	Annual, Short	A/W	Loam to clay, well-drained
6-8	G	Perennial	A/W & S/S	Adapted to acid and waterlogged soils
5-7	G H	Perennial	A/W	Loam to clay, well-drained
6-12	G	Annual, Long	S/S	Sandy to clay, not alkaline
3-8	G	Annual, Medium	S/S	Loam, well-drained
5-12	G	Annual, Long	S/S	Sandy to heavy clay, tolerates acidity
18-24	G	Short lived perennial	A/W & S/S	Sandy to clay, Well-drained
20-26	G	Perennial	A/W & S/S	Sandy to clay, Well-drained
8-12	G	Annual, Medium	A/W & S/S	Loam to clay
5-12	G S	Annual, Medium	A/W & S/S	Sandy to clay
7-10	G	Annual, Long	A/W & S/S	Sandy to clay
18-25	G	Annual, Long	S/S	Sandy to clay

DM Dry Matter
ME Metabolic Energy
CP Crude Protein
NDF Neutral Detergent Fibre
G Grazing
H Hay
S Silage
A/W Autumn/Winter
S/S Spring/Summer

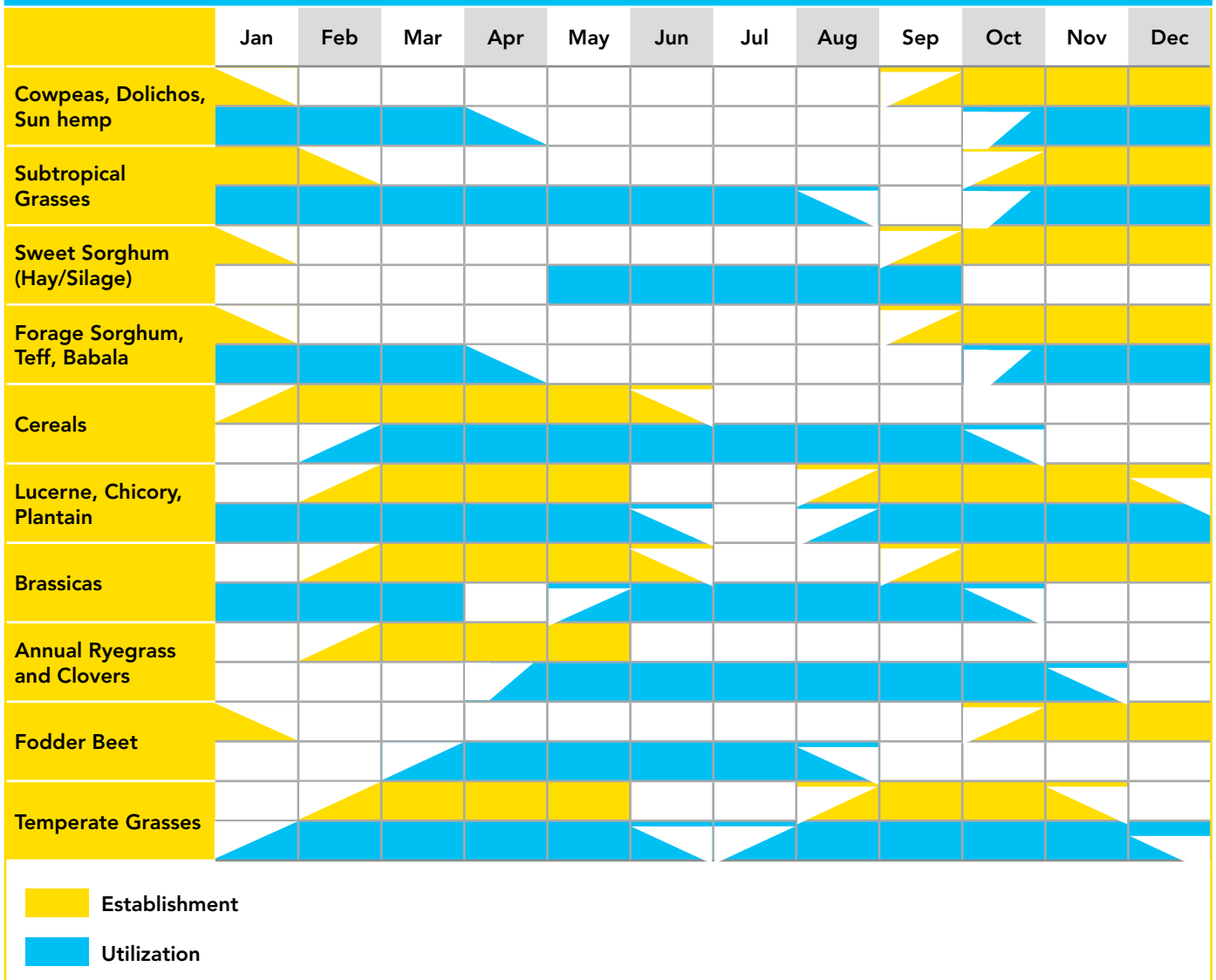
****General rule of thumb:**
Seeding depth = seed size x 10.
This can vary according to soil texture and moisture availability.

***Nutritional value and DM yield potential vary with different soil, climatic conditions, management and varieties.**





Guidelines for Fodder Flow Planning



A photograph of two men standing in a grassy field. The man on the left is wearing a blue short-sleeved button-down shirt and grey shorts, smiling broadly. The man on the right is wearing a dark blue short-sleeved button-down shirt, light blue jeans, and a pink and white baseball cap, also smiling. In the background, there is a large water fountain spraying water, and several brown cows are grazing in the field. The sky is overcast.

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