NOTMAN
PASTURE SEEDS

FORAGE OPTIONS

SPRING & SUMMER GUIDE

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ABOUT US

Notman Pasture Seeds is a family run business that supports the agricultural industry in Australia to improve productivity and efficiency through enhanced growth in the paddock.

Established by real farmers Peter & Elaine Notman, Notman Pasture Seeds has grown from a small business operating out of a garden shed on the family farm to a large organisation working with hundreds of farmers annually to improve their pasture and crop potentials.

A key aspect of the Notman Pasture Seeds culture is the continued focus on research through replicated pasture trials and making that data relevant to the bottom line of farmers. Pasture trials are continually monitored across southern Australia to ensure you receive the best advice.

Notman Pasture Seeds can provide you with all your seed requirements – whether it is for dairy, sheep, beef or any other paddock-based industry. Notman Pasture Seeds gives you real farm value and know-how.

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RESEARCH & DEVELOPMENT

All pasture and forage varieties available from Notman Pasture Seeds are thoroughly trialled and tested on farms throughout Australia & New Zealand to assess their performance capability under varying farming conditions.

Notman Pasture Seeds continue to work with our main suppliers to trials and demonstrate new & existing forage products.

Forage varieties are evaluated in these trials for a number of performance- related criteria, including dry matter yield and seasonal performance, pasture quality (including metabolisable energy, digestibility, protein, NDF, etc), persistence, and susceptibility to plant diseases and insect pests.

Where necessary, the company undertakes animal performance trials to assess the impact of its varieties on livestock performance and health.

All trials are conducted to strict industry-designed protocols, and managed by the company's technically skilled and experienced regional agronomists who are based throughout Australia & New Zealand.

A key aspect of the Notman Pasture Seeds culture is the continued focus on research through replicated pasture & cropping trials and making that data relevant to the bottom line of farmers.

ASSURE QUALITY TESTED

AsureQuality are the leading provider of testing, inspection, certification and verification services to the Australasian seed and grain industry.

For more information on AsureQuality visit: www.seedtesting.com.au

AsureQuality provides a comprehensive range of seed testing services for Notman Pasture Seeds, including:

- *Purity*
- *Germination*
- *Identification*
- *Moisture*
- *Weight*
- *Vigour*
- *Tetrazolium*
- *Health*
- *Lolium endophyte*

OUR NETWORK

Notman Pasture Seeds are proud to distribute products on behalf of these leading companies:

NOTMAN PASTURE SEEDS

QUALITY ASURED GUARANTEE NOTMAN SEEDS

CROPMARK SEEDS AUSTRALIA PTY LTD only the best!

PGG Wrightson

PIONEER® BRAND · PRODUCTS

farmalinx Partners in Agriculture

USING SUMMER FORAGES

FEATURED

BETTA GRAZE SORGHUM

INTRODUCTION

Spring and summer presents an opportunity to plant a forage crop for summer, autumn & winter feed.

As part of your pasture management program, spring & summer crops can grow valuable feed at key times when pastures are of low quality or quantity.

Dependent on a variety of factors, including environment, planting time, stock needs & water availability, there is a range of varieties available to suit your needs.

Forage brassicas are an extremely valuable, high protein, highly digestible feed source— offering establishment into cooler soils & the ability to mix pasture herbs and clovers into your summer forage blends.

Notman Pasture Seeds **Top Crop forage blends** are an excellent summer/spring option, producing high quality, high yielding, reliable feed during the summer period when normal pasture quality and production is declining.

KEY BENEFITS

- Cost effective source of dry matter compared to 'bought in feed'
- Produce large quantities of feed for a relatively low cost of production
- Be grazed where they are grown, eliminating additional costs associated with hay, silage and grain
- Break the perennial weed cycle using non-selective herbicides leading to more productive pastures
- Break clover pest and disease lifecycles (Nematodes/ viruses) for better clover content in subsequent pastures

Chicory is a highly palatable forage that is an excellent feed source for high livestock growth rates from late spring to late autumn.. It provides high quality feed through summer using summer rain, irrigation or stored soil water.

With it's long and fibrous root system allowing the plant to draw moisture and minerals from deep within the soil, the drought tolerance **Plantain** provides good year round growth and high quality feed.

Forage Sorghum & Millet with the right conditions—heat, moisture & fertility—can deliver strong early growth & large quantities of highly digestible dry matter. Irrigation is usually required for best performance.

Our proven range of **Maize** varieties suitable for both irrigation or dryland, deliver outstanding grain and silage yields with disease tolerance, stalk strength & balanced diets by providing good quality fibre, low protein while maintaining relatively good levels of energy.

TIPS FOR SUCCESSFUL CROPS

- Good agronomic advice is paramount
- High germination seeds (90% +) are a must.
- Control weeds and have an excellent cultivated seedbed.
- Soil clump size generally smaller than 50 mm.
- Address acidity problems, apply complete NPKS before planting, plus top up fertiliser after germination.
- Monitor for pests and take action if problems occur.
- Introduce stock slowly to enable the rumen to adapt.
- Good seed soil contact a must.

FORAGE BRASSICA

FEATURED
MARCO TURNIP

Forage brassica crops are an ideal complementary feed, especially when grass quality and quantity declines. Brassicas—highly digestible and low in fibre—play an important summer crop role in pasture renewal by providing high value feed & high yields when you need it most.

TURNIP (TANKARD OR GLOBE BULB)

Tankard type summer turnips are popular as a milking feed due to the exceptionally high yield potential from a single graze. They also have good leaf to bulb ratio which means high quality feed that offers good utilisation, reduced wastage & ease of harvesting.

Available turnips include the fast establishing Marco Tetraploid Turnip & high yielding Barkant turnip.

FORAGE RAPE

Forage rapes provide leafy, high quality feed which require a longer maturity time than hybrid leafy turnips. Forage rapes generally grow more dry matter from each grazing than leafy turnips and offer multiple grazing opportunities if moisture is available and the rapes are given the chance to re-grow.

Available forage rapes include the high yielding Pillar & the palatable Titan Forage Rapes.

LEAFY TURNIP

These are generally a multi-graze option with a very low ripening period. Leafy turnips offer quick spring, summer and autumn feed with the potential of providing up to 3-4 grazing's. They are more prone to stress during summer than forage rapes as they have a less prominent tap root.

Available leafy turnips include the early maturing Pasja II hybrid & flexible multi-graze Appin leafy turnips.

KEY BENEFITS

- Fast establishing home-grown feed
- Feed at key times when pasture low
- High regrowth potential & multi-graze options
- High dry matter yields & quality
- Improve soil structure & fertility
- Control weeds
- Efficient use of irrigation water
- Animal performance

CHOOSING A SPRING CROP

Multi or single grazing?

Single Graze		Multi Grazing	
Barkant	Marco	Titan Rape	Goliath
Australian Purple Top	Mammoth Purple Top	Pasja II	Appin
Fodder Beet		Pillar Rape	

How many days to grazing?

42-70	70-90	90-120	150+
Marco	Barkant	Goliath	Fodder Beet
Pasja II	Titan Rape	Australian Purple Top	
Appin	Pillar Rape	Mammoth Purple Top	

MANAGING FORAGE BRASSICA CROPS

Soil Test

A soil test is recommended to provide an understanding of the pH, fertility and nutrient levels. If the pH levels are below 5.8, then lime prior to sowing would be beneficial.

Using the soil test results will give a good idea of which fertiliser to use at sowing and the appropriate rates.

Fertiliser

Fertiliser is essential especially if paddock has a low fertility history. Generally sow with 100—200 kg/ha of D.A.P. Nitrogen can be applied in 3 weeks if the crop appears pale in colour, approximately 80-100 kg/ha.

If broadcasting with seed 100 kg/ha of DAP could be used, and spread within 4 hours to avoid seed damage.

Weed & insect control

Spray old pasture out early with Glyphosate and any pasture residue should ideally be grazed off or removed by other means before cultivation.

Control broadleaf weeds before sowing, as registered herbicide options are limited, Trifluralin 480 could be incorporated into soil pre-sowing. Incorporate into moist soil within four hours of spraying, and a clump size no larger than 50mm.

If paddock has a history of weeds then a pre emergent herbicide is essential.

Control brassica pests such as Lucerne flea, Earth mite and slugs with insecticide. For further advice on herbicides & insecticides contact your local agronomist at Notman Pasture Seeds.

Sowing

Mouldboard plough can be used on deeper soils where you won't be bringing up poor subsoil's such as clay, or alternatively disc then power-harrow.

The use of the plough tends to reduce the amount of weeds germinating due to the soil inversion (weed seeds are buried to a depth of 75-100mm) deep.

Sow into a cultivated seedbed. Broadcast from a power harrow, then harrow with light mesh, and roll. If direct drilling, surface needs to be even and sow no deeper than 1cm using 2 kg/ha. In dry soils, reduce rate.

Direct Drilling

Following chemical pasture control with Glyphosate, direct drilling can be used with the following varieties: Pasja II, all Forage Rapes, Chicory & Plantain. Increase sowing rate by 50% to ensure adequate plant density.

DIAMONDBACK MOTH

A KEY PEST IN BRASSICA CROPS

A key pest in brassicas, the Diamondback Moth can cause severe damage (can occur in only a few days) if your crops are not monitored regularly. In extreme cases, damaged crops have been ploughed in . Management starts with early detection to prevent the leaf-mining larva, that can be detected by the silver markings they cause on the leaf surface.

Insecticide does not control adults or eggs, so it is essential to spray larvae before they have developed from an egg to adult—which can be as short as 14 days in warmer temperatures (see below).

Ensure good spray application and use equipment (e.g. droppers) which gives good coverage of the plant, particularly on the undersides of the leaves. Before any spraying is undertaken, check grazing withholding periods (see page 8).

LIFE CYCLE

	SIZE	
Eggs	0.5mm	
Larvae	12mm	
Pupa	12mm	
Moth	10-12mm	

HOW LONG IS A DBM LIFECYCLE?

Constant Temperature	12°C	15°C	25°C	28°C
Generation Time (egg to egg)	113 days	47 days	17 days	14 days

MANAGING FORAGE BRASSICA CROPS (CONTINUED)

Grazing Management

This is important for many of the older type forage rapes where the leaves needed to turn a bronze purple colour which indicated that the crop was ready to introduce stock.

Don't allow stock sudden unrestricted access to a brassica crop. Sudden access can upset the balance of rumen microbes, resulting in poor animal performance, scouring and ruminal acidosis.

Start by grazing the crop for no more than 1-2 hours per day, building up to a maximum allowance over at least 7-10 days.

Break feed brassicas to ensure that the high quality leaf is balanced with stalks or bulbs. Break feeding or strip grazing will improve utilisation as well as allow maximum re-growth potential of the forage rape crop or leafy turnip.

They can also be grazed in conjunction with summer dry pasture to help balance the diet.

Animal Health

Good animal health management and monitoring limits problems associated with grazing forage brassicas.

Monitor nitrate levels in overcast conditions and following periods of drought & frost to identify possible nitrate issues.

Grazing brassicas as a high proportion of the diet can put young animals at risk of pulpy kidney. Vaccination before animals go onto the crop can reduce the risk of illness

High levels of SMCO (S-Methyl Cysteine Sulphoxide) can occasionally cause red water in ruminants, particularly in cattle grazing kale.

Restrict excess nitrogen and sulphur fertiliser applications (especially on soils already high in sulphur) and avoid feeding flowering brassica's.

INSECTICIDES FOR BRASSICA CROPS

Product	Pests Controlled	Application Rate	Application comments
AlphaCyper 100	Cabbage Moth, Cabbage White Butterfly, Native Budworm, Cotton Bollworm	400 mL/ha	Add wetting agent for best results. Use 300-400 L of water/ ha. Treat every 7-10 days if required **Withhold period is 1 day (for Turnip)**
Success™ NEO	Diamondback moth, Cabbage white butterfly, Cabbage cluster caterpillar, Centre grub, Corn earworm (heliothis), Native budworm,	100-200 mL/ha	Use a minimum spray volume of 50 L/ha. Ensure thorough crop coverage by increasing water volume with plant growth stage. Add a non-ionic wetting agent at the recommended rate. ***Withhold period 3 days.***

See our full range of affordable agricultural chemicals available to protect your crops on page 29-30.

FEATURED

CROPPING FIELD DAY

TURNIPS

Cropmark Marco Tetraploid Turnip

55-65 days | 1-4 kg/ha | 700mm / Irrigation

- The earliest maturing turnip available (only 55 -65 days from sowing to grazing)
- High yielding
- Tetraploid quality – high metabolisable energy & digestibility
- Large bulbs with high bulb to leaf ratio
- Excellent bulb storage quality (can be grazed up to 90 days after sowing)
- Resistance to club root and bolting

The fastest establishing turnip

The earliest maturing summer turnip available in Australia, Marco is a tetraploid, tankard type, having an interval from sowing to grazing of just 55-65 days.

Marco has a high root to leaf ratio, with large bulb size and good bulb storage ability. It is highly palatable, high ME content, has excellent bolting resistance and high club root resistance.

Marco can be used as a high yielding summer turnip crop in higher rainfall regions of Australia, and with all livestock types.

Its very short interval to grazing means less time out of pasture and sowing date flexibility. It can sit well in the paddock for up to 90 days after sowing.

Two crops of Marco in one season are possible, and can be late sown for example after a previous crop failure.

Pasja II hybrid leafy turnip performance bred®

- High dry matter yields & reduced bolting
- Multi-graze option with excellent regrowth potential
- Fast establishing
- Minimal ripening required

One of the fastest brassica feed options

Pasja II – the brassica to choose when fast (42-70 days), high quality spring/summer/autumn feed is needed for all stock classes. Pasja II combines early maturity with yield and the option for multiple grazings (potential yield of 12,000kg DM/ha over multiple grazings), providing quality fast feed you can rely on. If direct drilling, increase sowing rate by 50%.

42-70 days | 3-6 kg/ha | 500mm / Irrigation

Barkant turnip performance bred®

- Very high dry matter yields
- Very good energy
- Tankard bulb shape to reduce risk of choking
- Early maturing excellent summer feed
- High leaf to bulb ratio

The perfect balance for summer pastures

Barkant bulb turnip - the highest yielding summer bulb turnip in the business. You deserve the best turnip on the market and your stock deserve the best quality feed. Barkant offers proven performance year after year & delivers supplementary protein as leaf and water soluble carbohydrates as bulb.

70-90 days | 1-4 kg/ha | 800mm / Irrigation

Ceres APT Australian Purple Top Turnip

- Improved Diamondback Moth tolerance
- 12-14 weeks to mature, summer turnip
- Selected in dryland conditions
- Certified alternative to Mammoth Purple Top turnip

High yielding tolerant turnip

Australian Purple Top is a purple top/white base, bulb-type turnip used traditionally in hard, drier regions, for summer feed. The key advances of this variety is the selection for improved drought and Diamondback Moth tolerance.

42-70 days | 1–4 kg/ha | 500mm / Irrigation

Appin leafy turnip performance bred®

- Excellent option for quick winter feed
- Tops and bulbs are highly palatable
- Re-grazing in 30 days is possible if initial grazing is managed well
- Highly compatible with annual and Italian ryegrass mixes

Flexible, multi-graze leafy turnip with high winter growth rate

Appin is a great quick winter feed option that can maximise the value & return from your pasture system. Tops can be grazed initially, then re-growth of leaf and bulb will occur after a short spell. Sow from September to December and February to April.

42-70 days | 1-4 kg/ha | 600mm / Irrigation

Cropmark Pillar Forage Rape

80-110 days | 3-6 kg/ha | 600mm / Irrigation

Higher yielding multi-graze rape

- Leafy, giant-type multi-graze forage rape
- Very fast establishing
- Very high yield potential
- Very good re-growth potential
- Good disease resistance
- Can be sown in spring or autumn
- Suitable sheep, cattle and deer

Pillar is an exciting new, fast establishing, high yielding multi-graze giant-type forage rape with strong re-growth potential, good aphid tolerance and disease resistance.

Pillar can be used as a flexible 2-3 graze forage crop, sown in either spring or autumn to provide fast establishing summer or autumn/winter feed.

The dry matter yield potential of Pillar is proving on farm to be a real highlight, as is its flexibility for spring or autumn sowings

Pillar is suitable for all livestock types and farming systems and is an ideal break crop as part of a re-grassing programme.

Pillar has shown consistently high yields, with strong re-growth and good disease resistance in trials.

Titan forage rape performance bred®

- High animal preference forage rape cultivar
- Multi-graze option with excellent regrowth potential
- Very good aphid and virus tolerance
- Early maturing

The tasty forage rape

Titan combines early maturity, high dry matter yields and exceptional tastiness to deliver a high quality summer/ autumn/winter feed option. Strong regrowth potential offers multi-graze options for all grazing systems. Titan forage rape is a intermediate height rape with kale genetics used to give increased tolerance to virus & aphids.

70-90 days | 3-6 kg/ha | 600mm / Irrigation

Goliath® forage rape performance bred®

- Very high dry matter yields
- Multi-purpose forage rape from spring/ summer/ autumn establishment
- Improved hardiness & superior regrowth potential
- Very good aphid tolerance

Very quick feed due to minimal ripening

Goliath® performs strongly from spring/summer/autumn establishment, delivering feed when you need it. Graze Goliath® once or take advantage of superior regrowth potential for multiple grazings; the perfect flexible feed option for all stock classes.

90-120 days | 3-6 kg/ha | 500mm / Irrigation

GRAZING FORAGE RAPE

- Introduce livestock to crop (1-2 hours a day), building up to a maximum allowance over at least a 7-10 day period to allow rumen microbes to adjust to the high quality forage.
- Feed dry stock and dairy cows no more than 70-80% and 33% of the diet as brassicas
- Prevent gorging & help rumen microbes adjust by feeding extra fibre prior to and while grazing forage rape crops
- Do not feed frozen brassica to stock, feed silage/hay in the morning then shift the break in the late-morning/early after-noon.

FODDER BEET

Fodder Beet, a cross between mangels and sugar beet, is potentially the highest yielding winter forage options available to farmers currently. It is an attractive option with its palatability, digestibility and very good disease tolerance. It aims to combine the ease of harvest of mangels with the high dry mater yields and high sugar levels of sugar beet.

For further information on Fodder Beets please request our Fodder Beet Management Guide or contact your local representative.

- High yield potential (20 t DM/ha+)
- High ME value (12-13 MJ ME/kg DM) and utilisation (typically 90%), for improved animal performance.
- Relatively low cost c/kg DM at high yields.
- Unaffected by most brassica diseases.
- Versatility.

Cropmark Fortimo Fodder Beet

80,000-100,000 seeds per hectare | DM 14-16 % DM | +/- 45% Bulb % above ground

Fortimo is a high yielding, mono-germ fodder beet which has a large red tankard shaped bulb that sits approximately 45% above the ground. It has strong cool season growth and clean, dark green leaves with very good disease tolerance, giving ex-cellent performance. Fortimo has a medium DM content bulb at approx. 14-16% DM. Fortimo can be grazed in-situ, lifted and fed whole or chopped.

- Good seedling vigour and cool climate growth
- Very good disease resistance giving clean, darkgreen leaves
- Good tolerance to bolting
- Suitable for all livestock types and farming systems, including irrigat-ed and dryland

Cropmark Betimo Fodder Beet

80,000-100,000 seeds per hectare | DM 14-16 % DM | +/- 45% Bulb % above ground

Betimo Fodder Beet is a medium dry matter content, mono-germ fodder beet with large red tankard shaped bulbs. Betimo is bred with the latest genetics and has improved disease toler-ance giving more clean, green leaf. It has good bolting tolerance and can be grazed in-situ, or be lifted and fed whole or chopped.

- Medium dry matter variety with large bulbs
- Strong foliar growth producing large tops
- Very good bolting and disease tolerance
- Suitable for grazing in-situ or lifting

Cropmark Geronimo Fodder Beet

80,000-100,000 seeds per hectare | DM 15-17 % DM | +/- 45% Bulb % above ground

Geronimo is a newly released mono-germ fodder beet originat-ing from France. It has a yellow – orange tankard shaped bulb that sits approximately 45% above the ground. It is a high yield-ing variety with medium dry matter content at 15-17% DM, with very good tolerance to the diseases Rhizomania, Ramularia and Mildew. The crop can be grazed in-situ, lifted and fed whole or chopped.

- Consistently high yielding with medium Dry Matter content bulbs
- Large top growth & very good bolting tolerance
- Very good tolerance to diseases rhizomania, ramularia and mildew
- Suitable for sheep, cattle and deer for grazing in-situ, or lifted

Cropmark Lactimo Fodder Beet

80,000-100,000 seeds per hectare | DM 14-16 % DM | +/- 45% Bulb % above ground

Lactimo Fodder Beet is a very high yielding monogerm fodder beet which has a yellow – orange tankard shaped bulb that sits 45-50% above the ground. It has good seedling vigour and strong foliar growth producing very big tops with very good disease and bolting resistance. The crop can be grazed in-situ, or be lifted and fed whole or chopped.

- Medium dry matter variety
- Very good bolting tolerance
- Good seedling vigour
- Very good disease resistance

FEATURED

PLANTAIN

Plantain is a moderate drought tolerant herb with a fibrous, coarse root system that is best suited to dairy farm situations where the amount and quality of summer feed limits milk production.

MANAGEMENT

Despite it's moderate drought tolerance, Plantain still requires moisture to grow well; and under severe drought growth will be reduced. Producing between 10-19 t DM/ha/year with an average of 16 t DM/ha (High yields coming from crops under irrigation).

Sowing

For optimum growth and persistence, Plantain is best sown in high fertile soils with temperatures of 12°C and rising.

Plantain sowing can be adapted to a wide range of soil and climatic conditions (for example Autumn), however a Spring sowing using direct drilling & depths of no greater than 1cm
is recommended as the plant develops quickly and will reach its full potential through Summer & Autumn.

Mixed with ryegrass & Clover, Plantain can be added at 2-4 kg/ha, whilst in special purpose crops the recommended seed mix is 8-10kg/ha.

KEY BENEFITS

- Year round growing pattern
- Deep taproot for good drought tolerance
- High nutritive & mineral contents
- Quick to establish
- Performs reasonably well on low fertility soils

Fertiliser & weed control

Plantain establishment will be vastly improved with the application of Nitrogen fertiliser (70 kg/ha Urea) and control of broadleaf weeds.

Grazing Management

Graze plantain 7-8 weeks following spring sowing & no earlier than the six-leaf plant stage. Dairy animals should graze 3-4 kg DM per day.

'Ceres' TONIC plantain

- Valuable year-round production
- Source of key minerals – calcium, sodium, copper, selenium
- Degree of drought tolerance due to coarse deep root system
- Strong cool season growth
- Exceptional animal growth rates in late winter and spring
- Suits a wide range of environments and soil conditions

4-10 kg/ha

450 mm / Irrigation

Exceptional animal production

Tonic plantain is a mineral-rich perennial grazing herb. It is a valuable pasture for the supply of minerals and dry matter production, particularly in drier regions and less fertile conditions.

Tonic contributes invaluable dry matter production, typically at times of the year when ryegrass and other species, e.g. white clover, are not performing.

Tonic has a deep, coarse, root system, which gives it a degree of drought tolerance and the ability to respond quickly after summer-dry conditions.

CHICORY

FEATURED

CHICO CHICORY

Chicory is a deep-rooted broad-leafed perennial herb, which has proven to be an excellent source of high quality & yielding feed from late spring to late autumn.

Chicory produces leafy top growth and has a thick, deep taproot—which can go down up to 1.5metres—giving it excellent drought tolerance and mineral extraction.

Chicory has good disease resistance, insect tolerance, along with tolerance to acidity and has been successfully grown in soils with low pH soils.

Understanding whether a perennial type or a bi-annual type is needed must be the initial decision which should make the variety selection a little simpler.

BENEFITS

- Highly palatable forage
- Excellent feed source for high livestock growth rates
- Provides high quality feed through summer using summer rain, irrigation or stored soil water
- Able to produce high quality forage on acid soils
- Recovers quickly after grazing
- Can be used for silage production as part of a pasture mix.

CHICORY MANAGEMENT

Preparation

Control broadleaf weeds before sowing, as registered post - emergence herbicide options are limited. Paddock preparation should aim to start a year ahead of sowing.

Spray paddock with Warlord Glyphosate— 3-6 L/ha - if you believe summer grasses may be a problem use the higher rate.

Cultivate *deep soils* with a mouldboard plough to a depth of 10cm with no grass showing.

For *shallow soils*, there are a number of cultivation options, however we recommend using a disc to level and break down clumps. This would normally need two passes.

After this pass and before the final pass spread fertilizer and apply pre emergent (see fertiliser).

Sowing Temperature & Soils

Chicory seed is sensitive to the cold therefore spring sowing is recommended, however early autumn sowing is possible, as long as the chicory has established before going dormant in the cool season.

Chicory prefers soils that are free draining, avoiding very wet soil types of water logging areas. For irrigation, water the soils before planting. Plant when soils have dried out.

Fertiliser

Chicory prefers well drained soils and moderate to high soil fertility. Apply phosphate at 20kg/ha P and nitrogen at 30kg/ha N at, or immediately prior to sowing unless soil P and N levels are high.

Insect & Weed Control

Prior to sowing, using pre-emergent herbicide is important to control some grass weeds as well as wireweed.

Avoid sowing chicory where broadleaf weeds are a known problem until such time that they have been reduced significantly to allow chicory to establish without too much competition.

Following spraying, power harrow (to a depth of 7cm) to incorporate herbicides (within four hours of application).

Red Legged Earth Mite is the most damaging pest to chicory. These can be managed in a chicory pasture by using an insecticide, however, it is recommended to use Ultrastrike® treatment if pests are a problem.

Sowing

Chicory will establish very quickly when soil temperatures are high and soil temperature is adequate.

Sow chicory seed at a rate of 6-10 kg/ha at a depth of 1cm, extended to 2cm for sandy & dry soils.

CHICORY MANAGEMENT (CONTINUED)

Chicory combines well with other grasses and clovers and can be added to a pasture mix at 0.5-2.0kg/ha.

Chicory stands are established at 6-10kg/ha with white and/or red clovers at 6-10kg/ha. (NB. Chicory could be sown with a clover to provide it with Nitrogen.)

Grazing Management

Chicory should be rotational grazed to achieve optimum performance and persistence from your crop. Graze when the chicory has reached 35cm, applying 80 kg/ha Urea after each grazing if moisture is present.

Dependent on climate, graze chicory at 35cm again – at approximately 20-35 days after first grazing.

Ensure the crop is not grazed below 5cm or after flowering or damage to the crown in wet conditions as this will affect production & persistence.

Cropmark Chico Dependable Chicory

50-70 days | 6-10 kg/ha | 500mm / Irrigation

Rocket fuel for livestock performance

- Very high quality, high yielding summer forage crop
- High in metabolisable energy and minerals
- Very high livestock performance potential
- Improved summer-dry tolerance
- Fast establishing and rapid re-growth
- Leafy, succulent and palatable (stock take to it readily)
- Won't cause grass staggers or facial eczema

A high yielding, very high quality and leafy chicory showing fast establishment, rapid re-growth, strong insect resistance and good drought tolerance.

Chico is noted for its strong summer, autumn growth providing high quality summer forage and making it ideal as a specialist summer crop for high livestock performance systems.

Chico can be used as a specialist and flexible multi-graze summer forage crop for finishing stock, and maximizing milk production,

It is suited for use with all livestock types, and for use throughout the country, but particularly in summer-dry regions as a summer safe forage.

Grasslands Puna II chicory performance bred®

55-85 days | 6-10 kg/ha | 500mm / Irrigation

High nutritious feed from spring to late autumn

- High yielding
- Excellent drought tolerance
- Highly palatable
- Good disease resistance and insect tolerance

Puna II is the leading perennial chicory variety, selected through a long term breeding programme in New Zealand for its nutritive value, productivity, palatability and persistency.

A true perennial, Grasslands Puna II delivers highly nutritional premium quality feed and high dry matter production from spring to late autumn.

A leading broad-leaved perennial forage crop for medium-long term grazing (2-5 year persistency). It is also known for its drought tolerance and mineral supply (both functions of a deep tap root) and for its potential to reduce worm burdens in grazing livestock.

TOP CROP BLENDS

Have you considered our premium Top Crop blends? Our **Top Crop Brassica & Herbs** & **Top Crop Brassica, Herb & Millet** produce high quality feed with excellent regrowth. For more information, see page14.

top crop forage blends Brassica & Herbs

top crop forage blends Brassica, Herb & Millet

TOP CROP BLENDS

HIGH QUALITY SUMMER FEED

Our Top Crop blends are unique summer forage varieties that can deliver high quality summer feed with excellent regrowth & reliability in the drier conditions.

Top Crop blends have a proven track record for reliable summer production under all conditions, delivering feed When you need it most.

Our blends aim to optimise summer feed by producing more tonnes of dry matter per hectare compared to traditional pasture methods. They also provide an ideal break crop over the summer period before planting in Autumn.

Notman Pasture Seeds agronomists provide expertise, advice and guidance on the preparation, sowing & management of all our Top Crop blends.

BENEFITS

- High in metabolisable energy and minerals
- Very high livestock performance potential
- Excellent regrowth potential
- Reliability in drier conditions; improved drought tolerance
- Produce more feed compared to traditional pasture management practices
- Ideal break crop as past of re-grassing programme.

50-70 days | 6-16 kg/ha | 650mm / Irrigation

top crop forage blends

Brassica, Herb & Millet

Good summer feed with excellent regrowth

Our Notman Pasture Seeds **Top Crop Brassica, Herb & Millet** blend of Millet, Chico Chicory & Pillar & Titan Forage Rape can produce good summer feed with excellent regrowth under hot conditions given moisture availability.

Expect a rotation of around 25 days following each grazing's with suitable conditions.

Top Crop Brassica Herbs & Millet: 24kg per bag

50-70 days | 12-20 kg/ha | 650mm / Irrigation

top crop forage blends

Rape & Millet

Reliable feed that can handle the dry conditions

Our Notman Pasture Seeds **Top Crop Rape & Millet** blend of Pillar & Titan Forage Rape & Millet is a reliable crop that can handle the dryer conditions and still produce good quality feed in 10-12 weeks.

Expect a rotation of around 25 days following each grazing with suitable conditions.

Top Crop Rape & Millet: 24kg per bag

FEATURED

RAPE & MILLET

50-65 days | 8 kg/ha | 650mm / Irrigation

top crop forage blends

Brassica & Herbs

High quality feed with multiple grazings

Top Crop Brassica & Herbs contains a unique blend of Pillar & Titan Forage Rape, Pasja II, Chico Chicory & White Clover that can produce very high quality feed within 6-8 weeks of sowing.

It's strong regrowth deliver an opportunity for multiple grazing's when moisture is available. Expect a rotation of around 30 days following each grazing with suitable conditions.

Top Crop Brassica & Herbs: 24kg per bag

70-95 days | 5 kg/ha | 650mm / Irrigation

top crop™ forage blends

Turnip & Millet

Reliable & high dry matter yields

Our Notman Pasture Seeds **Top Crop T&M (Turnip & Millet)** is a blend of Marco Turnip & Shirohie Millet. Top Crop T&M is a safe reliable crop that can handle the dryer conditions and still produce good quality feed in 70-95 days.

Marco Turnip is the earliest maturing summer turnip available in Australia. Marco has a high root to leaf ratio, with large bulb size and good bulb storage ability. Blended with Millet for multiple grazing's, Top Crop T&M produces high levels of summer feed & regrowth when moisture is available.

Top Crop Turnip & Millet: 20kg per bag

MAIZE

FEATURED

PIONEER BETTA STRIKE MAIZE

Maize is one of the worlds most widely grown crops, offering very high yields for both grain and silage. The yield potential of maize will vary between districts and farms because of water availability, altitude, sunlight, soil structure and soil fertility.

Yield potential will also vary between seasons at the same site depending basically on the season (e.g. heat wave, drought) as well as choice of hybrid, sowing time and other associated management decisions (e.g. type and quantity of fertiliser applied and its timing).

MAIZE MANAGEMENT

The most profitable maize crop is obtained by optimising (rather than maximising) the key inputs such as seed, fertiliser and water.

Although too often farmers have effectively used the optimum level of inputs but have not achieved the optimum high yield – usually because of poor timing of inputs or poor crop management. The recommended steps will address each of these aspects of growing a profitable maize crop.

Autumn preparation

Perennial weeds will cause a significant reduction in your maize yield if they are not controlled. Autumn control is more effective since the plant is actively growing.

If the total area is infested with perennial weeds, spray out the whole paddock and plant a winter crop such as winter growing greenfeed oats or Italian ryegrass.

Soil tests will indicate whether lime or potash should be applied prior to planting.

Waterlogged Soils

Maize does not perform well in waterlogged soils—encouraging weeds & summer grasses to invade the crop, reducing yields & contaminating the resulting silage crop. Drain areas where water ponds to allow earlier cultivation and better weed control.

Seedbed preparation

Bring the seedbed to a clump size no larger than a maize seed. A well-prepared seedbed enables weed control chemicals and insecticides to give optimum results, enhances crop establishment and allows planting machinery to function more accurately.

Growers with hard setting soils should implement practices such as deep ripping to break hard pans and permanent beds or zero-till to improve moisture infiltration to the root zone of the crop.

Sowing temperature—when can I plant?

Maize seed needs a minimum temperature of 12°C and rising to commence planting—so measure soil temperature (at depth of 5cm) at 9am over five consecutive days to determine appropriate planting time.

Fertiliser

Maize crops have a high requirement for fertiliser, so it is important high rates of nitrogen, phosphorus and potash be applied before & during crop growth.

A balanced fertility program is therefore a major step towards obtaining higher yields. As the roots begin to take over the job of nourishing the plant, shortages of major nutrients can seriously slow growth and development.

Spread 350 kg/ha Urea, 350kg/ha MOP (Potash) & 150kg/ha Superphosphate.

At planting, apply 250-400 kg/ha of D.A.P 5 cm to the side and 5 cm below the seed row.

Nitrogen Sidedressing is an essential part in maximising your maize silage yields, with an application of Urea (100-200kg/ha) at approx. 4 weeks post planting or just prior to row cover. Urea is the most commonly used nitrogen product, although calcium ammonium nitrate (CAN) is a worthy alternative if conditions look like remaining very dry.

Pre-emergent—before final cultivation

Pre-emergent Atrazine 900 (2.5kg/ha) & Metolachlor 720 (1.8L/ha) herbicide will be most effective if incorporated into a well

P1070 BETTA STRIKE—MID SEASON

worked seedbed (within four hours of spraying) to a depth of 3-4cm. Clumps no larger than 5cm. To be most effective it needs 10mm of rain, irrigation or good soil moisture.

Sowing

Maize hybrids must be precision planted—choose a competent contractor for sowing and harvesting your maize for the most economical option.

Planting seed to a depth of 3.5-5cm is optimum for seed germination & development. If planted too shallow it can (1) delay or inhibit the development of brace roots which are the primary tools for water & nutrient uptake; and (2) expose seed to herbicide residues.

Each variety varies in seed size, so check the number seeds per kilogram & the optimum population of plants per hectare. This generally falls between 80,000 & 100,000 plants.

Crop Emergence: From approx. 6 days after planting check crop emergence. Full emergence occurs 7 to 14 days from planting depending on temperature. Inspect daily for insect damage.

Weed & Insect Control

Weeds and pests have a major impact on the yield and performance of the crop - so regular crop inspections will limit major damage taking place.

Maize is quite sensitive to weed competition in the early stages of growth up until it reaches about 0.8 m in height. Inter-row cultivation can be done up until the Maize crop reaches about 0.75 m in height. After that the crop canopy closes over and the Maize competes well with weeds.

If post emergence weeds occur please consult an expert Maize agronomist.

The most effective control against the two most damaging insects to maize, Wireworm and Cutworm is ensuring a long (at least 5 weeks) fallow period. Control with Lorsban.

However, in most cases this is impractical, so it may be necessary when the fallow period is short to combine the use of an insecticide-coated seed & a post emergent herbicide.

Using an insecticide-coated seed such as Gaucho—42 day withholding—usually controls wireworm and Black Beetle. Ask for insecticide treatment when you order your maize seed.

KEY BENEFITS

- It is the highest quality commonly-used concentrate with higher energy levels than other grains, molasses, palm kernel extract and the majority of dairy meals.
- It is more slowly digested in the rumen than other grains, decreasing the risk of acidosis.
- It has a high starch content which drives milk protein percentage. Since milk protein is worth substantially more than milk fat, this increases milksolids returns.
- It's low nitrogen content means it can be used to reduce urinary nitrogen levels, decreasing nitrogen leaching.
- Maize grain is locally grown which means its price and supply is not subject to the exchange rate or overseas demand.

MAIZE ACTION PLAN

September

- Soil Test
- Select maize variety
- Yield targets
- Pre-order seed

October & November

- Seedbed preparation
- Fertiliser —pre-sowing
- Pre-emergent & power harrow
- Precision sowing & fertiliser

December

- Nitrogen—if moisture available
- Pest inspection & control
- Weed Management
- Summer Grass Management

January & February

- Regular crop inspections
- Prepare silage pit
- Plan harvest logistics

March & April

- Order Inoculant—11CFT
- Harvest crop
- Ensure stack is rolled and sealed well

MAIZE

Milk line self check

The whole plant dry matter can be estimated by looking at the milk line of the grain. To check whether your crop is in the range of 32-40 percent dry matter take a cob from a plant that is at least 20 rows into the crop. Break the cob in half and discard the end of the cob that was attached to the plant.

Hold the point of the cob downwards and remove a kernel from the snapped end. Keep the kernel the same way up as when you removed it from the cob. Slide your fingernail along the length of the kernel starting at the flat (dented) end of the kernel. On a 1-5 scale, with 1 being containing no hard starch and 5 being black layer, the optimum chopping time is when the milk line is between position two and three on the kernel.

Crops under Irrigation

Timing of the final irrigation should enable the crop to survive on moisture in the soil until the crop is harvested. Ensure the crop is not moisture stressed leading into harvest. Grain fill is occurring through to harvest and limiting water will reduce yield.

When to harvest

The ideal time to harvest your maize silage crop is when the whole plant dry matter is between 32- 40%.

Harvesting too early will result in high losses as plant fluids run from the silage stack/bunker taking away valuable sugars. Late harvest may result in loss of quality—increasing in fibre and becoming less digestible.

Some hybrids only offer a 4-5 day harvest window, while others offer 8-15 days. This allows for harvest delays due to weather, machinery breakdown or contractor hold-ups. Harvest chop length should be 8-12mm average.

Storage & Compaction

For stacked silage, spread into 100-150 mm layers and compact until the surface is firm. The average density of a maize silage stack is approximately 200 kg of dry matter (DM) per cubic metre with a range of 150-275 kg DM per cubic metre.

The average density of a maize silage bunker is approximately 225 kg DM with a range of 175-300 kg DM.

Sealing

Cover stack with a quality plastic cover (minimum 125 micron thickness) and weigh it down with tyres that are touching. If using an old cover spray with disinfectant to kill any undesirable micro-organisms. Important to seal the edges to avoid silage spoilage.

NUTRIENT REQUIREMENTS

Plant nutrients consumed by a maize crop

		KILOGRAMS PER HECTARE				
Corn: Grain and Silage		**N**	**P**	**K**	**S**	**Mg**
5.5 t/ha grain	Grain	121	19	24	9	11
40 t/ha green chop	Stover	44	7	97	11	20
(12.8t dm/ha)	**Total**	**165**	**26**	**121**	**20**	**31**
7 t/ha grain	Grain	136	24	30	11	13
50 t/ha green chop	Stover	54	10	120	13	25
(16t dm/ha)	**Total**	**190**	**34**	**150**	**24**	**38**
8.5 t/ha grain	Grain	151	28	36	13	15
58 t/ha green chop	Stover	64	12	143	15	30
(18.5t dm/ha)	**Total**	**215**	**40**	**179**	**28**	**45**
10 t/ha grain	Grain	176	32	41	15	17
65 t/ha green chop	Stover	74	14	167	17	35
(20.8t dm/ha)	**Total**	**240**	**46**	**208**	**32**	**52**
11 t/ha grain	Grain	190	35	45	16	18
70 t/ha green chop	Stover	80	15	180	18	35
(22.4t dm/ha)	**Total**	**270**	**50**	**225**	**34**	**56**

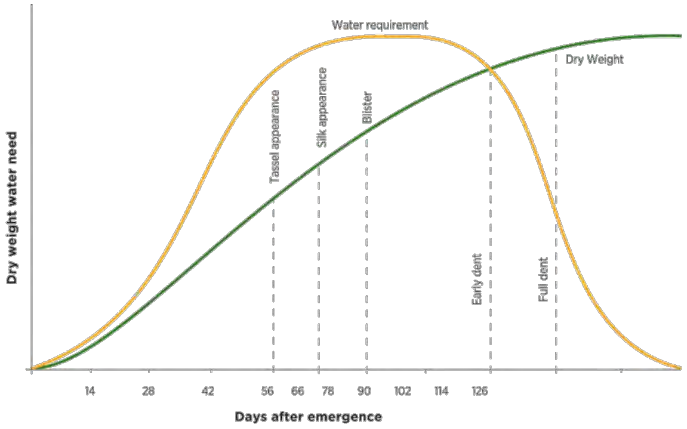
It should be noted that these figures are not absolute values. There can be variations up to 10 percent depending on conditions. Of special note is that silage removes more nutrients than grain alone, especially potassium

Weekly requirements (as per % of total need)

MATURITY	%N	%P	%K	% WATER
17 weeks	<1	<1	-K	<1
16 weeks	<1	1	-K	1
15 weeks	<1	2	-K	2
14 weeks	<1	5	-K	3
13 weeks	2	8	-	5
12 weeks	4	19	-	6
11 weeks	6	11	1	8
10 weeks	10	13	5	11
Silking	12	15	8	12
Tasseling	16	11	16	12
7 weeks	15	10	20	11
6 weeks	14	7	21	10
5 weeks	11	4	16	7
4 weeks	7	2	9	5
3 weeks	2	1	3	4
2 weeks	<1	<1	1	2
1 week	<1	<1	<1	1
Emergence	<1	<1	<1	<1

WATER MANAGEMENT

Water Requirements of Corn (Dry weight gain (figure A)



Crop growth & water requirements

The relationship between a crop's growth and water is best be shown by drawing the water requirement curve over the weight gain curve (figure A).

When is water needed?

Water need increases rapidly from about two weeks prior to tassel and ear appearance until about two weeks after full silk and then decreases rapidly. Figure A only compares water need & dry weight accumulation on a days after emergence basis.

Research shows that the total amount of water used by high yielding crops is only slightly more than that used to produce low yields. Weed control, fertiliser, plant population & maize variety are crucial factors to minimising water usage.

Making the most of limited water

It is generally considered that yield is lost when corn is visibly wilted for four consecutive days. When corn plants become stressed, the lower parts of the plant wilt and suffer damage proportionately more than the upper parts.

Hybrid varieties play an important role in yielding well in spite of considerable moisture stress.

FEED OUT MANAGEMENT

Getting the most out of your feed

Keep the face of the maize silage stack tight throughout the feed-out period, preventing air to penetrate into the stack.

Allowing (oxygen loving) bacteria access to break down the plant material will produce carbon dioxide, heat and water.

Careful use of the tractor bucket at feed-out time will minimise loosening of silage. Avoid digging into the stack as this loosens silage that will not be fed for several days.

Scoop out the lowest section of silage, then using the bucket blade, chip down the silage one section at a time from bottom.

Introduce maize silage into the diet over a period of 5-10 days. Start by allocating each animal 1-2 kg dry matter and increase the amount that you feed each day

IMPORTANT TIPS

- Keep face of maize silage stack tight
- Never feed mouldy or rotten silage to your animals.
- Careful use of the tractor bucket at feed-out time will minimise loosening of silage.
- Chip down the silage one section at a time starting at the bottom.

MAIZE

CHOOSING A VARIETY

GRAIN YIELD FOR MATURITY	*9 = High grain yield for the CRM*	Valid to compare hybrids of a similar maturity (CRM) (+/– 4 CRM)
COB ROT RESISTANCE	*9 = Shows very high resistance to cob rot*	
SILAGE YIELD FOR MATURITY	*9 = High silage yield for maturity*	Valid to compare hybrids of a similar maturity (CRM) (+/– 4 CRM)
HUSK COVER	*9 = Complete coverage of grain through to harvest*	Measures the length and tightness of the husk cover
DRYLAND ADAPTABILITY	*9 = Ability to handle hot dry stress conditions*	
STAYGREEN	*9 = Excellent ability to maintain green leaves during grain fill and good late season plant health*	
PLANT HEIGHT	*9 = Tall 1 = Short*	
NORTHERN LEAF BLIGHT	*9 = Completely free of NLB (very high resistance)*	
WHOLE PLANT DIGESTIBILITY	*9 = Very high whole plant digestibility*	Whole plant digestibility percentage (DM basis) as predicted by NIR

WHAT IS CRM?

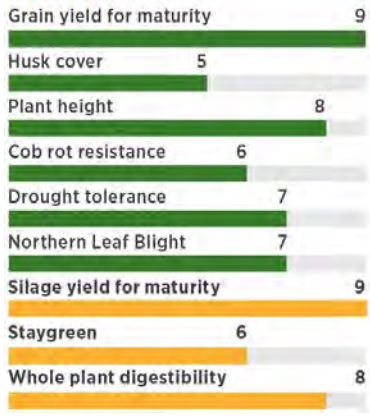
CRM stands for Comparative Relative Maturity. It is a number used by Pioneer to compare the maturity of one corn hybrid compared to another. It is a 'unit less' number and should not be related directly to 'days'. For example, it is not a number that refers to the number of days from planting until physiological maturity, as this will vary greatly with planting time and seasonal conditions. Generally, a hybrid with a smaller CRM will flower, fill grain and be ready for harvest more quickly than a hybrid with a larger CRM.

SHORT SEASON

P9400 — CRM 94

Outstanding quick hybrid. P9400 is a feed and grain silage hybrid with an excellent agronomic profile. A tall dense plant producing high grain content silage

- Excellent agronomic profile
- Strong early growth and good stress tolerance
- Excellent quality silage with high grain content
- Outstanding grain yield for maturity



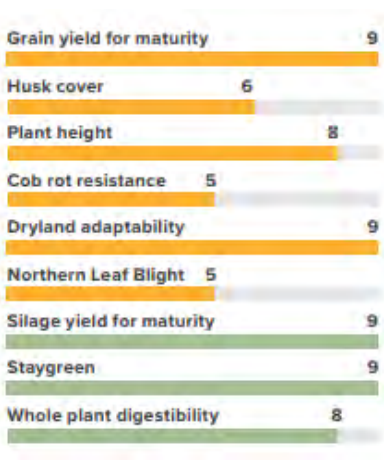
80-95,000 seeds/ha

750mm or Irrigation Rainfall

P9921 NEW — CRM 99

A NEW dual-purpose, quick-season hybrid offering unmatched silage performance & yield stability.

- Excellent grain yield for maturity, ideal option for grain growers in cooler regions aiming for field dry down
- Excellent staygreen to maximise silage starch content
- A tall impressive plant with unmatched silage performance
- Combines the best of bulk and energy for maximum milk productivity
- Outstanding drought tolerance



80-95,000 seeds/ha

750mm or Irrigation Rainfall

MID SEASON

P1467

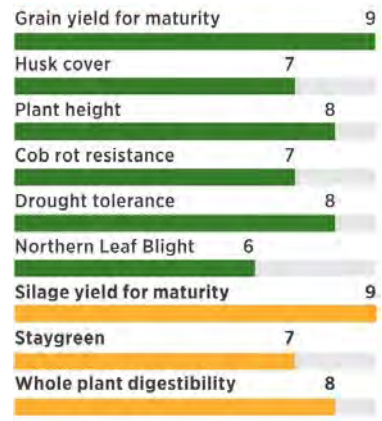
CRM 114

Benchmark silage and feed grain hybrid across all regions with outstanding silage yield

- Pioneer's highest yielding feed grain hybrid
- A strong trait combination of stalk strength, drought tolerance, staygreen and cob rot resistance
- High silage yield while still maintaining high quality

80-95,000 seeds/ha

750mm or Irrigation Rainfall



FULL SEASON

P1813-IT

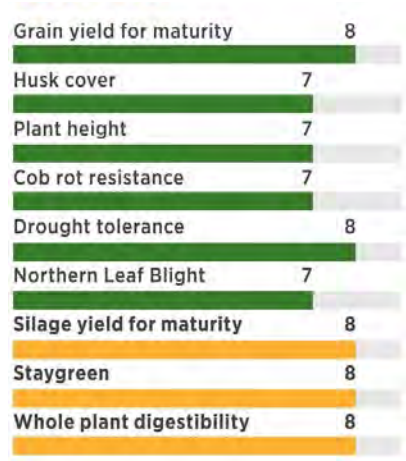
CRM 118

Top end yield from an IT hybrid . An immidazolinone-tolerant (IT) hybrid giving growers flexible weed control options.

- Immidazolinone-tolerant (IT) hybrid with excellent yield for maturity
- Widely adapted to a range of growing conditions
- Suited to irrigated/dryland with excellent stress tolerance
- Good disease resistance against Northern Leaf Blight and cob rots

80-95,000 seeds/ha

750mm or Irrigation Rainfall

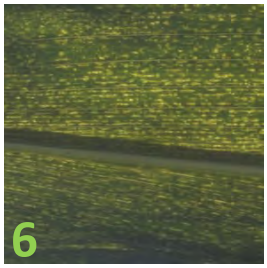


MAIZE PESTS

Knowing if insects are prevalent is the first management step—don't be caught unaware!

Maize crops are most susceptible to serious damage from insects during establishment (soil insects can be so destructive that resowing is necessary) and from tasselling, silking until harvest.

(1) False Fireworm
(2) Black field earwig
(3) Wireworms
(4) Cutworms
(5) Thrip damage
(6) Spider mite damage
(7) Corn Earworm
(8) Corn aphids



HIGH QUALITY SUMMER FEED

A quality silage inoculant will improve silage quality by delivering a faster, more efficient fermentation.

They help lock in nutrients and dry matter so your livestock can produce more milk or meat from every tonne of pasture or crop you ensile.

Pioneer® brand inoculants are unique —combining bacteria strains that work together well to improve the initial preservation, the stability and the digestibility of the nutrients in the silage.

Once oxygen free (anaerobic) conditions have been created through compacting and sealing the forage, bacteria will begin to multiply, convert plant sugars to fermentation acid and pH drops preserving the forage as silage.

BENEFITS

- Give a faster and more efficient fermentation.
- Increase silage energy content (feed value).
- Decrease protein breakdown.
- Improve silage digestibility.
- Increase drymatter recovery.
- Reduce heating, spoilage, shrinkage and run-off.
- Lift palatability giving higher drymatter intakes.
- Reduce silage heating and spoilage at feed-out time

A lactic fermentation is the most desirable because minimal energy is lost during the fermentation process and lactic acid produces palatable, high feed value silage. Just as cows differ in their ability to produce milk from grass, different bacterial strains vary in their ability to produce lactic acid.

The most desirable strains are those that can convert sugar to lactic acid with minimal energy and drymatter loss. Pioneer® brand inoculants contain bacteria that have been specially selected to give a faster, more efficient fermentation.

1127

Pioneer® inoculant 1127 is designed to:

- Significantly improve the fermentation.
- Increase dry matter recovery
- Increase protein availability and silage digestibility
- Improve animal performance in terms of more milk and more meat.

Pasture specific silage inoculant

Pioneer® inoculant 1127 is a pasture specific silage inoculant that improves silage fermentation quality, locking in valuable silage nutrients so you obtain more milk or meat form every tonne fed.

Pioneer® inoculant 1127 contains strains of Pioneer patented proprietary Lactobacillus plantarum and Enterococcus faecium which have been selected specifically for their efficacy on pasture when ensiled.

1174

Pioneer® inoculant 1174 is proven in Australian and global trials to:

- Improve silage digestibility
- Increase dry matter recovery
- Promote a faster, more efficient fermentation
- Increase animal performance

Proven multi-crop inoculant

Pioneer® inoculant 1174 is a multi-crop inoculant designed for use on all silage including cereal, legume, pasture, forage sorghum and maize.

This inoculant contains multiple strains of Pioneer patented proprietary Lactobacillus plantarum and Enterococcus.

11G22

Pioneer® inoculant 11G22 has been proven to:

- Substantially decrease the growth of mould and yeast species responsible for silage spoilage. This reduces heating in the silage and minimises losses during feed-out
- Increase total DM recovery over untreated silage.
- Improve animal performance over untreated silage

Dual purpose inoculant

Pioneer® inoculant 11G22 is a pasture/cereal silage inoculant designed to enhance the fermentation in pasture and whole crop cereal silage and deliver an improved fermentation and a fermentation acid profile that minimises aerobic dry matter losses to lock in the nutrients.

11G22 contains a unique blend of Pioneer patented proprietary strains of Lactobacillus buchneri, Lactobacillus plantarum and Enterococcus faecium.

11C33

Pioneer® inoculant 11C33 is a maize silage inoculant designed to:

- Reduce heating, increase bunklife
- Improve silage quality providing low terminal pH and desirable VFA profile
- Minimize dry matter losses

Dual purpose inoculant

Pioneer® inoculant 11C33 contains a unique blend of patented proprietary strains of Lactobacillus buchneri,

Lactobacillus plantarum and Enterococcus faecium formulated to enhance fermentation in whole-plant corn silage delivering an improved fermentation acid profile which helps to enhance aerobic dry matter recovery and preservation

11CFT

Pioneer® inoculant 11CFT has been proven to:

- Reduces dry matter loss resulting from "front fermentation losses and back-end" feed-out losses
- Improves digestibility. An excellent option for high producing herds fed high levels of forage
- Allows for reduction in concentrate and protein supplementation to reduce total feed costs

Revolutionary triple stack inoculant

Pioneer® inoculant 11CFT is a revolutionary maize specific inoculant for high producing herds. It helps keep silage cooler for longer, enabling it to be fed out up to a day in advance .

11CFT contains a novel strain of Lactobacillus buchneri which: produces specific fiber-digesting enzymes as it replicates in silage & reduces shrink and improves bunklife of the silage face during feedout.

SILAGE PIT THERMAL IMAGING

Thermal imaging provides real-time heat distribution information across the feed-out face of the silage stack.

Heat emissions from the feed-out face can therefore be used as a measure of the extent of aerobic deterioration of the silage.

The lower temperature of the silage inoculated with **11G22** (see Figure 1) highlights an aerobic profile that minimises dry matter losses & locks in nutrients compared to that of an untreated silage stack (see Figure 2) with high nutrient losses.

Maximise the economic value of your end product by selecting the right inoculant that is & employing the right harvest management practices.

Treated with 11G22 inoculant
No heating, enhancing fermentation, resulting in low energy & nutrient losses

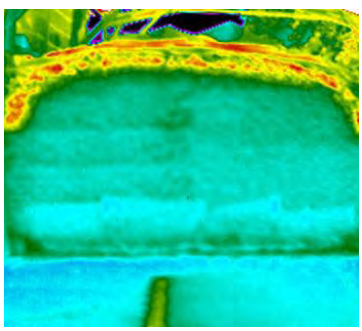


Figure 1

Untreated
High level of heating giving high energy & nutrient losses

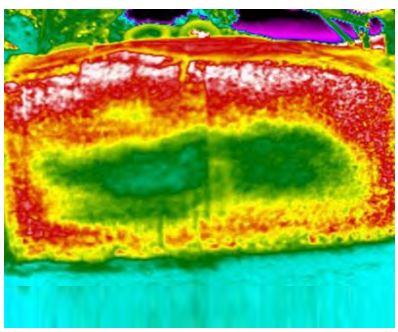


Figure 2

MILLET

FEATURED

SHIROHIE MILLET

Japanese and Shirohie millets are quick to establish highly productive summer forages for dairy, beef, sheep & silage, with dry matter yields between 8-12 tonne/ha. The tall leafy grass with a thin stem grows to around 1.5m in height

Millet, a low cost option for summer feed, is a safe forage for your animals—containing no prussic acid (HCN) and does not require supplementation with sulphur or salt blocks.

Compared with forage sorghum, temperate Millets can be sown earlier and will grow into late summer/early autumn. Millet is great for your pasture renovation program.

MILLET MANAGEMENT

Preparation

Mouldboard plough to a depth of 10cm with no grass showing in deep soils. In shallow soils there are a number of options including disc cultivation to level & break down clump size (two passes) followed by fertiliser spreading & pre-emergent spraying before final pass.

Sowing

To optimise yields, target soils that have a high level of moisture retention and drill seed to a depth of 1cm (extend to 2cm in sandy, dry soils) at a rate between 10-12kg/ha (lighter/poorer soils) & 20-30kg/ha (heavier, fertile soils with irrigation). Sow when temperatures stabilise at 14°C

Grazing Management

First cut or graze when plant has reached 35cm & frequently thereafter to prevent Millet running to head. To enhance quantity of grazing feed apply 100kg/ha of Urea following each grazing if moisture available.

Harvesting

Cut at 70cm with a mower conditioner in January. After conservation, consider applying 150kg/ha of Urea (if moisture available), if aiming for another harvest in early March.

KEY BENEFITS

- Fast growing low cost short term summer crop
- High quality feed with multiple grazings (up to 4 cuts)
- Valuable grazing, silage and hay crop
- Good interim crop between seasons
- Safe forage—no prussic acid

TOP CROP BLENDS

top crop forage blends
Rape & Millet

top crop forage blends
Brassica, Herb & Millet

Have you considered our premium Top Crop blends? Our Top Crop **Rape & Millet** & Top Crop **Brassica, Herb & Millet** produce high quality feed with excellent regrowth. For more information, see page 14

Shirohie Millet

Fast growing low cost summer feed

Shirohie Millet is a highly productive summer leafy forage crop that grows when you need it in summer. The fast growing versatile forage provides forage for grazing, hay and silage. Excellent regrowth potential when good moisture and nitrogen levels are available. Shirohie Millet is also available in our Top Crop blends.

45-60 days | 10-30 kg/ha | 500mm / Irrigation

FEATURED

BETTA GRAZE FORAGE SORGHUM

Forage sorghum hybrids deliver large quantities of quality feed for grazing, hay or silage.

There are large variety of forage sorghum to choose from, each with different characteristics—such as the cold tolerance & fast early growth of Betta Graze to Super Sweet Sudan's ability to sustain multiple & intensive grazings.

KEY BENEFITS

- Up to three times the water use efficiency of traditional perennial pastures over summer
- No compromise or loss of feed value
- Consistently high yields
- Excellent pit or wrap silage
- Suitable for all stock classes

MANAGING FORAGE SORGHUM

Sowing time

Target planting date should be around mid-late November in most regions, as the soil temperature has to be at least 16°C and rising for optimum crop establishment.

Soil type

Target heavier soils with high moisture retention & no clay or impermeable layer close to the surface — giving you the best chance of high yields. If soil moisture retention is poor, we suggest planting millet as a summer grass crop.

Seed bed preparation

Spray with Glyphosate — the rate could vary from 3L/ha to a higher rate of 6L/ha if summer grasses may be a problem.

Moldboard plough the paddock to a depth of 10cm ensuring that no grass is left showing. If soil is too shallow to use a moldboard plough, there would be a concern the paddock may not return a high yielding sorghum crop.

Preparing a fine seedbed will greatly assist crop establishment.

Fertiliser

To achieve peak yields, an application of a D.A.P type fertiliser is recommended when sowing your forage sorghum seed. Power harrow (to a depth of 7cm) to incorporate fertiliser.

Sowing

See page 26 for more information

Weed & Insect Control

Check crop regularly broadleaf weed (e.g. Fathen) & pest infestation (e.g. wireworms & cutworms) that can affect germination & establishment. Contact your local agronomist for more information on chemical applications.

Grazing Management

Aim to graze when sorghum when the quality of the feed - protein & energy - is at its peak between 0.8m-1.5m (dependant on variety). Then approximately 30-35 days after first grazing again when crop has reached 0.8m.

It's important not to graze sorghum too early, as there are risks of prussic acid poisoning with stock & fresh growth.

Apply Urea after each grazing (100 kg/ha) if moisture is available - this will ensure quicker regrowth & maintain feed quality for your animals.

Cut for harvest when sorghum has reached 0.8m (late January) with mower conditioner. Apply Urea again (150 kg/ha) if moisture available if aiming for another harvest in early March.

Re-growth crops that haven't reached the recommended 0.8m cannot be grazed or cut due to Prussic Acid poisoning.

BETTA GRAZE SORGHUM

Fast to feed - First to plant, first to feed

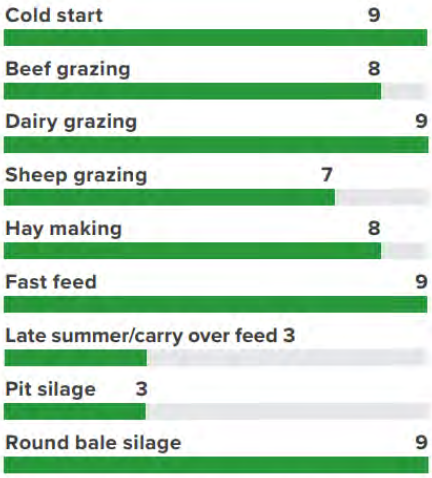
Excellent recovery from grazing or cutting, the fast growing nature of Betta Graze and its cold tolerance, mean it is the first forage sorghum you can plant and the first you can feed to any type of livestock.

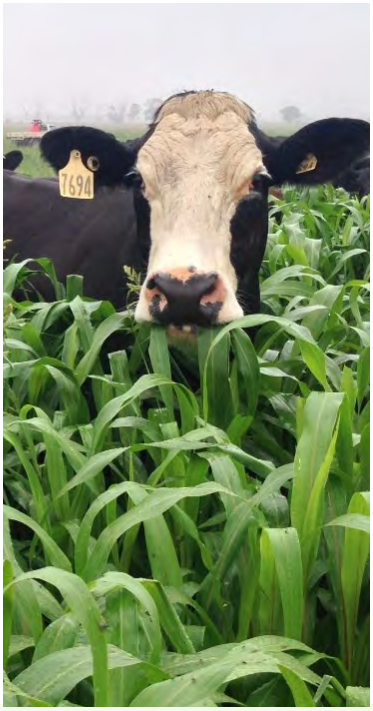
A drought tolerant sorghum x sudan grass hybrid with water use efficiency more than 70% higher than perennial ryegrass, Highly suited to grazing, hay production and round bale silage.

Betta Graze requires a minimum soil temperature of 17°C for quick germination and establishment - with sowing general not recommended before late November-early December.

- Sorghum x Sudan grass
- Cold tolerant gives fast early growth
- Responds well to heavy grazing or cutting with quick growth and an abundance of tillers

35-45 days | 17+ degrees | 15-30 kg/ha | 600mm Or Irrigation





SUPER SWEET SUDAN

Grow more with less

Grow more with less - High quality smaller seed means you plant more hectares with less kilograms. The next generation hybrid. A unique Australian product, bred for Australian conditions.

Super Sweet Sudan (SSS) is quick to graze and sustains multiple and intensive grazing's. SSS produces high quality hay and round bale silage suitable for sheep and cattle. Adaptable for early or late planting.

Studies have shown Sudan's pose a lower risk of prussic acid toxicity than sorghum type forages.

- Wide area adaptation with very fast growth and regrowth
- Prolific tillering habit & superfine stems
- Super sweet and leafy & Super high-quality hay
- Highly palatable at all stages of maturity plus growth

35-45 days | 15+ degrees | 2-16 kg/ha | 600mm Or Irrigation

PLANTING FORAGE SORGHUM

Sowing depth is dependent on moisture levels & warmer temperature available—with the aim to plant deep enough to ensure adequate moisture for germination. Crop failures are likely when planted too early—aim for 15°C and rising. At 15°C sorghum takes 11-14 days to emerge. At 17°C it takes only 7-10 days.

Sowing rates can vary between sorghum varieties so please refer to product information. For drier & non-irrigation areas sow at the recommended rate at 5cm soil depth. For high summer rainfall & irrigation areas, water the paddock prior to planting & sow into the moisture at 3cm depth when soils have dried sufficiently. If planting with power harrow aim to incorporate the seed to the required depth. Under good growing conditions, narrow rows out-yield wider rows. This advantage decreases as soil moisture reserves decline.

Dryland Plant Population

Yield Expectation	Plants / ha
1-3 t/ha	30-50,000
3-5 t/ha	50-75,000
5-7 t/ha	75-150,000

Irrigation Plant Population

Irrigation	Plants / ha
Partial	150-200,000
Full Irrigation	220-250,000

Row Spacing

Yield Expectation	Row Spacing (cm)
+4 t/ha	25 cm
3-4 t/ha	50 cm
1-3 t/ha	75 cm

MEGA SWEET

- Sweet sorghum x sweet sorghum hybrid
- High sugar content
- Feed value increases with maturity
- Highly flexible: can be planted early, mid-season or late

The flexible forage sorghum

Attractive to stock at any stage of growth and increases its feed value and sweetness as it matures. Mega Sweet can be used for grazing or silage but should be your first choice for grazing cattle.

35-45 days | 15-30 kg/ha | 600 mm / Irrigation

GRAZE-N-SILE

- Sorghum x sorghum hybrid
- Ideal for pit silage
- More stress tolerant than corn
- Grain yields similar to grain sorghum hybrids

Great for pit silage production

The best choice for Pit Silage Production. Graze-N-Sile is a tall, grain-bearing forage sorghum hybrid. These unique attributes mean Graze-N-Sile produces high quantities of silage with high energy content. Anideal substitute for maize silage in dryland areas or in limited irrigation situations

100-110 days | 25-45 kg/ha | 600 mm / Irrigation

Sweet Eat BMR forage sorghum performance bred®

- Ready to graze in 70-85 days
- Highly palatable leaves ideal for grazing
- Excellent for pit or wrap silage

The flexible forage sorghum

Sweet Eat BMR is a very late maturing sorghum that offers flexibility from stand over grazing through to pit silage or hay production. Careful plant breeding has developed a highly palatable and excellent quality forage sorghum.

70-85 days | 8-15 kg/ha | 600 mm / Irrigation

Pronto® forage sorghum performance bred®

- Ready to graze in 40-55 days
- Ideal grazing at 1m high
- Produces excellent pit or wrap silage
- Best cut for high quality hay at between 1.5-2m high

Fast maturing for early grazing, silage & ha

A consistent and affordable performer. Finely stemmed, Pronto is a leafy, early maturing, high yielding sorghum type Sudan grass. Sown from early spring until late summer into warm soil—at a rate of 25-50kg/ha.

40-55 days | 25-50 kg/ha | 600 mm / Irrigation

FORAGE SORGHUM SILAGE

Tips for ensiling forage sorghum

The optimum harvest window for precision chop forage sorghum is dependent on the target dry matter (see table). This will maximise yield, quality and stack fermentation.

Early harvest will result in yield losses and potentially poor fermentation whilst a late harvest may result in a loss of quality as plant stover (leaf & stalk) increase in fibre & becomes less digestible.

Wilted forage sorghums need to be harvested before forage quality starts to decline rapidly. This is normally around 0.8m – 1.2m in height. The forage will need to be wilted to achieve the target dry matter range (see table)

Mowing with a mower conditioner and using a crimper machine will be an advantage. The aim is to achieve the target dry matter within 48 hours to maximise quality.

With baled silage and wilted forage sorghum it is important to minimise contamination from dirt as the contamination will put the fermentation at risk.

Targeting a Harvest Date

Crop	Target Harvest Dry Matter	Typical Energy ME	Typical Crude Protein %
Forage Sorghum precision chop	28 - 35% DM	9 - 10.5	6 - 9%
Wilted forage sorghum	35 - 40% DM	9.5 – 10.5	10 – 16%

Recommended Inoculants

More information: Page 22-23

Crop	Target Harvest Dry Matter
Forage Sorghum precision chop	11CFT Triple Stack or 11C33. Both contain L. buchneri Pioneer® brand 1174 fermentation only
Wilted forage sorghum	11G22 contains L. buchneri Pioneer® brand 1174 fermentation only.

AG CHEMICALS

We offer you access to a wide range of high quality affordable agricultural chemicals including herbicides & insecticides to eradicate pests and protect your crops. Our staff are experienced in providing advice about chemicals for agricultural purposes and will focus on a strategy to manage your farm and crops for long-term health.

GLYPHOSATE

BAZOOKA DRY 800SG

800 g /kg Glyphosate (present as the acid and ammonium salt)

Bazooka Dry 800SG is a powerful glyphosate formulation using the latest agchemical technology. Bazooka Dry 800's enhanced performance includes extensive knockdown capabilities of many annual and perennial weeds.

- Powerful 800g/kg glyphosate formulation
- Latest agchemical technology
- Enhanced performance

WARLORD 540 HI-LOAD

540 g/L Glyphosate present as the Potassium Salt

Warlord 540 Hi-Load Glyphosate is a reliable and cost effective non-selective knockdown herbicide for the control of many annual and perennial weeds.

GLYPHO 450

450g/L GLYPHOSATE

Glyphosate 450 Herbicide is a non-residual translocating knockdown herbicide for use in conservation tillage situations. It controls emerged weeds only and replaces mechanical tillage practices to conserve soil moisture and reduce soil erosion.

PASTURE HERBICIDES

2,4-D Amine 625

625 g/L 2,4-D present as the dimethylamine and diethanolamine salts

Similar Product: Amicide 625

For the control of broadleaf weeds in fallow before direct drilling or sowing of cereals and pastures

Control includes: Capeweed, Doublegee, Mustards, Paterson's Curse, Turnip. Supression of Docks, Flatweed, Wild Radish, Thistle (various)

FatCat 250

250 g/L MCPA present as the ethyl hexyl ester; 25 g/L DIFLUFENICAN Solvents: 325 g/L liquid hydrocarbons, 150 g/L N-methyl-2-pyrrolidone

Similar Products: Tigrex, Nugrex, Rygrex

FatCat 250 is a post-emergent herbicide for the control and/or suppression of certain broadleaf weeds.

Pound 240

240 g/L CARFENTRAZONE-ETHYL

Similar Products: Nail 240, Hammer 240, Titan

For improvement in the control of marshmallow and certain other broadleaf weeds prior to establishment of crops. For the control of marshmallow and annual nettles in grass pastures and rough grass/turf areas. Control includes: Marshmallow, Chickweed, Nettles, Erodium (max 4 leaf)

2,4-D LV Ester 680

680 g / L 2,4-D present as 2-ethylhexyl ester

Similar Products: Estercide 680

Ester 680 is a specially formulated low volatile herbicide for selective control of various weeds. Control includes actively growing capeweed, dock, wild radish, erodium, stinging nettle, nut grass, fat hen, flatweed, wireweed, mustards, ragwort, thistles (various), Caltrop

MCPA 750

750 g / L MCPA

For the control of broadleaf weeds pastures. Control includes Thistles (various including Nodding Thistle), Seedling dock Capeweed, Flatweed, Fat hen, fumitory, Erodium, Sorrell, Wild Radish.

Scanner 500 SC

500 g / L Ethofumesate

Scanner 500 SC, for selective weed control of winter grasses and weeds in ryegrass pastures and seed crops and established turf.

Control includes winter grasses such as Poa, Barley Grass, Annual Ryegrass and weeds including Cleavers, emerged Brome Grass, seedling Chickweed, Shepherd's Purse, Storksbill

SPRING CROP HERBICIDES

Atrazine 900 WG

900 g/kg ATRAZINE

For the control of weeds and grasses in sorghum, maize, sugar cane, TT-canola, lucerne and for fallow area maintenance and other situations as per the Directions for Use table.

Flumetsulam 800

800 g/kg FLUMETSULAM

Flumentsulam 800 EG – a post emergence, herbicide for broadleaf weed control in winter cereals, maize, leguminous crops and pastures.

Metor 900 EC

960 g/L METOLACHLOR

Metor 960 EC—for the control of certain annual grasses and broadleaf weeds. Controls including Barnyard Grass, Crowsfoot Grass, Liverseed Grass, Lovegrass, Pigeon Grass, Summer Grass, Wandering Jew, Blackberry Nightshade, Caltrop, Common Thornapple, Mintweed, Needle Burr, Noogoora Burr, Pigweed, Redroot Amaranth, Slim Amaranth.

Trifluralinx 480

480g/L TRIFLURALIN

A pre-emergence herbicide for the control of annual grasses and certain broadleaf weeds. Controls weeds including Annual Ryegrass, Barnyard Grass, Canary Grass, Caltrop, Crab Grass, Pigweed Redroot (Amaranthus), Redshank (Prince of Wales Feather), Summer Grass, Wild Oats, Winter Grass, Wireweed (Hogweed)

INSECTICIDES

Alphacyper 100

100 g/L ALPHA-CYPERMETHRIN, 755 g/L LIQUID HYDROCARBONS

Controls insect pests in various crops including: Wingless grasshopper, Brown pasture looper, Blackheaded pasture cockchafer, Redlegged earth mite and Blue oat mite.

Chlorpyrifos 500

500 g/L CHLORPYRIFOS

Similar Products: Lorsban

Pests controlled in pastures include: Southern armyworm, Common armyworm, Cutworms

Spur-throated locust, Aust Plaque Locust, Blue oat mite, Redlegged earth mite, Lucerne flea, Wingless grasshopper

Dimetholinx 400

400 g/L DIMETHOATE

Controls insect pests in pastures including: Redlegged Earth Mite, Lucerne Flea, Blue Oat Mite, Wingless Grasshoppers, Pangola Aphids, Spotted Alfalfa Aphid and Blue Green Aphid.

SlugOut

18g/kg METALDEHYDE

For the control of slugs and snails including Common white snail, White Italian snail, Conical snail, Grey field slug

WETTER, ADJUVANTS, SURFACTANT & TANK CLEANER

FLX 700

350 g / L Soyal Phospholipids + 350 g / L Propionic acid

Acidifying and penetrating surfactant.

Boom Kaboom!

200 g/KG SODIUM TRIPOLYPHOSPHATE

A specially-formulated boom and tank cleaner that will decontaminate all pesticides including Sulfonyl Urea compounds and Phenoxy-based herbicides such as 2,4-D and MCPA.

Rhodamine Marker 150

150 g/L RHODAMINE B

Liquid marking dye and foam marker colouring agent. Available in red or white

Wetter 1000

1000 g/L alcohol alkoxylates

Wetting agent for use with knockdown and residual herbicides.

VATBUSTER®
PREMIUM PERENNIAL PASTURE SEED

Our premium perennial pasture blends

A proven versatile mix of long rotation diploid/tetraploid enhanced late seeding perennial ryegrass and persistent white clover. This is an excellent quality pasture mix providing high levels of metabolisable energy and good palatability. Strong year round production, disease resistance and suitable to all livestock classes. Farmers nationwide have been impressed with its production and persistence under challenging environmental conditions. Also available without clover

- Long rotation diploid/tetraploid perennial ryegrasses
- Persistent white clover available
- Excellent quality & good palatability
- Year round production
- Suitable for all livestock classes

MEGABITE®
PREMIUM SHORT TERM PASTURE SEED

Our proven & versatile Italian ryegrass blends

MegaBite Premium is a proven versatile long season diploid and tetraploid blend enhanced with late seeding material to improve both palatability and energy produced per hectare. The fast establishing MegaBite Premium will produce high yields into early summer and can perform well into a second year with suitable conditions. Trialling has enabled us to continually refine our blend, and after 27 years it is still our #1 seller & performer in our Italian Ryegrass range.

- Proven versatile long season blend
- Fast establishing
- Late maturing to improve palatability
- High yielding
- Performs well in early summer

WINTERBITE™
PREMIUM ANNUAL PASTURE SEED

Our premium winter performer

A WINTERBITE blend of annual ryegrasses is a specialist winter feed mix that delivers fast establishing feed. Excellent quality through autumn, winter and early spring. It is a key performer in late autumn with outstanding cost effective performance.

- Specialist winter feed
- Fast establishing
- Excellent growth and quality in autumn, winter and early spring
- Cost effective
- Available with or without clover

PERFORMER™
PERENNIAL PASTURE BLEND

Cost effective perennial ryegrass blends

Performer Perennial Blend is our cost effective quality perennial ryegrass and white clover pasture suitable to medium-high rainfall regions. Perennial ryegrass provides good bulk growth that will not cause staggers combined with the option for excellent energy with white clovers.

- Cost effective blend
- Good quality pasture and clovers
- Perennial performer
- Suited to medium-high rainfall areas

Cropmark Matrix Enhanced® Ryegrass

Matrix is a thoroughly proven, high performing and uniquely different Enhanced ® perennial ryegrass variety of meadow fescue and perennial ryegrass parentage, having high ME and digestibility and with very high year-round yields, strong winter / early spring activity, and very late heading (+23 days) for improved quality in late spring

Base tetraploid perennial ryegrass performance bred® AR37 grasslan endophyte

Base is a tetraploid perennial ryegrass available with AR37* endophyte. Base was selected from high yielding, densely tillered plants that survived two years of severe drought and hard sheep grazing. Improved persistence is also offered from AR37 endophyte with protection from a number of Australia's major pasture pests.

Surge ITALIAN RYEGRASS GROW MORE - FASTER

A very high yielding diploid Italian ryegrass which displays strong year-round growth & strong persistence where conditions allow. Fast establishing, high forage quality, very low aftermath heading, late heading (+21 days) enables pasture quality to be carried through longer into early summer. Can perform very well into a 2nd year given suitable conditions.

Cropmark Bullet Tetraploid Annual Ryegrass

An exciting, new and rapidly establishing tetraploid annual ryegrass, with superior speed of establishment, cool season performance and excellent pasture quality. Bullet is densely tillered, upright growing and highly palatable tetraploid annual ryegrass that has outstanding performance.

IDEAL PLANTING & GRAZING DATES

MONTH	September	October	November	December	January	February	March
PLANTING		Brassicas Chicory Plantain	Brassicas Millet Maize Sorghum Plantain	Brassicas Millet Maize Sorghum			
GRAZE & HARVEST				Brassica	Brassica Chicory Millet Sorghum Plantain	Brassica Chicory Millet Sorghum Plantain	Chicory Millet Sorghum Maize Plantain

KEY TO FORAGE GUIDE

Minimum Soil Temperature (C°)

Bulb Percentage Above Ground

Dry Matter Percentage

Number of days to first grazing

Sowing Rate (kg per hectare)

Rainfall minimum (or mm) or irrigation per annum

NOTES

DISCLAIMER

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