MAIZE FOR SILAGE
SOUTH ISLAND

2020-2021
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PIONEER LONG LOOK

As adopted by Genetic Technologies Limited.

We strive to produce the best products on the market.

We deal honestly and fairly with customers, employees and business associates.

We vigorously market our products, but without misrepresentation.

We provide helpful management information to assist customers in making optimum profits from our products.
Every season delivers a challenge or two and this past season has been no exception. Dry conditions had a major impact on pasture growth. The combined impact of higher feed costs and increased bank loan repayment requirements has tightened cashflows. There are also more stringent environmental compliance requirements at both regional and national level.

Farmers continue to adapt and develop resilient systems to meet the challenges that come their way. Top farmers like Nathan and Catherine Simpson (page 3), Frank Ranford (page 5), Peter Collins (page 7), and many others are using maize silage to secure their feed supply and maintain or increase production, whilst at the same time controlling production costs.

Maize doesn't just have a positive impact on production and profit, it also brings significant environmental benefits. A maize crop can be used to soak up surplus nutrients (especially nitrogen and potassium) from high fertility dairy paddocks. Feeding maize silage dilutes dietary protein resulting in lowered urinary nitrogen output and less nitrogen leaching.

In the past 12 months, greenhouse gas emissions have come under the spotlight. While there is no silver bullet, fewer cows producing more milk per cow, lower replacement rates and a greater reliance on home-grown feed will all help to reduce agricultural losses. Maize can help by filling feed deficits, extending lactation and improving production as well as reproductive performance.

In March our longstanding, highly regarded Seed Production Manager Phil Evans retired after more than 30 years in that role. Phil is succeeded by Andrew Powell who has held other key positions since joining the business in 2007. We have every confidence Andrew and the Gisborne team will continue to produce the high-quality Pioneer seed New Zealand growers have come to expect.

We also recently welcomed Richard Weightman to the position of National Sales Manager. From a family who have farmed in Northland since 1864 (his Mum still lives on the family farm at Wharehine) and following a 28 years sales career with PGG Wrightson, Richie brings much experience to the Pioneer team as we seek to constantly improve our customer service and quality of product delivery.

We are pleased to announce a new shorter maturity hybrid for planting in spring 2020. P8666 is an 86 CRM hybrid with sound all-round agronomics and excellent digestibility.

We take your business very seriously. Our philosophy is to be “with you from the word go”. That is why we are focused on not only delivering industry-leading hybrids, but also working closely with our merchant partners and contractors to help ensure your farming success.

With best wishes for the 2020-21 growing season.

Sincerely,

William Yates
Managing Director
To grow better and more feed in a smaller area is a goal that any quality-driven farmer would strive for – and that’s exactly what West Coast dairy farmers Nathan and Catherine Simpson are doing.

“To harvest grass silage in the equivalent quantity and quality of maize silage, I would have to harvest 120 ha of grass compared to just 18 ha of maize,” Nathan says.

“Maize is a silage crop that out-performs grass hands down.”

Nathan milks 470 cows on a 210 ha milking platform at Karama, the northern-most dairy farm to supply Westland Milk Products.
He is in his third season growing maize, and the decision to start growing the crop was not one he made lightly.

“The Pioneer team first approached us through our merchant representative five years ago, when we were thinking about growing maize,” Nathan says.

“We thought about it for 18 months before we went ahead with it. We wanted to secure winter feed, and we knew that if we didn’t do it, we wouldn’t have the baleage to get through.”

The ‘calculated risk’ of growing maize is one that has paid off in spades

Nathan currently grows 18 ha of maize on farm – Pioneer hybrid P8500, inoculated with 11C33 inoculant – and is hoping to increase that area to 20 ha next season.

Situated right on the West Coast, the 380 ha farm is prone to summer dry, and grows more grass in the winter than it does in the summer.

“Of the 18 ha of maize, we use 10 ha for autumn, winter and spring, and we use the other 8 ha over the summer months to fill the feed shortage,” Nathan says.

“Without supplementary feed, the summer dry can cripple us.”

Incorporating maize silage into their feed regime means the cows finish the season in good condition, and continue to put on weight during the winter, which contributes to an annual production of 197,000 kgMS.

“With maize silage we don’t lose as much milk production over the summer,” Nathan says.

“Maize silage is also really easy on the gear to feed out and is no stress.”

Last season, Nathan’s maize yielded 20 tDM/ha.

The Pioneer team sees Nathan as showcasing the success of maize on the northern part of the West Coast, working with him step-by-step throughout the set-up process, and in-crop monitoring.

Nathan appreciates the Pioneer team’s support and advice, and despite the farm’s isolated location, a team member visits the farm three or four times a year.

“Otherwise if I need something, I just give them a call,” Nathan says.

“We’re in regular contact with the Pioneer team, our contractors and our merchant representative. Our goal is to always surround ourselves with the right kind of people to help us succeed.”

For Nathan, the ‘calculated risk’ of growing maize is one that has paid off in spades.

“We like to try new things quite regularly; if you don’t, you won’t get ahead.”
SUN SMILES ON RA KANOHI AMURI LTD

Sunshine is a critical factor in the growth and prosperity of plant life - so what better ingredient after which to name a thriving agricultural business?

Ra Kanohi Amuri Ltd is a Māori adaptation of the old Irish prayer: “May the sun smile on your face and the wind be at your back”.

“We went to a school reunion where they used this Irish prayer and thought it so related to farming in the..."
Amuri district of Canterbury,” operations manager Frank Ranford says.

“We were told that Amuri meant wind at your back, and we thought it was so apt for where you want the wind when you are outside on the farm.”

“My brother Steve took the Irish prayer to Māori to get an abbreviated version of the first lines, and they came up with Ra Kanohi Amuri.”

“Ra Kanohi means sun and face, so we see it as having the sun on our face and the wind at our back.”

The Culverden farm is owned by Operations Managers Frank (Ranford) and Liz Teulon, and Frank’s brother Steve Ranford and wife Janet Dehn. Equity Managers Kevin and Alex Thompson manage the farm.

As a former agronomist, Frank works on the premise that they are harvesting sunshine, using the photosynthetic process in plants to convert plant material to milk.

And it’s a thought process that is bringing great success to the maize paddock, and the business as a whole.

“I like maize; it is a plant that is well-suited to, and enjoys, Culverden’s warm summers,” Frank says.

“High sunshine hours equals big growth: in the five months from November to March, our maize crop was growing 130-150 kg/ha/day – yielding 20-22 tDM/ha in total.”

The farm is divided into two properties: the Green Valley dairy unit, a 240 ha effective milking platform; and Blakiston 2, a 307 ha support block.

The dairy unit runs 860 cows and is on track to produce 380,000 kgMS – 442 kgMS/cow, or 1,583 kgMS/ha.

They also rear 450-500 calves on whole milk on the platform. The family started growing maize 12 years ago, when they bought a support block for the dairy unit.

“A lot of Canterbury farms winter livestock off-farm, which is partly why we bought the support block for the dairy unit,” Frank says.

“We investigated the best ways to increase feed supply for the dairy and beef herd, and maize silage was the best option.”

“We started with 30 ha of maize being grown on the support block, an area which has increased to 40 ha today.”

Maize silage is fed to the herd for nine months of the year.

Of the 40 ha of maize grown on Blakiston 2, the resulting silage is split between the support block and the dairy unit. Half the silage is kept at Blakiston 2 for winter use, with plenty of stock to feed: the block winters 700 mixed age dairy cows, 200 R2 dairy heifers, 210 R1 dairy heifers, and 50 high BW carryovers.

Blakiston 2 also winters sale stock, including 120 R1 dairy heifers, 120 R1 dairy beef bulls, and 50 R1 Jersey breeding bulls. The other half of the maize silage is taken to the dairy unit and fed in the spring and autumn.

“We’re still juggling how to get better condition on cows, but having maize silage on hand means we always have feed in the bank,” Frank says.

“It is a big store of good starch. The combination of maize and sunshine has proven the perfect recipe for crop success for Ra Kanohi Amuri.”
For Pareora dairy farmer Peter Collins, his return to growing maize has been nothing short of extraordinary.

Four seasons ago, he pulled the pin on the maize crop he had been growing, unproductively, for two years.

But with the help of Pioneer Area Manager Daryl Moore, he’s back with all guns blazing.

“Maize is amazing,” Peter says. “Contrary to popular belief, you can grow maize between Timaru and Oamaru; we’re well and truly proving that without a doubt.”

Peter and wife Bonny, who farm 950 ha Dalmore Farm in South Canterbury, are celebrating 50 years on the farm in 2020.

They started with a potato crop, going on to develop a livestock fattening operation before they started milking cows in 2013.

They planted a maize crop in 2014, but a combination of factors led them to discontinue the crop in 2015.

“We didn’t really know enough about the crop itself,” Peter says.

“The maize was harvested far too green, and we didn’t get the full benefit of enough starch.”

In the following two seasons Peter’s 1,200 cows milked well at 500 kgMS/cow, but he knew something wasn’t right.

“The health of the cows was good, but they were milking off their backs,” he says.

“Having fattened livestock for many years I know when an animal is in good condition.”

On the advice of local farmer Aad van Leeuwen, Peter tried again and planted 100 ha of maize in 2017 - but this time, he engaged the advice and experience of Pioneer’s Daryl Moore.
“Daryl has been outstanding,” Peter says.

“He did his research and chose the right hybrid – P8000 – and as a result, we’ve had a phenomenal yield of 27 tDM/ha, with 37% starch; you can’t grow it any better than that.”

Peter says the maize silage in the pit is 40-45% drymatter; good consolidation and a double cover means the quality of the fermentation is excellent.

**Condition on cows this season and last has been terrific, almost beyond recognition**

Since maize silage has been reintroduced to the farm system, and a new wintering barn built, Peter’s herd has achieved high production and the cows now maintain their top condition.

“The condition on the cows this season and last has been terrific, almost beyond recognition,” Peter says.

“Cow production has increased from 500 kgMS to 550 kgMS thanks to the increased levels of starch they are getting from the maize.”

Peter also fattened 800 bulls this season on grass silage and maize silage.

“They were sold in great condition at a great price; we were getting 1.2 kg of growth per day on maize silage,” he says.

Peter does all of the maize field work himself, starting with spreading the effluent from the barn onto the maize paddocks, which helps to reduce fertiliser costs.

“We also bought a 12-row maize planter, so we can sow over 100 ha in a couple of days, as well as our own silage chopper and a shear grab,” Peter says.

“It grabs three tonnes of maize with every scoop, and wastage is virtually nil.”

“We’re in it for the long haul now; we’ve got all the gear!”

Peter says their success this time around is all thanks to Daryl.

“This fella has been prepared to put in the effort with us, and we have seen results,” he says.

“Daryl is here all the time, helping us expand our understanding of the crop.”

“With his help, we’re getting better and better at the game.”
“A top-quality crop for top-performing farmers” is how Wanaka lucerne grower Ken Roberts describes his primary produce.

A stalwart in New Zealand’s lucerne industry, Ken has a cropping history spanning back to the 1960s, and he is still growing the crop prolifically today.

Ken first started growing lucerne in 1963 on his North Otago farm.

“At that stage there was a little bit of lucerne around New Zealand already,” he says.

“The farm I had at the time contained river flats, which lucerne is suited to growing on.”

A sheep and beef drystock farmer at the time, Ken grazed the lucerne with his sheep.

“The stock did very well on lucerne – it lifted their performance and production and we saw good weight gains as a result,” he says.

Ken says one of the biggest advantages of feeding lucerne to livestock was its ability to thrive in dry conditions, continuing on even in drought-prone areas.

“For us, lucerne was another paddock the sheep could go into; it just kept growing, as opposed to grass.”

In 1975 Ken moved south to Milton, and it wasn’t until he shifted north again in 1995 that he was able to plant a lucerne crop again.

Today, Ken farms a 120 ha effective property at Wanaka, growing 50 ha of lucerne. Around 100-200 sheep graze the farm terraces on which lucerne doesn’t grow.

Ken follows a spring lucerne planting schedule, with sowing occurring around Labour weekend.
The first cut is in November/December, with the fourth and final cut occurring in April/May.

The vast majority of the lucerne crop is cut and made into medium square or small bales of hay and sold on to sheep and beef farmers, racehorse owners and goat farmers.

Any challenging spring weather is overcome by processing the lucerne into baleage.

We see really good growth rates on the lambs as a result of them grazing on lucerne

While the vast majority of Ken’s lucerne is sold, he purchases 1,000 lambs in the autumn to graze the crop.

“We see really good growth rates on the lambs as a result of them grazing on lucerne,” he says.

Lucerne is well-known to increase animal performance: it encourages high animal growth rates in beef cattle and lifts the protein content of dairy cows’ summer/autumn diet, increasing milk solid production.

Ken has implemented a three-year crop rotation cycle on farm: he rotates the crops from lucerne to turnips, to barley, back to turnips, and then to lucerne again.

By rotating the crops, the farm’s soil gets the benefit of the natural function of each crop.

Ken has been using Pioneer brand lucerne for the last five years: variety 55Q27 combines very good winter hardiness to withstand Wanaka’s harsh winters, with excellent disease resistance.

With Ken’s experience in the field it made sense that a test plot was established on his farm in order to help Pioneer evaluate lucerne varieties that provide even higher-yield potential, and ever-improving forage quality, pest and disease resistance.

Pioneer Area Manager Darin Dick visits Ken’s property regularly to monitor the trial and provide support and advice to Ken if required.

With over 50 years in the lucerne game, Ken knows the many benefits of both growing and feeding lucerne.

“The quality of our lucerne speaks for itself; our customers come back year after year,” Ken says.

“Lucerne increases the condition and performance of animals; it is a top-quality crop for top-performing farmers.”

FARM WALK

- First grew lucerne back in 1963
- Grows 50 ha of lucerne every year
- Sells majority in bales to other farmers
- Grows Pioneer® lucerne variety 55Q27
- 3 year rotation of lucerne/turnips/barley
- Buys in 1000 lambs to graze on lucerne
Many farmers throughout New Zealand have been using maize silage as part of their system for a few years now. Farmer reports are backed up by proven science telling us the same thing... maize silage, when added to a farm system can result in significant financial, environmental and animal welfare benefits. Simply put, maize silage works.

**FINANCIAL**

**Extend lactation**

Some early work incorporating maize silage within farm systems was conducted at the Waimate West Demonstration Farm in the late 1990s. The trial showed using maize silage to increase days in milk was profitable. In fact net profit per hectare increased by 23 and 28 percent when maize silage was fed in the spring and autumn respectively (see table below).

<table>
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<tr>
<th>Control</th>
<th>Spring</th>
<th>Summer</th>
<th>Autumn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stocking rate (cows / ha)</td>
<td>3.8</td>
<td>3.8</td>
<td>3.8</td>
</tr>
<tr>
<td>Maize silage (kgDM / cow)</td>
<td>0</td>
<td>300</td>
<td>293</td>
</tr>
<tr>
<td>Milksolids per cow (kgMS / cow)</td>
<td>285</td>
<td>332</td>
<td>309</td>
</tr>
<tr>
<td>Milksolids per hectare (kgMS / ha)</td>
<td>1,083</td>
<td>1,262</td>
<td>1,174</td>
</tr>
<tr>
<td>Days in milk</td>
<td>228</td>
<td>268</td>
<td>256</td>
</tr>
<tr>
<td>EFS ($ / ha calculated at a $3.50 payout)</td>
<td>1,489</td>
<td>1,824</td>
<td>1,532</td>
</tr>
<tr>
<td>Increase in EFS over control (%)</td>
<td>-</td>
<td>23%</td>
<td>3%</td>
</tr>
<tr>
<td>Milksolids response (kgMS / kgDM maize silage fed)</td>
<td>-</td>
<td>157</td>
<td>82</td>
</tr>
</tbody>
</table>

Note: Payout was $3.50/kgMS and cost of maize silage was 18c/kgDM when the trial was undertaken at Waimate West Demonstration farm 1997/98 season.

**MAINTAIN MILK QUALITY**

Fonterra introduced a Fat Evaluation Index (FEI) Grading System in 2018. It was designed to indicate the suitability of the milk fat composition for processing into a variety of products. Farmers are required to keep the FEI in the A and B zones and out of the C and D zones to avoid penalties. The main driver of FEI is the amount of PKE fed and the PKE fat content.

Maize silage can be fed at high levels without having any significant impact on the FEI. This means that during periods of extended dry, maize silage is the perfect alternative to PKE.
ENVIRONMENTAL

Reduce the risk of nitrogen leaching
Every tonne of drymatter of maize silage harvested removes 12.8 kg of nitrogen from the paddock. A 25 tDM maize crop will remove around 300 kg nitrogen per hectare. This means that maize silage can be used to extract a lot of excess nitrogen out of the soil, reducing the risk of leaching. For much of the year pasture contains more protein than is required by a dairy cow. Surplus dietary protein is excreted in the urine and this is a major contributor to nitrogen leaching. As a low protein feed, maize silage can be used to dilute dietary protein levels thereby reducing urinary nitrogen levels.

High water use efficiency
Maize is highly efficient at using water. Water use efficiency (WUE) is a measure of how much water it takes to produce a tonne of drymatter. Maize has up to twice the WUE of perennial ryegrass on an annual basis and up to three times greater on a summer seasonal basis.

ANIMAL WELFARE

Put condition on cows
Maize silage is one of the best feeds for putting condition on cows. Work conducted by DairyNZ showed that maize silage is approximately 20% more efficient at putting weight on cows than autumn saved pasture.

Feed cows properly regardless of the weather
Maize silage is an excellent farm systems feed, as it can be stored for long periods and fed when it is needed. The combination of maize silage and a feed-out pad allows farmers to stand animals off pasture but still feed them well even when wet soil conditions mean lots of mud. It means that on a cold wet night, no-one needs to go out and move cows.
GROWING FOR SILAGE YIELD NEXT SEASON

With the 2019/20 harvest completed now is a good time to focus on the requirements of your next maize silage crop. Growing a successful crop requires a significant up-front investment in seed-bed preparation, soil fertility, seed, planting, pest and weed control and later in the season harvesting, inoculants, cartage and stacking. Maximising silage yield reduces the cost per kilogram of dry matter and maximises the profit potential of your crop, but along the way there are several important management principles to consider.

HYBRID SELECTION

Maturity and required harvest date
Hybrid maturity will affect the timing of silage harvest, feed availability and the planting date of permanent pasture or your winter crop.

An increasing number of growers are choosing to plant high yielding short maturing hybrids which enable earlier harvest and the early establishment of pasture or a winter crop. Early establishment results in paddocks returning to the grazing round sooner, higher dry matter yields and, for contract growers, greater income attributable to the winter cycle.

Agronomic requirements including disease resistance
The next step requires an evaluation of the relative agronomic merits of the hybrids in the target maturity range. Desirable silage hybrids deliver strong early growth, standability and defensive traits such as drought tolerance. (See the characteristics table on page 32 to compare key trait ratings)

Maize silage yields
From those hybrids that meet your maturity and agronomic requirements, select two or three hybrids that are expected to deliver the highest total dry matter yield.
The best measure of relative hybrid yield performance is obtained from trials conducted in multiple locations, over several seasons within a growing region. Pioneer conducts over 160 silage trials in New Zealand annually with the results being published in regional summaries for:

- Northland and South Auckland
- Waikato
- Bay of Plenty, Gisborne and North Hawke’s Bay
- Lower North Island and Taranaki and
- South Island

While individual trial results are published the real value comes from the summary yield information. Side-by-side comparisons conducted over several seasons at 20 or more locations, within your growing region will give the best measure of relative potential yield performance on your farm.

Two hybrids can have a similar average yield, but Hybrid A may perform better than Hybrid B in high yield environments whilst Hybrid B performs better than Hybrid A in lower yield environments. Pioneer regression graphs show a yield trend line for two similar hybrids grown side-by-side at multiple locations.

Regional reports which include yield summaries and regression graphs are available for download at pioneer.nz. A little time spent looking over these graphs or discussing best options with your Pioneer Area Manager can greatly enhance your ability to select the best hybrid for your paddock.

**Nutritional quality**

Silage quality characteristics should only be compared between hybrids that have similar maturity, agronomic characteristics and side-by-side yield performance. From a nutritional standpoint, the best silage hybrids will have high energy and digestibility ratings.

Each season we measure the nutritional quality of over 2,500 whole-chopped maize samples as part of our silage hybrid evaluation programme. The ratings for starch and sugar and whole plant digestibility in the trait table on page 32 have been derived from this data. One rating point difference reflects one percent difference in sugar and starch or whole plant digestibility.

**MANAGING MAIZE FOR DROUGHT**

High temperatures combined with a lack of rainfall caused drought stress and yield loss in many maize crops last season. Even in seasons with normal rainfall and irrigation most maize paddocks are likely to experience some moisture stress that can impact yield potential.

To minimise the effect of a dry summer on maize silage yield consider the following strategies:

- Plant a hybrid with a high drought tolerance rating. While it is noted that Pioneer breeders have done an excellent job in enhancing the base drought tolerance of all hybrids, AQUAmax hybrids are noted to be particularly strong.
- Adjust the target plant populations and other inputs to match the realistic yield expectation of the paddock.
- If the soil profile is dry, available irrigation is limited and/or a dry summer is predicted, plant as early as possible and consider using a shorter maturity hybrid.
- Choose a high potential paddock. Maize crops grown on lighter soils will encounter drought stress sooner than crops grown on heavier or higher organic matter soils. Reducing the number of cultivation passes will help reduce soil moisture loss. Strip or minimum tillage systems that leave a layer of mulch in the paddock are also beneficial.

**WEED CONTROL**

Good weed control is an important part of growing a successful maize crop as weeds compete for moisture, nutrients and light.

The most important time for weed control is between crop emergence and canopy cover. Weeds germinating after canopy closure will struggle to compete with the maize and will have minimal impact on crop yield.

Weed control can be carried out by cultural, mechanical or chemical means, or a combination of these.

Cultural practices include cultivation as well as keeping fence lines and ditches free from weeds. Contamination from tillage, planting and harvest equipment is also possible so thoroughly cleaning equipment before it enters or leaves a paddock will minimise mechanical transmission.

There are a range of excellent herbicides available for both pre and post emergence application. Using the right herbicides (including maize safeners) timing of application and weather conditions at the time are all important considerations. The application of best practice is encouraged to control and prevent any further spread of invasive weeds like velvet leaf.

Finally, talking to the Pioneer Team, and your merchant representative or contractor is a great place to start when planning your next maize crop. They have observed our hybrids in many trial plots and local paddocks and their local experience is extremely valuable in positioning the best hybrid for your growing conditions.
Over the past 40 years, the team at Pioneer® has been working with New Zealand farmers to help them derive maximum value from the Pioneer maize hybrids they plant. During this time, our hybrid line-up has broadened and performance has improved significantly. We see this continuing in the future and are pleased to introduce one new hybrid to the range – P8666 bringing the total number of silage hybrids to nine for the coming 2020-21 season.

With around 160 silage trials planted every season, chances are there is a Pioneer trial close to you. This extensive testing allows the Pioneer team to understand product performance across environments and growing conditions. With this knowledge they can help position the right hybrid(s) to suit your specific situation, so you can plant with confidence.

Our team in the field is dedicated to knowing the hybrids that work best in your area. Please contact one of them, or your local merchant or contractor, for advice on choosing the right hybrid to best fit your farming situation.

www.pioneer.nz/contact-us
MAIZE HYBRID PERFORMANCE COMPARISONS

Good crop management practices certainly help achieve high yields, but the most important decision at the start of the season is to select and plant the highest yielding hybrid suited to the growing situation being considered. The product performance and positioning information below will assist farmers to make informed hybrid selection decisions this spring.

<table>
<thead>
<tr>
<th>Hybrid A</th>
<th>Hybrid B</th>
<th>Number of trials</th>
<th>Drymatter difference (%)</th>
<th>Yield advantage (kgDM/ha)</th>
<th>Statistical significance</th>
<th>MILKsolids income ($/ha)</th>
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<tr>
<td>P7124</td>
<td>39V43</td>
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<td></td>
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<td>698</td>
</tr>
</tbody>
</table>

Positive drymatter differences indicate that the bolded Pioneer hybrid had a higher average drymatter percentage at harvest. Such hybrids are usually shorter in maturity than the comparison hybrid. Negative drymatter differences indicate that the bolded Pioneer hybrid had a lower average drymatter content at harvest. Such hybrids are usually longer in maturity than the comparison hybrid. Includes all data to the end of the 2019 harvest. Milksolids income calculated @ $6.00 / kgMS based on industry reports available on 14th April 2020. Source: Pioneer® brand products New Zealand Research Programme.

Scientific Designation

★★★★ = very highly significant yield advantage
★★★ = highly significant yield advantage
★★ = significant yield advantage
★ = commercially acceptable yield advantage
CA = no statistical yield advantage
NS = no statistical yield advantage.
OPTIMUM AQUAMAX® MAKES THE DIFFERENCE IN A DRY SEASON

Optimum AQUAmax® hybrids are revolutionary products that offer growers additional choices to help minimise risk and maximise crop productivity under drought stress.

Developed and tested utilising Pioneer’s extensive drought technology research and proprietary Accelerated Yield Technology (AYT™) system, Optimum AQUAmax® hybrids help deliver a yield advantage in water-limited environments.

Optimum AQUAmax® hybrid benefits:

- Maximise water access through an extended rooting system.
- Help minimise the risk of decreased yields due to drought stress.
- Deliver yield stability even in dry seasons.

**Optimum AQUAmax® hybrid range for the 2020-2021 season**

See page 20

IMPORTANT NOTE: Hybrid comparisons are only valid within a range of + or - 4 CRM. These descriptions mainly feature product strengths. When choosing hybrids, also review carefully the trait ratings found in the table on page 32. Contact your local Pioneer Area Manager or Merchant for further advice.
Raising the yield bar in cooler regions.

New option for New Zealand’s cooler maize growing regions. P7124 is tall for maturity, uniform, bulky plant with notable grain filled ears. P7124 also has strong standability, drought tolerance and staygreen. Delivers notable silage yields with great energy and digestibility ratings.

Best grown in cooler growing regions where P7524 and P8000 are considered too late in maturity such as high-altitude and higher-latitude regions of the South Island.

Stands and delivers tonnes of high energy feed.

Growers recognise P7524 as a reliable hybrid producing impressive silage yields with high levels of starch and outstanding whole-plant digestibility.

P7524 combines strong drought tolerance and staygreen for a wide harvest window. It has striking appearance, being a very tall plant with low ear placement and great standability.

Intermediate in maturity between P7124 and P8000, P7524 provides an exciting option for growers in New Zealand’s cooler growing environments.

Versatile stunner. Delivers top yields of high energy silage.

P8000 is tall, with low ear placement, strong roots and stalks for excellent eye appeal and improved standability in this maturity.

Growers will also note its superior staygreen characteristic.

P8000 has a chunky cob with deep dent grain to produce top yields of high starch content silage with great feed value.

Now a widely grown, popular choice in much of the South Island. It is often grown alongside P7524 or P8500.
Yield leader with looks to match.

This silage yield leader has a solid agronomic package with great standability, drought tolerance and staygreen for a wide harvest window.

A tall imposing hybrid well adapted to all warmer Canterbury regions.

Plant with P8000, P8666 or P8805 depending on maturity requirements.

Grows well, yields very well and feeds even better.

A tall bulky plant with balanced all-round agronomics, superior drought tolerance, Northern Leaf Blight resistance and staygreen.

Delivers top silage yields, with impressive grain content and with optimal digestibility that cows will thrive on.

Is widely adapted from Ashburton and north where a hybrid of this maturity is required.

P8666 is intermediate in maturity between P8500 and P8805. However, to optimise performance established plant populations should be approximately 5,000 per hectare less than applied for P8500 and P8805.

Yields rain or shine – makes the most of every drop

Tough hybrid providing growers with silage production stability. P8805 performs where water may be limited as well as under ideal conditions.

A relatively short hybrid delivering high grain content silage with exceptional digestibility characteristics.

Has excellent all-round agronomics and a balanced disease resistance profile.

P8805 is widely adapted in the South Island and is intermediate in maturity between P8500 and P9127.

IMPORTANT NOTE: Hybrid comparisons are only valid within a range of + or - 4 CRM. These descriptions mainly feature product strengths. When choosing hybrids, also review carefully the trait ratings found in the table on page 32. Contact your local Pioneer Area Manager or Merchant for further advice.
### PIONEER 38V12

<table>
<thead>
<tr>
<th>Trait</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silage yield</td>
<td>6</td>
</tr>
<tr>
<td>Grain yield</td>
<td>6</td>
</tr>
<tr>
<td>Staygreen</td>
<td>7</td>
</tr>
<tr>
<td>Drought tolerance</td>
<td>7</td>
</tr>
<tr>
<td>Early growth</td>
<td>7</td>
</tr>
<tr>
<td>Starch and sugar</td>
<td>7</td>
</tr>
<tr>
<td>Whole plant digestibility</td>
<td>6</td>
</tr>
</tbody>
</table>

**Reliable Canterbury favourite.**

Well-known late maturing hybrid for Canterbury growers. Consistently delivers high yields, while maintaining comparative yield advantage in moderate to challenging environments.

Position with P8500, P8666 and P9127.

### PIONEER P9127

<table>
<thead>
<tr>
<th>Trait</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silage yield</td>
<td>9</td>
</tr>
<tr>
<td>Grain yield</td>
<td>9</td>
</tr>
<tr>
<td>Staygreen</td>
<td>7</td>
</tr>
<tr>
<td>Drought tolerance</td>
<td>9</td>
</tr>
<tr>
<td>Early growth</td>
<td>6</td>
</tr>
<tr>
<td>Starch and sugar</td>
<td>9</td>
</tr>
<tr>
<td>Whole plant digestibility</td>
<td>9</td>
</tr>
</tbody>
</table>

**Bred to yield, destined to impress.**

New full season Optimum AQUAmax® hybrid offering top-end silage yield stability for South Island growers. A tall plant with strong roots, stalks, drought tolerance and staygreen for season long eye appeal. Often produces a second cob!

A widely adapted hybrid similar in maturity to 38V12.

 Companion with P8500, P8666 or 38V12.

### PIONEER P9400

<table>
<thead>
<tr>
<th>Trait</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silage yield</td>
<td>9</td>
</tr>
<tr>
<td>Grain yield</td>
<td>9</td>
</tr>
<tr>
<td>Staygreen</td>
<td>6</td>
</tr>
<tr>
<td>Drought tolerance</td>
<td>7</td>
</tr>
<tr>
<td>Early growth</td>
<td>7</td>
</tr>
<tr>
<td>Starch and sugar</td>
<td>9</td>
</tr>
<tr>
<td>Whole plant digestibility</td>
<td>9</td>
</tr>
</tbody>
</table>

**Stands tall – delivers big time.**

A tall, dense plant producing high grain content silage with superior digestibility. Strong agronomically with a sound all-round disease resistance offering.

A full season hybrid best planted in moderate to high yield environments in Nelson Marlborough. Plant alongside P8500, P8666 and P9127 that are earlier hybrids.
Pioneer® brand crop-specific inoculants contain unique bacterial strains which are tested and proven to improve the quality of your silage. They increase fermentation efficiency, reduce shrinkage, decrease heating at feed-out time and increase fibre digestibility. The end result is more nutrients available to your livestock and More Milk™ or More Meat™ for every tonne of pasture or crop ensiled.

MORE CHOICES, MORE BENEFITS

Pioneer® brand inoculants provide multiple inoculant choices to maximise ensiling benefits for a range of crops:

- Crop specific inoculant products
- Patented bacteria strains
- Comprehensive, product specific research
- Quality assured with an ISO 9001:2000 accredited quality control system
- Guaranteed bacteria levels on the label of every bottle
- Exclusive Appli-Pro® inoculant applicator technology, allowing more consistent and precise inoculant application
- Extensive local technical back-up throughout New Zealand
THE PIONEER® BRAND MAIZE INOCULANT RANGE

**Pioneer® brand 11C33**
Maize specific inoculant that helps keep silage cooler for longer, reducing energy losses and enabling it to be fed out up to a day in advance.

**Pioneer® brand 1132**
Produces top quality maize silage with enhanced fermentation for high producing dairy cows and specialised beef production.

**Pioneer® brand 1174**
Improves drymatter recovery and silage quality of all forage crops.

**Which Maize Silage Inoculant Should I Use?**

---

**Do you want to feed out in less than 30 days?**

**YES**
- Do you need a maize inoculant that maximises return on investment?
- **YES**
  - **1132**
    - Fermentation enhancer. Higher cost but higher return on investment.
- **NO**
  - **1174**
    - Fermentation enhancer. Low-cost option for cost conscious farmers.

**NO**
- Is heating* at feed-out likely to be an issue?
- **YES**
  - Heating could be an issue. Do you need extra fibre digestibility?
  - **YES**
    - **11CFT**
      - Reduces heating, improves fermentation. Greater fibre digestibility.
  - **NO**
    - Heating won’t be an issue. Do you need to maximise ROI?
    - **YES**
      - **1132**
        - Higher cost but higher return on investment.
    - **NO**
      - **1174**
        - Low-cost option for cost conscious farmers.

---

*Heating may occur if:
1. The crop was dry at harvest
2. The feed out rate is slow
3. Face management was poor
4. The feed-out wagon is loaded the night before feeding

---

1 Trial data available on request.
2 While 11CFT and 11C33 inoculated maize silage can be fed out immediately after harvest, it will stay cooler for longer when it has been fermented for 30 days prior to feeding.
Extensively tested across multiple growing regions and the Pioneer maize hybrid range.

PROVEN PERFORMANCE
Seed treatment active ingredients evaluated and selected to best address New Zealand’s unique combination of pests and diseases.

SELECTED FROM THE BEST
Extensively tested across multiple growing regions and the Pioneer maize hybrid range.

ACCURATELY APPLIED
Industry-leading precision seed treating equipment to safeguard seed germination and seedling vigour.

ENHANCED PLANTABILITY
A new, high-quality polymer coating to keep the active ingredients well-attached to the seed for smooth, accurate planting.
New Bird Repellent

A new bird repellent Anthraquinone is now being applied to Pioneer® brand seed. It delivers improved germination and seedling vigour compared to the previously applied bird repellent product. It also has an improved toxicity profile, which is safer for those handling seed and has no crop withholding period requirement.

Anthraquinone has been used as a bird repellent in New Zealand and overseas markets for a number of years. It is a naturally occurring substance found in several plants, including aloe vera, rhubarb, and plantain.

It limits birds eating newly planted maize seed by causing immediate but temporary digestive unease, resulting in birds looking elsewhere for food.

New Polymer Seed Coating

A newly introduced polymer delivers improved seed flowability and plantability, and uniform stand establishment in the paddock.

Both new products have been extensively tested and trialed by a rigorous evaluation process measuring seed germination and vigour. Thorough and comprehensive laboratory experiments and field trial observations have demonstrated and proven the seed safety, enhanced plantability and efficacy of all treatment combinations.
Pioneer’s lucerne variants offer high yield potential, outstanding quality and improved pest and disease resistance. While other seed treatments add up to 25% weight to the seed, Pioneer uses a light (9%) coating. This means you get more lucerne seeds in every kilogram you purchase. The other benefits of using Pioneer’s unique seed coating are:

- Four stage layering to ensure excellent seedling establishment and nodulation of every plant
- Patented seed drying process providing assurance of high Rhizobium levels on every seed
- Excellent product stability – guaranteed Rhizobium shelf life of two years from coating
- Superior seed adhesion with minimal dust, making planting easier, healthier and more accurate

**55Q27** is a 5 dormant* variety with exceptional forage yield potential and quality. It combines very good winter-hardiness with an excellent disease resistance package including high resistance to Phytophthora Root Rot, Verticillium Wilt, Bacterial Wilt, Fusarium Wilt and Stem Nematode. Suitable for grazing, silage or hay.

**54Q29** is a new, high yielding 4 dormant* variety (so slightly more winter dormant than 55Q27) with above average forage quality. 54Q29 combines excellent winter-hardiness with a superb disease resistance package that includes high resistance to Phytophthora Root Rot, Verticillium Wilt, Bacterial Wilt and Stem Nematode. Suitable for grazing, silage or hay.

---

**Key 1** = Poor, **9** = Excellent - Based on Pioneer research comparisons with other Pioneer® brand lucerne cultivars.

*Dormancy: Higher dormancy ratings indicate greater autumn growth.
LEAFIER PLANTS, GREATER NUTRITIONAL VALUE.

Lucerne leaves contain high levels of digestible energy, protein, vitamins and minerals compared to stem material. Farmers have commented that Pioneer’s variety is leafier than some competitor varieties. Our trial data supports this observation.

% Percentage Leaf

<table>
<thead>
<tr>
<th></th>
<th>50%</th>
<th>55%</th>
<th>56%</th>
<th>58%</th>
<th>60%</th>
<th>62%</th>
<th>64%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pioneer® brand 55Q27</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>62%</td>
</tr>
<tr>
<td>Force 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>59%</td>
</tr>
</tbody>
</table>

*Seven replicated cuts taken from one trial. 55Q27 was significantly leafier (P<0.001) than Force 4. There was no significant difference in the yield of the two varieties.*

Disease resistance profiles

HR = Highly resistant (more than 50% resistant plants)
R = Resistant (31% to 50% resistant plants)
MR = Moderately resistant (16% to 30% resistant plants)
LR = Low resistant (6% to 15% resistant plants)
S = Susceptible (up to 5% resistant plants)

Important:
Ratings based on both Pioneer Agronomists and Research Scientists field observations.

References:
1. Torlesse Agrinote (https://www.agricom.co.nz/Files/Files/Public/Agricom/Agrinote/Torlesse-agrinote.pdf)
3. SF Force 4 product brochure (https://www.seedforce.co.nz/product/sf-force-4/)
# Maize growing tool

## Growing and Harvest Cost Guide

Enter your own growing & harvesting costs for the coming season in the ‘My Costs’ column. For help and notes on this table, refer to the assumptions on the next page.

### Calculate growing & harvesting costs for your farm

<table>
<thead>
<tr>
<th>2020-21 Average Estimated Cost (exclusive of GST)</th>
<th>Average estimated costs* ($/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Growing Costs</strong></td>
<td></td>
</tr>
<tr>
<td>Pre planting</td>
<td></td>
</tr>
<tr>
<td>Cost of leased land</td>
<td>?</td>
</tr>
<tr>
<td>Soil test, other</td>
<td>10</td>
</tr>
<tr>
<td>Spraying out pasture including glyphosate</td>
<td>70</td>
</tr>
<tr>
<td>Lime @ 1.25 t/ha including cartage and application</td>
<td>85</td>
</tr>
<tr>
<td>Base fertiliser cost including application</td>
<td>235</td>
</tr>
<tr>
<td>Cultivation : to planting specifications¹</td>
<td>360</td>
</tr>
<tr>
<td>Planting</td>
<td></td>
</tr>
<tr>
<td>Pioneer® brand P8000 maize seed @1.5 bags/ha</td>
<td>580</td>
</tr>
<tr>
<td>FAR maize seed levy ($8.00/80,000 kernels @ 1.5 bags/ha)</td>
<td>10</td>
</tr>
<tr>
<td>LumiGEN™ System L-400 seed treatment @ 1.5 bags/ha</td>
<td>180</td>
</tr>
<tr>
<td>Starter fertiliser cost including application</td>
<td>245</td>
</tr>
<tr>
<td>Planting</td>
<td>160</td>
</tr>
<tr>
<td>Post planting</td>
<td></td>
</tr>
<tr>
<td>Pre emergence weed control (herbicide + application)</td>
<td>100</td>
</tr>
<tr>
<td>Post emergence weed control (herbicide + application)</td>
<td>100</td>
</tr>
<tr>
<td>Sidedress application</td>
<td>80</td>
</tr>
<tr>
<td>Sidedress nitrogen</td>
<td>170</td>
</tr>
<tr>
<td>Irrigation</td>
<td>?</td>
</tr>
<tr>
<td>Interest on maize expenditure (7 months @ 6%)</td>
<td>80</td>
</tr>
<tr>
<td><strong>Total growing cost</strong></td>
<td><strong>$2,465</strong></td>
</tr>
</tbody>
</table>

| Harvest Costs                                 |                                 |
| Harvesting                                    |                                 |
| Harvest, transport, stack and cover           | 1000                            |
| Pioneer® brand 11C33 maize specific inoculant | 355                             |
| **Total harvest cost**                       | **$1,355**                      |

**Total Growing & Harvest Costs**

$3,820

---

* rounded to $5

¹Cultivation costs will vary depending on soil types and land class.
Maize silage drymatter cost

Research has shown that high fertility dairy farm paddocks including those with a history of effluent application may not require any additional fertiliser to be applied. Different yield environments also influence the recommended planting rate for Pioneer® brand maize silage hybrids (see page 32).

The table below gives indicative maize silage costings for the growing of maize silage in the South Island. Always soil test maize paddocks and apply nutrients according to the results.

<table>
<thead>
<tr>
<th>Maize silage yield (tDM) in the stack</th>
<th>Maize silage cost per kgDM in the stack (c/kgDM)</th>
<th>Maize silage cost per MJME (c/MJME)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>23.9</td>
<td>2.21</td>
</tr>
<tr>
<td>18</td>
<td>21.2</td>
<td>1.97</td>
</tr>
<tr>
<td>20</td>
<td>19.1</td>
<td>1.77</td>
</tr>
<tr>
<td>22</td>
<td>17.4</td>
<td>1.61</td>
</tr>
<tr>
<td>24</td>
<td>15.9</td>
<td>1.47</td>
</tr>
<tr>
<td>26</td>
<td>14.7</td>
<td>1.36</td>
</tr>
<tr>
<td>28</td>
<td>13.6</td>
<td>1.26</td>
</tr>
<tr>
<td>30</td>
<td>12.7</td>
<td>1.18</td>
</tr>
</tbody>
</table>

Assumptions

1. Cost to grow, harvest and store the crop are estimates only.
2. Average land rentals have not been included because of large regional variations (provision has been made for you to consider land rental in your own costing column).
3. The cost and benefits of regrassing have not been included.
4. Cost for Pioneer® brand 11C33 is based on inoculating a 22 tDM/ha crop.
5. Farmers growing Pioneer® brand maize for silage for sale are usually responsible for costs up to and including the nitrogen sidedressing application.
6. Maize silage cost per MJME assumes a maize silage energy content of 10.8 MJME/kgDM.
7. The amount of pasture lost during the maize growing season will vary between paddocks, farms and districts. The value of pasture lost during the maize growing season has not been considered in the calculation of the maize silage drymatter cost.
8. Costs are estimates based on a sample of contractor rates, other typical industry charges and product costs. All costs exclude GST and are indicative at 28 February 2020. See www.pioneer.nz for updated costs.

Notes

The information in this tool is general in nature and is not intended to be a representation of actual costs. We do not accept any responsibility or liability (whether as a result of negligence or otherwise) for any loss of any kind that may arise from actions based on the contents of this tool or otherwise in connection with the use of this tool.
Step by step guide

Choosing the right Pioneer hybrid for your farm

Complete the following four steps to determine the right hybrid for your paddock.

1. **Calculate your days from planting to harvest**

   Use the chart below to calculate.

   Line up your planned planting date column with your target harvest date row to find the actual number of days.

   - **Planned planting date 2020**
     - September
       - 21: 137
       - 26: 132
       - October
         - 1: 127
         - 6: 122
         - 11: 117
     - October
       - 21: 127
       - 26: 122
     - November
       - 5: 117
       - 10: 117
       - 15: 112
       - 20: 107
       - 25: 102
   - **Target harvest date 2021**
     - February
       - 2: 157
       - 7: 152
     - March
       - 12: 147
       - 17: 142
     - April
       - 22: 137
     - May
       - 27: 132
   - **Days from planting to harvest**
     - Days

   - **GO TO STEP 2**

**Notes**

It is possible to plant from mid September through to mid December in most areas, however, remember to consider planting date needs of the following grass crop. Please contact your local Pioneer Area Manager or phone 0800 PIONEER (746 633) for advice on hybrid selections for earlier or later plantings.
Choose your region then identify hybrid options by matching your number of days from planting to harvest.
Notes

Hybrid maturity is based on heat unit accumulation through the season. Hybrids will therefore be quicker to harvest in warmer regions or warmer seasons. For example, a hybrid planted in coastal Nelson will be ready for harvesting much earlier than the same hybrid planted on the same day in mid Canterbury due to the faster accumulation of heat units in the Nelson environment. This has important implications for hybrid selection. The table below is a guide as to the estimated days from planting to harvest for Pioneer® brand hybrids in the regions for which they are recommended for silage. This information is generated from silage hybrid trials carried out in these regions over several seasons.

<table>
<thead>
<tr>
<th>Region 7</th>
<th>South Canterbury / West Coast</th>
<th>Region 8</th>
<th>North Otago / Southland</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hybrids</strong></td>
<td><strong>Estimated days from planting to harvest</strong></td>
<td><strong>Maturity</strong></td>
<td><strong>Hybrids</strong></td>
</tr>
<tr>
<td>P7124</td>
<td>145-159</td>
<td>S</td>
<td>P7124</td>
</tr>
<tr>
<td>P7524</td>
<td>148-162</td>
<td>M</td>
<td>P7524</td>
</tr>
<tr>
<td>P8000</td>
<td>152-166</td>
<td></td>
<td>P8000</td>
</tr>
<tr>
<td>P8500</td>
<td>155-170</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>P8666</td>
<td>157-172</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P8805</td>
<td>157-172</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Maturity key**
- US = Ultra short
- VS = Very short
- M = Mid
- F = Full
- S = Short
- VL = Very long
# Pioneer® brand Maize Silage hybrid trait characteristics for 2020-2021

<table>
<thead>
<tr>
<th>Plant trait</th>
<th>P7124</th>
<th>P7524</th>
<th>P8000</th>
<th>P8500</th>
<th>P8666</th>
<th>P8805</th>
<th>P9127</th>
<th>P9400</th>
<th>P9721</th>
<th>P9874</th>
<th>P9911</th>
<th>P0021</th>
<th>P0362</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Silage CRM</strong></td>
<td>71</td>
<td>75</td>
<td>80</td>
<td>85</td>
<td>86</td>
<td>88</td>
<td>91</td>
<td>91</td>
<td>94</td>
<td>97</td>
<td>98</td>
<td>99</td>
<td>100</td>
</tr>
<tr>
<td><strong>Grain yield for maturity</strong></td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>8</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td><strong>Silage yield for maturity</strong></td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>6</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td><strong>Adaptability to high population</strong></td>
<td>9</td>
<td>9</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>9</td>
<td>9</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td><strong>Adaptability to low population</strong> (ear flex)</td>
<td>6</td>
<td>8</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>5</td>
<td>6</td>
<td>9</td>
<td>7</td>
<td>6</td>
<td>9</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td><strong>Drought tolerance</strong></td>
<td>6</td>
<td>7</td>
<td>6</td>
<td>7</td>
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**Plant Populations**

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<thead>
<tr>
<th>Plant Populations</th>
<th>Recommended established plant populations (000’S/HA)</th>
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<tr>
<td></td>
<td>CHALLENGING YIELD ENVIRONMENTS</td>
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<td>MEDIUM YIELD ENVIRONMENTS</td>
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<td>HIGH YIELD ENVIRONMENTS</td>
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<tr>
<td></td>
<td>130 120 120 120 115 120 115 115 115 115 120 115 115</td>
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</tbody>
</table>

**Ratings**

- 9 = Outstanding
- 1 = Poor
- Insufficient data available

NEW = New hybrid
NR = Not recommended
For footnotes please refer to page 34
Choose key traits that are important to you

Use trait table

<table>
<thead>
<tr>
<th>Hybrid 1</th>
<th>Hybrid 2</th>
<th>Hybrid 3</th>
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</thead>
<tbody>
<tr>
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- Silage yield rating
- Grain yield rating
- Drought tolerance rating
- Staygreen rating
- Early growth rating
- Leaf disease rating
- Whole plant digestibility
- Starch and sugar

Enter the hybrid trait ratings above for the hybrids you selected in Step 2

Bag calculator

Planting populations page

Paddock name

<table>
<thead>
<tr>
<th>Planting population (000's)</th>
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<tbody>
<tr>
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<table>
<thead>
<tr>
<th>Hectares</th>
<th>Bags required</th>
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</table>

\[ A \times 80 = C \]

Determine the number of bags required for each paddock on your farm

Notes:

Enter the hybrid trait ratings above for the hybrids you selected in Step 2

Determine the number of bags required for each paddock on your farm

A YATES FAMILY BUSINESS
Trait characteristic notes (See page 32).

1 Silage comparative relative maturity (CRM): Pioneer silage CRM ratings provide a comparison between Pioneer hybrids indicating the relative rates at which hybrids reach harvestable whole plant drymatter. They do not represent actual calendar days from planting to harvest.

2 Yield for maturity: Hybrid comparisons should only be made within a range of + or – 4 CRM. Analysis of differences in harvest drymatter percentages between hybrids measured in our New Zealand silage research programme show products compared within + or – 4 CRM will reach ideal silage harvest maturity (defined as 30% - 38% DM) within about seven days of each other.

3 Adaptability to high population: A measure of the mix of genetic factors that permit a maize plant to withstand the stresses of high population and still give good standability and high yields.

4 Adaptability to low population: An indicator of a hybrid’s ability to compensate (flex) cob size for stand loss from insect damage or poor emergence.

5 Early growth: Ratings are taken when two leaf collars are visible.

6 Plant height: 9 = Tall. 1 = Short.

7 Staygreen: A measure of late season plant health. A lower score also means that the plant stover loses colour and dries down more rapidly at maturity.

8 Whole plant digestibility: Based on estimated 24 hour in vitro, whole plant digestibility percentage (DM basis) as predicted by Near Infrared Reflectance Spectroscopy (NIRS). A 1 rating point difference reflects one percent difference in digestibility.

9 Starch and sugar: Based on total starch and sugar content of hybrids harvested at silage maturity. Use this score as a relative comparison of the whole plant concentration of more readily available energy (primarily grain) among individual hybrids. A 1 rating point difference reflects one percent difference in starch and sugar.

10 Northern Leaf Blight (NLB) and Eyespot: Caution: In conditions where NLB and Eyespot risks are high, growers should only consider planting hybrids with at least moderate resistance ratings of 5 or higher for these diseases.

11 Hybrid disease resistance ratings: 8 to 9 = Highly resistant. 6 to 7 = Resistant. 4 to 5 = Moderately resistant. 1 to 3 = Susceptible. = Insufficient data. Common Rust, Eyespot and NLB ratings are based on overseas data together with New Zealand observations. Scores are based on visual assessment only and not on yield reduction data.

12 Cool environments: In cool environments, including high altitude sites greater than approximately 150 m / 500 ft above sea level, select your yield environment using the descriptions in note 15, then increase established plant populations to the next level i.e. for P8000 in a medium yield environment at high altitude, plant to achieve 115,000 established plants per hectare.

13 Established plant populations: These assume good seed establishment conditions. If you are planting very early or into a less than ideal seedbed or where insect pressure may be high (e.g. a shorter than optimum fallow period), seeding rates may need to be increased to compensate for reduced establishment due to field losses.

14 Plant populations: The tabulated established populations are recommendations only. Work with your local Pioneer representative or Merchant seed representative to determine the appropriate plant populations for your specific growing environment.

15 Growing environment definitions: May include some or all of the following characteristics:

Challenging yield environments (CYE)
- Typically light, sandy or shallow soils of low fertility, low moisture retention, and predictably low summer rainfall (drought-prone environments).
- High cob or leaf disease pressure.

Medium yield environments (MYE)
- Average fertility soils with predictably adequate summer rainfall and good moisture retention.
- Continuously cropped soils.
- Medium to low cob or leaf disease pressure.

High yield environments (HYE)
- Typically deeper, highly fertile and well structured soils with good moisture retention.
- Predictably good summer rainfall, shelter from high wind run.
- Good soils straight out of long term pasture.
- Low or no cob or leaf disease pressure.

Publication abbreviations:
- %= percent
- g= gram
- m= metre
- cm= centimetre
- kg= kilogram
- ha= hectare
- DM= drymatter
- bags/ha= bags per hectare
- kgDM= kilograms of drymatter
- kgDM/ha= kilograms of drymatter per hectare
- kgMS= kilograms of milksolids
- kgMS/cow= kilograms of milksolids per cow
- $/ha= NZ dollars per hectare
- MJME= megajoules of metabolisable energy
- MJME/kgDM= megajoules of metabolisable energy per kilogram of drymatter
- t/ha= tonnes per hectare
- tDM= tonnes of drymatter
- tDM/cow= tonnes of drymatter per cow
- tDM/ha= tonnes of drymatter per hectare
- c/kgDM= cents per kilogram of drymatter
- ai= active ingredient
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