PIONEER® BRAND
MAIZE FOR GRAIN
2015/2016
The Pioneer® brand products team is committed to ‘going the extra mile’ to enhance the sustainability and profitability of New Zealand farmers and those who service and support them. This commitment goes well beyond the delivery of a bag of seed.

As a 100% New Zealand family owned agribusiness, we are dedicated to providing our customers with valuable post-sales service, advice and support, in addition to the highest quality products.

We will not be satisfied until our customers are even more successful.

PIONEER LONG LOOK

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.

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Global events and markets inevitably impact on New Zealand’s farming sector. Whilst international grain and dairy supply-demand imbalances are currently weighing on commodity prices, the mid and long-term challenge of producing enough food for a growing world population remains. This had been underpinning world markets prior to the current downturn and will again win through, bringing stronger demand and more stability to world commodity markets in the future.

Grain growers and the grain sector of the maize industry have always been a key focus for us as a seed company. In the current challenging operating environment, maximising yield will help ensure acceptable returns. Consequently, we are more focused than ever on seed quality, hybrid performance and in-field technical service and support.

Growers more than anyone know and understand the importance of planting high quality seed to achieve good yields. That’s the key reason we continue to invest in our Gisborne seed production facilities, ensuring we deliver the highest quality seed containing the world’s best genetics to your paddocks.

We also know that success each season depends on planting the right product in the right paddock. Our ongoing investment in research and product development sees exciting new hybrids available for the coming season.

Between now and the spring, I encourage you to work closely with your Pioneer, grain company and merchant representatives. Between them, they have the experience and specialist advice to help you maximise your return from growing maize. In a challenging environment, their product, agronomic and market knowledge can make a bigger difference than ever.

Despite the current market uncertainties, as an industry we can and must plan ahead, confident in the knowledge that the future is sound. Given its yield, quality, nutritional value and sustainability, locally grown maize grain will continue to play a vital part in the feed and food manufacturing industries.

The valuable and important role of both maize grain and silage for Kiwi dairy farmers is well established. Whilst the near term presents a challenge for them with tight farm cash flows, this presents an opportunity to reinforce maize as a cost effective, as well as environmentally responsible supplementary feed option.

By now you should have received details of our Early Order promotion. In bringing this together we have endeavoured to take account of the what we believe is important to growers: the ability for us to deliver seed of the hybrids in the right quantities you wish to plant come spring time; reducing the cost of replanting should that unfortunate situation arise; and also a number of chances to reduce the cost of your initial seed purchase by way of a “win-back” prize draw. Your Pioneer and merchant representative will be in touch with you sometime soon to take you through the benefits of the Early Order programme.

With best wishes and warm regards.

Sincerely

William Yates
Managing Director
FARM PROFILE

ALEN BROWN
RICHMOND DOWNS, WAIKATO

“I’VE GOT NO REASON TO PLANT ANYTHING ELSE”

TEN YEARS AGO ALAN BROWN PURCHASED A SMALL BLOCK OF LAND AND PLANTED HIS FIRST MAIZE CROP.

Today he is growing 117 ha for grain and silage on a mix of owned and leased land and is also running an agricultural contracting business.

“We were living in town and looking to purchase a lifestyle block, when a friend suggested we buy a larger block of land to grow maize instead” says Alan. “Everything fell into place and I’ve been growing the crop ever since”.

Alan’s first maize block was an overgrown 46 ha organic apple orchard at Richmond Downs, 10 km from Morrinsville in the Eastern Waikato. He pulled out 9,600 apple trees as well as several rows of shelterbelts. He then did a lot of development work filling in gullies and improving the contour to maximise the amount of croppable land. Three years ago he sold the block and purchased 34 ha next door.

The home block is planted in maize for silage and Alan is growing another 39 ha of silage on four lease blocks in the Eastern Waikato. In spring 2013, he took over the lease of a 44 ha block between Waihi and Whangamata on the Coromandel Peninsula and this is planted in maize for grain.

In spring 2014 he has planted Pioneer® brand P0791 for silage and P9400 for grain.

“The grain block is on light soil 280 m above sea level which catches the wind, so we wanted a short maturity hybrid with good drought tolerance, root and stalk length” says Alan. “On the silage ground we’re looking for a hybrid with good drought tolerance because the summers seem to be getting drier and drier”.

“We’ve had good support from Pioneer and they have great hybrids” says Alan. “I’ve got no reason to plant anything else”.

Planting starts on the grain block in early October and Alan aims to have the last maize silage block planted by the end of that month.

Alan soil tests regularly and applies base fertiliser as required. Crops are planted with 150-250 kg/ha DAP and side dressed with 200-250 kg/ha urea depending on the individual block’s nutrient status.

“Weeds can be a problem, especially on the lease blocks which have been previously cropped” says Alan. “We have been spraying pre and post emergence and seem to be getting on top of them”.

Maize silage harvest starts in early to mid-March, while the grain comes off late April. Some of the maize silage is contracted to local dairy farmers, many of whom have become regular customers over the past decade. The balance is sold to a local contractor.

After harvest, the silage blocks are planted in annual ryegrass which is winter grazed or sold as grass silage.

The grain block is mulched and fallowed for the winter. By the time the combine is back in the shed, it is time to start maintaining gear in advance of the next season.

“A lot of our gear isn’t new so there is a fair bit of repair and maintenance work to ensure everything remains reliable during the season” says Alan. “We also rebuild and sell equipment, and this has helped improve our cashflow as we get more established”.

Because of the range of soil types, elevation and varied growing environments of his maize blocks, Alan averages silage yields of around 18 tDM/ha. His first grain crop yielded 10 t/ha which was a good result given the challenging growing conditions.

“In the future we want to try and improve the lease blocks so we can increase yields” says Alan, “...and we have always got our eyes open on the lookout for more lease land”.

ALAN BROWN RICHMOND DOWNS, WAIKATO

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FARM DETAILS

MAIZE HECTARES GROWN

MAIZE HYBRIDS

P9400

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FARM DETAILS

MAIZE HECTARES GROWN

MAIZE HYBRIDS

P9400
Left: The Steele’s maize grain crop.
Above: Paul Steele with Simon Begley, their local Pioneer Representative.

While the last few decades have seen the conversion of significant areas of arable land to dairying, Northern Hawke’s Bay farmers Paul and Susan Steele chose to go in the opposite direction when they sold their dairy farm to grow maize.

The couple, who farm at Nuhaka, between Gisborne and Wairoa, had been dairying for 25 years when they made the decision to sell the cows in 2010. “Staff were always a problem, the kids were growing up and I was tied to the shed. We were ready to have a lifestyle change”, says Paul.

“When we were dairying, we had also grown 5 or 6 ha of maize silage and 15 ha of grain maize, so switching to grow entirely maize was an obvious choice”.

In their first season, the couple planted 70 ha in maize. After a successful crop, they decided to purchase a 320 ha farm with 120 ha of flat land, 1.5 km from the home farm in 2011. “The returns from maize were far better than fattening sheep or cattle, and not far behind milking cows”, says Paul. “In fact, a good maize crop can deliver as good a return as dairying, taking into account the much lower labour requirement”.

Paddocks are disc’d twice and power-harrowed prior to planting, starting in late September through to the end of October.

In spring 2014, the couple purchased a 6 row planter and planted a mix of Pioneer® brand P0891 and P1253, with a smaller area of P0021. “Buying the planter allowed the flexibility to plant as soon as paddocks were ready, weather permitting” says Paul.

“We choose longer maturity hybrids which will give us the higher yields. Our best yield so far is 19.4 t/ha, and our aim is to produce a 20 t/ha crop”. Paul also contracts out, planting 100 ha for another local maize grower.

“We are really happy with the Pioneer hybrids and the service we get from our local Pioneer Area Manager, Simon Begley. He has a wealth of knowledge and is only a phone call away” says Paul.

This year, for the first time, all the Steele’s maize seed was treated with insecticide, prior to planting. “It meant we didn’t have to monitor crops as intensely, and it took away the worry of being hit by insects such as Greasy Cutworm and Argentine Stem Weevil”, says Paul. “It’s cheap insurance”.

They typically apply a starter fertiliser of 300 kg/ha cropzeal 16N at planting and side-dress with 300 kg/ha urea when plants are at the 5-6 leaf stage.

Using his own spray unit, Paul applies a pre-emergent spray of acetochlor and post-emergent spray of atrazine plus nicosulfuron for weed control. Clopyralid is used as necessary to control Californian thistle and Bathurst burn.

Once the maize crop has been side-dressed in December, it needs no further attention. “It’s just a matter of shutting the gate and watching it grow”, says Paul.

Harvest starts when the maize is under 20% moisture and usually lasts around a month. The crop is transported to Gisborne and sold for milling and stock feed.

After harvest, Paul applies glyphosate to those paddocks with summer grass and weeds and spreads 2 t/ha lime. They are disc’d, ripped and left to fallow. The stover breaks down over the winter, making it easier to cultivate in the spring.

In the future, Paul plans to fine-tune his system so he can achieve his goal of 20 t/ha. “We are happy with the lifestyle, and the income maize provides”, says Paul. “It’s going well for us”.

“We are happy with the lifestyle, and the income maize provides” — Paul & Susan Steele, Nuhaka, Northern Hawke’s Bay

FARM DETAILS

MAIZE HECTARES GROWN 180
GRAIN HYBRIDS P0891, P1253, P0021

08
Poultry provided us with a more certain market for maize grain and so we made the switch.

Each year the couple plant around half the farm in maize grain. The balance of the farm is in winter wheat and barley, or in permanent pasture which is used for fattening cattle and finishing lambs.

“Our typical rotation is two years in maize grain, followed by a year in winter wheat or barley, and then back into permanent pasture”.

In the 2014-15 growing season the Williams planted a mix of Pioneer® brand P9400, P9721 and P0021.

“We are growing maize at an altitude of 200 m, so we are looking for shorter maturity hybrids which need less heat and can withstand a cooler start” says Brendon. “We need hybrids with fast dry down because the elevation means the temperature drops quickly in the autumn”.

The Williams participate in Pioneer’s Maize Hybrid Product Evaluation Programme each season. They use the results of their strip trial along with other local trials, and the advice of local Pioneer Representative David McDonald, to determine which hybrids to plant the next season.

“One of the good things about maize is that the yield is consistently high as long as you do the basics right” says Brendon. “But every now and then the weather delivers a “freak” season and we can get yields of up to 15 t/ha with no extra crop inputs”.

The couple, who farm 150 ha at Tutaenui, north of Marton, started growing maize in 2004 to mop up the excess nutrients after their potato crops - but ultimately made the decision to switch from potatoes to maize.

“We soon found maize was an easier crop to grow than potatoes” says Brendon. “It gave us similar returns for much less work”.

While the Williams’ first maize crop was sold as silage, they made the change to grain five seasons ago.

“There are not too many dairy cows around here, so demand for maize silage was variable” say Brendon. “In contrast Turks Poultry provided us with a more certain market for maize grain and so we made the switch”.

Every paddock is soil tested each season and base fertiliser is applied to correct any nutrient deficiencies. Crops are planted with 300kg/ha 12:10:10 and 300 kg/ha area is side-dressed 6-8 weeks post-planting.

Grain harvest starts early to mid-May as soon as the grain moisture is in the low 20’s. Paddock are typically left fallow until the spring. For the last few seasons, the Williams’ maize crop have produced an average yield of 12 t/ha.

“IT GAVE US SIMILAR RETURNS FOR MUCH LESS WORK”

FARM DETAILS

**MAIZE HECTARES GROWN**

75

**GRAIN HYBRIDS**

P9400, P9721, P0021
An interest in organic farming, combined with a desire to build a livestock business where he had control from paddock to plate, led Hawke’s Bay farmer Ben Bostock to establish Bostock’s Organic Free Range Chicken.

The business, which is located on 8 ha of pasture on Ben’s family’s organic apple orchard in Hastings, started in June 2014. Prior to this, Ben had researched international poultry practices, and travelled to France to see how to best raise organic chicken.

“Superior tasting, succulent chickens are part of French culture” says Ben. “Our focus is on quality, not quantity and we’re committed to healthy, safe growing practices”. Day old Cobb chickens are purchased from Bromley Park Hatcheries and housed in eighteen state of the art ‘chalets’ which were imported from France. The 120 m² chalets have a solar operated feeding system and windows which allow the chickens to roam freely outside once they are fully feathered. Each chalet holds 1,500 birds and it is moved every 10 weeks allowing the birds access to fresh grass.

Birds are slaughtered at 63 days, by which time they have reached a dressed weight of 1.6 kg. During their time on the farm each bird consumes as much pasture as they can eat, plus 4 kg of an organic meal mix comprised of maize grain, barley, dried apple pomace and fish meal.

“We feed our birds a lower protein feed so it takes them twice as long to grow to slaughter weight” says Ben. “The slow growth rate increases our production costs, but produces superior tasting chicken which has been nurtured from pasture to plate”.

Ben’s father, John Bostock, has been growing a significant area of maize for several years, so maize grain was an obvious choice when it came to formulating a poultry ration.

“We feed our birds a lower protein feed so it takes them twice as long to grow to slaughter weight” says Ben. “The slow growth rate increases our production costs, but produces superior tasting chicken which has been nurtured from pasture to plate”. In the 2013-14 season Ben grew 4 ha of Pioneer® brand P0537. In spring 2014 he planted 32 ha of Pioneer® brand P8801 and 8 ha of Pioneer® brand P8805.

“We are looking for a hybrid which would deliver a high yield, but we also wanted some very early maturity maize because we needed the grain early for the chickens” says Ben.

Weeds are the key challenge for organic maize crops. Paddocks were ploughed in October and a ‘false seed bed’ was created prior to planting. This allowed weed seeds to germinate with the weed seedlings being removed by a second cultivation just prior to planting.

“This year we didn’t plant until 5 November because the ground conditions were too wet earlier on” says Ben. “The later planting date allowed the maize to jump out of the ground and we only had to inter-row cultivate once”.

Since an organic system cannot use synthetic fertiliser, Ben relies on chicken manure from the chalets to provide nutrients for the maize crop. This season it was applied prior to maize planting, and a second application is planned after harvest prior to planting a winter crop.

Ben’s organic chickens are slaughtered locally before being packaged and sold at New World supermarkets and niche food stores around the country.

“Having control of the whole process means we can produce a high quality product which is healthy and safe” says Ben. “It’s very satisfying to be running a successful business which meets all welfare standards, is kind to the environment, and is economic and sustainable”.

Ben Bostock
Hastings, Hawke’s Bay

“OUR FOCUS IS ON QUALITY NOT QUANTITY”
The battle for the Yield Cup

Each season the battle is on as Lower North Island maize grain growers Paul Carter, Stewart Glasgow and Patrick O’Neill compete amongst themselves and other growers for the Manawatu/Rangitikei Pioneer® brand seeds maize grain Yield Cup. Started in 1998, the Maize for Grain Yield Competition celebrates grain growers achieving the highest yields with Pioneer® brand maize hybrids in their on-farm trials. The competition covers five regions: Waikato, Bay of Plenty, Gisborne/Hawke’s Bay, Manawatu/Rangitikei and Auckland Province & North, and three maturity groups: early, mid and late within each region.

All on-farm trial co-operators are automatically entered into the competition. The regional winner is the grower with the highest yield from a currently commercial Pioneer hybrid. The National Yield Cup is awarded to the highest yielding regional winner.

Since the competition’s inception, Stewart Glasgow and Paul Carter have each taken the Manawatu/Rangitikei Cup three times, with Patrick O’Neill winning in 2005. “We are good mates but we are also very competitive. Beating Paul and Patrick is just about as good as winning the Yield Cup!” says Stewart with a smile.

“We are farming in a unique microclimate and that’s why local data is important to us” says Stewart. “Planting Pioneer strip trials gives us valuable knowledge for next season, and allows us to see the new hybrids which are coming out in the next few years”.

“I pay a lot of attention to the strip trial results” says Paul. “If a particular hybrid is producing high yields it pays to take notice”. Stewart started growing maize grain on his 174 ha farm at Turakina in 2007. Over time, the maize area has increased to almost 50 ha. He has a mix of Pioneer® brand P0547 and P0021 in the ground for grain, as well as a small area of P8805 for maize silage. Crops normally average around 15 t/ha, with the best paddocks producing up to 18 t/ha of maize grain.

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Patrick farms just upstream from Stewart. He has been growing maize for 15 years and has total of 300 ha of maize in the ground. In spring 2014 he planted a mix of P9721, P9911, P0021 and P0547. Patrick’s average grain yield is normally around 13.5 t/ha, although the 2013-14 crop averaged 12 t/ha, while the crop in the year prior yielded over 14 t/ha.

“Climate plays a big part in determining the final yield we get” says Patrick. “If all the stars line up we can expect yields of more than 14 t/ha and the net return of the crop is more than useful!”

From left to right: Patrick O’Neill, Paul Carter and Stewart Glasgow
“We wait until the ground conditions are right and then go like hell” says Patrick. “We also place a major emphasis on controlling weeds because they are competing for the same nutrients as the maize plant.”

All three growers appreciate the support they get from local Pioneer Representative David McDonald and believe the advice he provides helps them to grow successful crops year after year.

“Pioneer has a fantastic research programme, great hybrids and top people” say Paul. “Why would you grow anything else?”

During the past two seasons Paul, Stewart and Patrick have all been “outgunned” by Bulls grower Dennis Nitschke, who has taken out the Regional Yield Cup. So what do they think their chance is of having their name on the cup in 2015?

“We’ve been within 0.1-0.2 t/ha of the winning yield for the past few seasons” says Patrick. “All going well we should be in with a reasonable chance to win the Cup this year”.

Paul has been growing maize grain for more than 30 years. He also owns a combine and contract harvests for a number of local growers, including Stewart and Patrick. He has been growing 140 ha of maize on the Whanganui River flats for the past eight years. Historically he has planted 37Y12, but this year he made the change to Pioneer® brand P9721. Paul’s crops typically yield around 13 t/ha.

“Stewart and Patrick are farming on slightly heavier soils than me” says Paul. “Their crops tend to do better if we have a dry season, but I have the edge if the season is wet”.

All three growers agree that getting the basics right is critical to achieve a high yielding crop.

“It’s a matter of preparing a good seed bed, making sure you have adequate nutrients for the crop and controlling the weeds” says Paul. “Timing is just as important as doing the job right”.

### NATIONAL YIELD CUP WINNERS 1998–2014

<table>
<thead>
<tr>
<th>YEAR</th>
<th>WINNER</th>
<th>HYBRID</th>
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<td>2014</td>
<td>Brian Amor</td>
<td>P1253</td>
<td>Gisborne/Hawke’s Bay</td>
</tr>
</tbody>
</table>

2015 Maize for Grain Yield winners were not known at the time of print.
All national and regional Yield Cup winners will be announced in late July on www.pioneer.co.nz
DRIVING BETTER PRODUCT DECISIONS

DO YOU CHOOSE A FAMILY CAR BECAUSE YOU’VE SEEN IT WIN A GRAND PRIX? TRACK RACES INVOLVE GREAT DRIVERS, SKILLED PIT CREWS AND TALENTED MECHANICS. YOU CAN’T EXPECT THE KIND OF PERFORMANCE THEY ACHIEVE ON THE TRACK, ON YOUR LOCAL ROADS

Likewise, maize trials conducted at one or two sites are not the best way to select a hybrid. It’s much better to look at data from a lot of plots, on many types of ground, including paddocks and environments similar to yours.

Each season, the New Zealand Pioneer® brand products research team work with local growers and contractors to test a broad range of new experimental hybrids under local conditions at multiple locations. This is like taking a new car for a test drive on the roads you travel every day.

IMPACT™ TRIALS
Firstly, new hybrids are tested in IMPACT™ (Intensively Managed Product Advancement, Characterisation and Training) trials. These replicated small plot trials are located at approximately 50 sites around the country.

“When choosing sites we look for growing environments that are common to the area” says Barry McCarter, Maize Product Manager for Pioneer® brand products.

“When we see a lot of hybrids, over multiple locations and several seasons, we can pick the best ones to re-test the next season” says Barry. “Many of the experimental hybrids don’t progress beyond this stage because their yield and agronomic characteristics are no better than existing commercial hybrids”.

PRODUCT ADVANCEMENT TRIALS (PAT)
The handful of hybrids that show improved performance through IMPACT trials move to the Product Advancement Trials (PAT) stage of testing where they are planted in strips alongside commercially available hybrids in growers’ paddocks.

“The PAT trials are where hybrids are really put to the test in multiple trials in defined growing regions. They are tested in real-life situations that allow us to gather useful information about every aspect of the hybrid” says Barry.

MORE THAN JUST YIELD
New hybrids planted in IMPACT and PAT trials are carefully observed and their performance is rated for a broad range of plant performance characteristics such as standability, disease resistance, grain quality and yield.

Experimental hybrids that offer real advantages over existing commercial products are identified for local seed production and commercialisation.

“New hybrids will only be advanced if they exceed the agronomy and disease tolerance requirements for the environment they will be grown in” says Barry.

POSITIONING PRODUCTS
Over 450 grain and silage trials conducted by the Pioneer research team around the country each season help determine which products to advance and provide growers with a live “shop window” experience. They also allow the Pioneer field team to gain knowledge of the “personality” of hybrids in your growing region.

“All these trials, we understand the true potential of hybrids and where they perform best” says Barry. “This goes a long way in helping farmers select the right product for the right paddock”.

CHOOSING WHAT FITS
While Pioneer trials are aimed at identifying products that perform consistently in a wide range of growing conditions, sometimes a product will fit a special need.

“We may see a sweet spot where a hybrid performs well in dry conditions or on marginal land” says Barry. “A hybrid may not make 15 t/ha in the best soil, but it may consistently yield 12 t/ha where others would offer a variable performance”.

“Over the past 25 years, Pioneer research technicians, contractors and local farmers have planted thousands of hybrid plots in trials across the country” says Barry. “When you see Pioneer® brand maize hybrids winning the race in your paddock, it’s because they have made it through the most rigorous testing programme in the industry”.

Alan Brown (left) with his local Pioneer Representative, Craig Maxwell (right). The Pioneer Research Station at Rukuhia in the Central Waikato (above).

Source: New Zealand Yearbook and Pioneer® brand products New Zealand Research programme

New Zealand Grain Yield Trend 1961 to 2014

Grain Yield (t/ha)

Year


0 2 4 6 8 10 12 14 16

New Zealand Grain Yield Trend 1961 to 2014


0 2 4 6 8 10 12 14 16

Year

THE NEW ZEALAND FAMILY OWNED MAIZE SEED BUSINESS

THE NEW ZEALAND FAMILY OWNED MAIZE SEED BUSINESS

THE NEW ZEALAND FAMILY OWNED MAIZE SEED BUSINESS

THE NEW ZEALAND FAMILY OWNED MAIZE SEED BUSINESS

THE NEW ZEALAND FAMILY OWNED MAIZE SEED BUSINESS

THE NEW ZEALAND FAMILY OWNED MAIZE SEED BUSINESS
The best maize crops are produced by growers who plant and manage crops with excellent execution and the right timing. This includes paddock selection, soil fertility management, pest and weed control, hybrid selection and of course accurate and timely planting.

Maize seed comes in a range of shapes and sizes. If you are planting high quality Pioneer® brand maize seed and your planter is well maintained and operated with the correct settings and ground speed, it doesn’t matter whether you plant big seed or small seed, rounds or flats. Every bag contains high quality seed and industry-leading genetics, ensuring you get the best possible crop. The seed parents and growing conditions (including temperature and rainfall) during seed production also influence seed size and shape.

Many research studies have shown that for high quality seed, there are no consistent effects of seed size and shape on overall maize hybrid germination, plant growth or yield. In recent years, earlier planting and the increased use of reduced tillage techniques have created a more challenging environment for maize establishment. However, maize breeding advances have resulted in hybrids with enhanced germination and emergence capability so they have faster early growth under these challenging seedbed conditions.

Pioneer® brand seed production processes in Gisborne ensure the delivery of world class quality seed with outstanding germination and vigour, in all seed sizes and grades. Every seed paddock produces a range of seed shapes and sizes, which are reflected in the overall availability of seed size for every hybrid. While we always endeavour to supply the seed size and shape you prefer, this is not always possible. Running your planter through the Pioneer “seed Planter CheckSM” across a range of settings and seed sizes will ensure your planter is working accurately and efficiently.

High yielding crops of maize can be achieved from any grade of Pioneer® brand seed provided due care and attention is given to planter and meter maintenance, settings and ground speed. Evenly spaced plants without skips are the foundation for higher yields. Planting too many, unevenly spaced seeds causes competition between plants. Planting too few seeds and falling short of the optimum population limits yield potential.

To help you maximise the return from your investment in Pioneer genetics and seed quality, the Pioneer team uses MeterMax® Ultra test planters to check a range of finger picker and vacuum metering units produced by John Deere, Kinze, Case IH and Monosem. The test units can also provide potential alterations in singulator, speed or vacuum settings to improve accuracy when changing seed size.

To request a seed Planter CheckSM, please contact your local Pioneer Representative.
Optimum Aquamax® hybrids are exciting new 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.

Simply stated Optimum Aquamax® hybrids:

- 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® hybrids for the 2015-2016 season

Pioneer Optimum Aquamax® drought-tolerant hybrid (right) vs. a susceptible hybrid (left) grown side by side in a drought environment.

FOR MORE OUT OF EVERY DROP

See page 27

P9911

P0725

see page 25

see page 27
Every farm throughout New Zealand provides its own unique set of growing conditions. Each paddock may be different to the one next-door. The Pioneer® brand products hybrid range for 2015/16 offers 15 new and well-known hybrids, all of which have gone through our comprehensive New Zealand trialling programme. With around 180 grain trials in the ground every season, chances are we will have trialled our products somewhere near you. This allows us to offer the right hybrid to suit your specific environment so you can plant with confidence.

Our team includes representatives who are dedicated to and know your area, so please contact us or your local merchant or contractor, if you need any advice on choosing the right hybrid for your farming situation.

**Sharing your farming risk**

Every bag of Pioneer® brand hybrid maize seed you plant is covered by our 50% Seed Replant Risk Cover. If in the unfortunate situation that your Pioneer crop needs replanting within two months of planting, we will provide you with replant seed at half the price for the affected area.*

*This cover is for planting within the same season, and only applies to Pioneer® brand hybrid maize seed which is planted in accordance with specifications and usual practices. Affected area will need to be assessed and replant approved by a Pioneer Representative. Depending on product availability, hybrid and seed treatment will be as per original order. If a given product is out of stock, the next best alternative will be provided. Cover does not apply to lucerne or greenfeed maize blends, or seed treated by a third party.

**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 35 and 36. Contact your local Pioneer Representative or Merchant for further advice.
IMPORTANT NOTE: Hybrid comparisons are only valid within a range of ± 4 CRM. These descriptions mainly feature product strengths. When choosing hybrids, also review carefully the trait ratings found in the table on page 35 and 36. Contact your local Pioneer Representative or Merchant for further advice.

**Pioneer® Brand Maize Hybrids**

**37Y12**
- Grain yield potential: 7
- Stalk strength: 5
- Root strength: 6
- Drought tolerance: 6
- Grain drydown: 9
- Staygreen: 5

**P9721**
- Grain yield potential: 9
- Stalk strength: 6
- Root strength: 5
- Drought tolerance: 8
- Grain drydown: 9
- Staygreen: 7

**P9911**
- Grain yield potential: 8
- Stalk strength: 5
- Root strength: 5
- Drought tolerance: 9
- Grain drydown: 5
- Staygreen: 9

**P0021**
- Grain yield potential: 9
- Stalk strength: 6
- Root strength: 7
- Drought tolerance: 7
- Grain drydown: 6
- Staygreen: 6

**P0537**
- Grain yield potential: 8
- Stalk strength: 7
- Root strength: 6
- Drought tolerance: 6
- Grain drydown: 8
- Staygreen: 7

**P0547**
- Grain yield potential: 9
- Stalk strength: 7
- Root strength: 6
- Drought tolerance: 6
- Grain drydown: 7
- Staygreen: 6

**Impressive Yields with "Fuel Saving Speedy Drydown"**
Impressive grain yields coupled with very fast grain drydown are significant economic benefits but timely harvest is important.

**37Y12** is a grain performance standard in the Lower North Island yet is well positioned in Northland and Waikato as a stable, defensive and fast-drying early hybrid. Plant alongside **P9400** and **P9721**.

**P9721** offers a great all-round balanced package of agronomic traits, with wide adaptability for the production of industry leading grain yields in this maturity. Widely grown in all northern growing regions.

**P9911** is an important mid-maturity hybrid in the north and a top full-maturity option in the Lower North Island. Widely planted from Dargaville to Bulls. Companion with **P9911** or **P0021** depending on maturity requirements.

**AQUAmax®**

**The New Hero for Fast Drydown and Top Grain Yields. You Can Bank on it**
Similar in type and maturity but delivers higher yields than **37Y12**. **P9721** offers a great all-round balanced package of agronomic traits, with wide adaptability for the production of industry leading grain yields in this maturity.

This new hybrid will be a sought after partner to **P9911** or **P7921** throughout the North Island. Will be a sought after partner to **P0021** throughout the North Island.

**Water Wise with Optimum AQUAmax® Gives More Grain with Every Drop**
A key maturity option in the AQUAmax® range providing growers more yield per drop – rain or shine!

A showy hybrid providing yield stability. May be the best option for those bony paddocks.

An impressive all-round hybrid, with top agronomics and a sound disease package. Will be a sought after partner to **P0021** throughout the North Island.

**Hard to Beat Favourite with Stable Yields**
A relatively short plant with excellent grain yields. Produces an eye-catching ear on plants with sound standability and staygreen, bundled together with top disease resistances.

Excellent option in moderate to high yield environments. **P0021** is an important mid-maturity hybrid in the north and a top full-maturity option in the Lower North Island.

Widely planted from Dargaville to Bulls. Companion with **P9911** or **P0021** depending on maturity requirements.

**Produces a Weighty Yield of Quality Grain**
Widely grown in all northern growing regions. A moderately tall plant with low ear placement. Combines dependable staygreen with strong drought tolerance and Northern Leaf Blight, Common Rust and ear rot resistances.

Strong agronomics and top-end yields enable this broadly adapted hybrid to be used in a wide range of environments including Northland, Waikato, Bay of Plenty and south to Hawke’s Bay.

Companion with **P9911**, **P0021** or **P0891** depending on maturity requirements.

**Will Earn Your Respect in Northland and Rangitikei!**
Very similar in type and maturity to **P0537**, but with higher yield and faster grain drydown for earlier harvest timing.

While broadly adapted the analysis of trial results show this hybrid to be most productive in Northland and Rangitikei. Companion with **P9911**, **P0021** or **P0891** depending on maturity requirements.

---

**Grain Yield Potential**
- **37Y12**: 7
- **P9721**: 9
- **P9911**: 8
- **P0021**: 9
- **P0537**: 8
- **P0547**: 9

**Stalk Strength**
- **37Y12**: 5
- **P9721**: 6
- **P9911**: 5
- **P0021**: 6
- **P0537**: 7
- **P0547**: 6

**Root Strength**
- **37Y12**: 6
- **P9721**: 5
- **P9911**: 5
- **P0021**: 7
- **P0537**: 5
- **P0547**: 6

**Drought Tolerance**
- **37Y12**: 6
- **P9721**: 8
- **P9911**: 9
- **P0021**: 7
- **P0537**: 7
- **P0547**: 6

**Grain Drydown**
- **37Y12**: 9
- **P9721**: 9
- **P9911**: 5
- **P0021**: 6
- **P0537**: 7
- **P0547**: 7

**Staygreen**
- **37Y12**: 5
- **P9721**: 7
- **P9911**: 9
- **P0021**: 6
- **P0537**: 6
- **P0547**: 6

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**The New Zealand Family-Owned Maize Seed Business**

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**Maize for Grain 2015–2016**

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**25**

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**26**
**AQUAmax®**

**GREAT PERFORMANCE WITH EXTRAORDINARY CONSISTENCY!**

Optimum AQUAmax® drought tolerance provides resilience when it’s dry and yield responsiveness with favourable growing conditions.

Delivers exceptional yield stability for grain and silage in all northern production regions.

Has similar grain yield potential to 34P88 but is earlier and has faster drydown, enabling earlier harvest and lower drying costs.

New companion hybrid to P0891, P1253 and 34P88.

---

**THE PERFECT ALL-AROUND PERFORMER PRODUCES A “SEA OF GOLD”**

Delivers exceptional yield stability for grain and silage from Kaitaia to Napier.

Very good drought tolerance, standability and staygreen combined with above average resistance to Northern Leaf Blight.

Best suited to moderate to high yielding paddocks.

Produces grain with excellent appearance, very high test weight and with food grade end-use quality.

Well adapted to high plant populations which should be adjusted to match growing conditions and yield expectations.

Other hybrids to consider include P0725, P1253 or 34P88.

---

**POPULAR TOP PERFORMER FOR GRAIN AND SILAGE**

A tall hybrid with balanced agronomics and disease resistances.

Well known as a stable, dependable hybrid producing consistent quality grain on large ears which have significant capacity to “flex”.

34P88 produces exceptional grain and silage yields in Northland, Waikato, Bay of Plenty through to northern Hawke’s Bay.

Companion with P1253 or P0891 and P0725 which are earlier.

---

**PACK YOUR PADDOCK FOR BIN TOPPING YIELDS**

Similar to 34P88 but is a slightly shorter plant, with lower ear placement and faster drydown.

P1253 is well adapted to moderate to higher yielding situations.

Plant early to optimise its impressive performance opportunity.

Excellent staygreen and a strong agronomic package.

Produces impressive yields of grain with high test weight and notable quality.

P1253 also performs for silage and as a result is an excellent companion for 34P88.

---

**PIONEER HYBRID NUMBERING SYSTEM**

The following shows how the Pioneer hybrid numbering system works:

**PIONEER® BRAND MAIZE HYBRIDS**

**ALSO AVAILABLE**

The hybrids below are older genetics which are no longer being produced. These products will be discontinued when existing stocks are exhausted.

---

**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 35 and 36. Contact your local Pioneer Representative or Merchant for further advice.
MAIZE GRAIN FOR DAIRY COWS

PIONEER® BRAND PRODUCTS ARE WORKING ALONGSIDE LOCAL GRAIN MERCHANTS TO PROMOTE MAIZE GRAIN INTO THE DAIRY SECTOR.

Market research shows that dairy farmers are continuing to increase the amount of supplements they feed and a growing number have invested in in-shed feeding systems which allow them to feed meal or grain. This represents a significant opportunity for the New Zealand maize industry.

CHANGING DAIRY FARM SYSTEMS

While pasture and maize silage form the basis of the diet for many dairy cows, concentrate feeding systems are becoming increasingly popular with those farmers who want to lift per-cow performance while at the same time reducing labour inputs.

In-shed feeding systems allow grain or meal to be fed at the push of a switch. The more sophisticated systems are coupled with cow identification and milk monitoring technology which allow individual cows to be allocated varying amounts of feed or grain depending on the amount of milk they produce.

For dairy farmers with an in-shed feeding system, maize grain offers the opportunity for more production, better reproductive performance and healthier cows.

MORE ENERGY, MORE MILK PROTEIN, MORE REVENUE

Maize grain is higher in energy than other concentrate feeds, such as barley, wheat, palm kernel and most dairy meals.

What’s more, this energy is mainly in the form of starch, which drives milk protein percentage. Since milk protein is worth more than milk fat, feeding maize grain can directly increase milk revenue.

HEALTHY, PRODUCTIVE COWS

Maize is one of the best possible sources of starch for cows because it is digested more slowly and to a lesser extent in the rumen. This reduces the risk of acidosis and its associated production losses and animal health costs.

ENVIRONMENTALLY FRIENDLY

Cow urine is a major source of nitrogen leaching on dairy farms. The more nitrogen cows eat above their requirements, the more they excrete in their urine. Low protein feeds such as maize grain dilute dietary protein reducing the amount of nitrogen excreted in cows’ urine. This reduces the risk of nitrogen leaching into groundwater, lakes and rivers.

GET IT WHEN YOU NEED IT

Convenient and easy to use, processed maize grain can be ordered when required. It can be fed mixed with silage or other feeds in bins or through in-shed feeding systems.

The benefits of feeding maize grain to dairy cows.

TO RECEIVE YOUR COMPLIMENTARY COPY

- VISIT WWW.PIONEER.CO.NZ/PUBLICATIONS
- CONTACT YOUR LOCAL PIONEER REPRESENTATIVE – SEE OUTSIDE BACK COVER FOR CONTACT DETAILS

Cow identification and milk monitoring technology in an in-shed feeding system
When it comes to achieving high maize yields, every plant counts. Pioneer Premium Seed Treatment offers a number of industry-leading insecticide, fungicide and bird repellent options to control insects, soil borne diseases and birds. These give your seedlings the best possible chance of achieving their full yield potential.

To carry the Pioneer Premium Seed Treatment stamp of approval, every bag of treated Pioneer® brand maize seed must meet the following stringent quality control standards.

**QUALITY CONTROL**

Compliance with Pioneer’s globally accredited ISO 9001:2008 quality standards is at the forefront of all conditioning, grading and seed treating operations at our Gisborne production plant.

**PRECISION APPLICATION**

Precision treating technology accurately applies the precise dose of seed treatment required to each and every seed.

**ADVANCED FILM COATINGS**

The use of film coatings and advanced drying processes ensure the seed treatment ingredients adhere to the seed reducing dust and improving planter operator safety.

**PIONEER WARRANTY**

For your protection, every bag of Pioneer® brand seed is mechanically stitched closed with a green and white bi-colour tamper proof string. This “locks in” the Pioneer warranty & Seed Replant Risk Cover and guarantees there are a minimum of 80,000 kernels in each and every bag.

If the bag has been opened and treated by a third party, your Pioneer warranty and Seed Replant Risk Cover will be void.

---

**GET THE MOST FROM EVERY SEED**

WHEN IT COMES TO ACHIEVING HIGH MAIZE YIELDS, EVERY PLANT COUNTS.

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---

**INDICATIVE MAIZE FOR GRAIN COSTS OF PRODUCTION FOR THE 2015-16 SEASON**

Visit www.pioneer.co.nz to find figures specific to your farm.

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Indicative cost estimate ($/ha)</th>
<th>My costs ($/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil tests, other</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Base: Lime @ 1 t/ha</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Base fertiliser: 300 kg/ha + application</td>
<td>220</td>
<td></td>
</tr>
<tr>
<td>Cultivation: To planting specifications</td>
<td>370</td>
<td></td>
</tr>
<tr>
<td>Pioneer® brand maize seed P0891 @ 94,000/ha</td>
<td>430</td>
<td></td>
</tr>
<tr>
<td>FAR levy ($0.90/10,000 kernels @ 94,000/ha)</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Seed insecticide treatment (Poncho®*)</td>
<td>130</td>
<td></td>
</tr>
<tr>
<td>Starter fertiliser: 250 kg/ha DAP + application</td>
<td>210</td>
<td></td>
</tr>
<tr>
<td>Planting</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>Pre emergence weed control</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>Post emergence weed control</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Side dressing: 250 kg/ha urea + application</td>
<td>210</td>
<td></td>
</tr>
<tr>
<td>Spraying: Two applications</td>
<td>80</td>
<td></td>
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<tr>
<td>Harvest: Combine</td>
<td>380</td>
<td></td>
</tr>
<tr>
<td><strong>Total input costs per hectare</strong></td>
<td><strong>$2,395</strong></td>
<td></td>
</tr>
</tbody>
</table>

Interest on input costs excluding harvest

| Interest on $2,015 @ 10% for 8 months | $135 |  |

**Total costs (inputs & interest)**

<table>
<thead>
<tr>
<th>Yield</th>
<th>Tonnage per hectare: WET</th>
<th>12.14</th>
<th>13.29</th>
<th>14.45</th>
<th>15.61</th>
<th>16.76</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cartage and drying costs</td>
<td>Tonnage per hectare: DRY (@ 14% moisture)</td>
<td>10.50</td>
<td>11.50</td>
<td>12.50</td>
<td>13.50</td>
<td>14.50</td>
</tr>
<tr>
<td>Cartage - 50 km @ $18 per wet tonne</td>
<td>219</td>
<td>239</td>
<td>260</td>
<td>281</td>
<td>302</td>
<td></td>
</tr>
<tr>
<td>Drying (from 22% - 14%) @ $40 per wet tonne</td>
<td>486</td>
<td>532</td>
<td>576</td>
<td>624</td>
<td>670</td>
<td></td>
</tr>
<tr>
<td><strong>Total drying costs per hectare</strong></td>
<td><strong>705</strong></td>
<td><strong>771</strong></td>
<td><strong>838</strong></td>
<td><strong>905</strong></td>
<td><strong>972</strong></td>
<td></td>
</tr>
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**Cost summary**

<table>
<thead>
<tr>
<th>Input costs</th>
<th>2,395</th>
<th>2,395</th>
<th>2,395</th>
<th>2,395</th>
<th>2,395</th>
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<tbody>
<tr>
<td>Interest (on input costs)</td>
<td>135</td>
<td>135</td>
<td>135</td>
<td>135</td>
<td>135</td>
</tr>
<tr>
<td><strong>Drying costs / cartage costs</strong></td>
<td><strong>705</strong></td>
<td><strong>771</strong></td>
<td><strong>838</strong></td>
<td><strong>905</strong></td>
<td><strong>972</strong></td>
</tr>
<tr>
<td><strong>Total costs</strong></td>
<td><strong>3,235</strong></td>
<td><strong>3,301</strong></td>
<td><strong>3,368</strong></td>
<td><strong>3,435</strong></td>
<td><strong>3,502</strong></td>
</tr>
</tbody>
</table>

**Assumptions**

1. Costs to grow, harvest, transport and dry the crop are estimates only.
2. Medium yield growing environment where 94,000 seeds of hybrid P0891 are planted per hectare.
3. Wet harvest moisture content of 22%.
4. Costs are estimates based on a sample of contractor rates, other typical industry charges and product costs. All costs exclude GST and were indicative at 31 January 2015. See www.pioneer.co.nz for updated costs.

The information in this calculator 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 calculator or otherwise in connection with the use of this calculator.

*Registered trademark of the Bayer Group.*
Hybrid recommendations for grain by region

**Regions depicted reflect general similarity of hybrid requirements. When choosing hybrids review carefully the hybrid performance profiles and the trait ratings on pages 35-36. Contact your Pioneer Area Manager or merchant representative for further positioning advice.**

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 Bay of Plenty will be ready for harvesting much earlier than the same hybrid planted on the same day in Central Taranaki due to the faster accumulation of heat units in the Bay of Plenty environment. This has important implications for hybrid selection.

Hybrid comparisons are only valid within a range of + or - 4 CRM (Comparative Relative Maturity). Contact your local Pioneer® brand seeds Area Manager or Merchant representative for further advice.

**NOTES**

ha = hectare

cm = centimetres

m = metres

km = kilometres

t/ha = tonnes per hectare

kg/ha = kilograms per hectare

kg/ha/year = kilograms per hectare per year

kg/litre = kilograms per hectolitre

$/ha = $ per hectare

$/tonne = NZ dollars per tonne

---

**Hybrid Recommendations by Region**

**Region 1**

**Northland / North Auckland**

<table>
<thead>
<tr>
<th>Hybrids</th>
<th>CRM</th>
<th>Maturity</th>
</tr>
</thead>
<tbody>
<tr>
<td>P8805</td>
<td>88</td>
<td>Very Early</td>
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**Publication Abbreviations**

ha = hectare

cm = centimetres

m = metres

km = kilometres

t/ha = tonnes per hectare

kg/ha = kilograms per hectare

kg/ha/year = kilograms per hectare per year

kg/litre = kilograms per hectolitre

$/ha = $ per hectare

$/tonne = NZ dollars per tonne

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**Region 2**

**South Auckland / North & Central Waikato**

<table>
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<tr>
<th>Hybrids</th>
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**Region 3**

**Coastal BOP / Gisborne / Northern Hawke’s Bay**

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**Region 4**

**South Waikato / Coastal Taranaki / Rangitikei / Manawatu / Southern Wairarapa / Central Hawke’s Bay**

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**Region 5**

**Nelson, Marlborough, North & Mid Canterbury**

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### Disease resistance ratings

<table>
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<tr>
<th>Hybrid</th>
<th>Northern Leaf Blight</th>
<th>Eyespot</th>
<th>Head smut</th>
<th>Fusarium ear rot</th>
<th>Diplodia ear rot</th>
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**The hybrid descriptions in all New Zealand Pioneer® brand products publications conform to strict word usage protocols approved and used by Pioneer around the world. We do not use descriptive adjectives randomly or loosely. We have a policy of avoiding exaggerated superlatives in product descriptions or product discussions. The following words are those approved for use in the product performance descriptions listed on pages 24 to 28 of this catalogue.**

<table>
<thead>
<tr>
<th>Trait</th>
<th>Word and numeric alignment for disease traits</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-9</td>
<td>Excellent, exceptional, outstanding, superb, impressive, industry-leading.</td>
</tr>
<tr>
<td>7</td>
<td>Superior, very good, strong, sound, reliable, stable, dependable, consistent.</td>
</tr>
<tr>
<td>6</td>
<td>Good, above average, sound, reliable, stable, dependable, consistent.</td>
</tr>
<tr>
<td>5</td>
<td>Average, acceptable, adequate, moderate.</td>
</tr>
<tr>
<td>4</td>
<td>Acceptable, slightly below average.</td>
</tr>
<tr>
<td>3</td>
<td>Marginal, susceptible, below average.</td>
</tr>
<tr>
<td>2</td>
<td>Poor</td>
</tr>
<tr>
<td>1</td>
<td>Very poor</td>
</tr>
</tbody>
</table>

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**Notes on performance traits can be found on page 38.**

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**Pioneer sets tough yet honest standards when rating maize hybrids. These ratings are based on comparisons with other Pioneer® brand hybrids, NOT competitor hybrids and on average performance across areas of adaptation under normal conditions. The ratings are based on both customer ‘side-by-side’ paddock experience and research comparison data. Individual seasons and paddock ratings may show a variation from these average comparative ratings. Extreme conditions may adversely affect performance. Comparisons between hybrids for yield and plant height are only valid within a similar maturity group (+ or – 4 CRM).**

Notes on performance traits can be found on page 38.

---

**Disease precaution**

Growers should balance hybrid yield potential, hybrid maturity and cultural practices (especially stubble management) against their anticipated risk of specific diseases and need for resistance. In high disease risk situations, consider planting hybrids with at least moderate resistance ratings of 5 or higher to help reduce risk. When susceptible hybrids with disease ratings of 1 to 3 are planted in conditions of high disease pressure, the grower assumes a higher level of risk. If conditions are severe, even hybrids rated as resistant can be adversely affected. Independent of yield reduction, diseases can predispose plants to secondary diseases such as stalk rots. This requires individual field and hybrid monitoring for stalk stability and earlier harvest if necessary.
## TRAIT CHARACTERISTIC NOTES

1. **CRM to harvest moisture**: Based on the grain moisture content at harvest, relative to other Pioneer® brand hybrids. The higher the rating, the sooner the growing season required for the hybrid. It serves as a relative guide to compare the maturity difference between Pioneer® brand hybrids to the grain harvest moisture stage, stated as 22% moisture.

2. **CRM to silking**: Based on the GDDs required for a hybrid to reach black layer (physiological maturity) relative to other Pioneer® brand hybrids. It gives an indication of whether a hybrid flowers early or late relative to its CRM to Harvest Moisture rating. Hybrids with an early flowering CRM compared with black layer CRM will generally be better adapted to cool seasons within their area of adaptation.

3. **CRM to black layer**: Based on the GDDs required for a hybrid to reach black layer (physiological maturity) relative to other Pioneer® brand hybrids. It gives an indication of whether a hybrid reaches black layer early or late relative to its CRM to Harvest Moisture rating. Black layer refers to the stage of grain fill when the plant is physiologically mature and no further grain filling or weight increment will take place. **Important**: To help decide if a new hybrid fits your area’s growing season, compare its black layer rating to a hybrid that you have planted previously, or one that is successfully used in your area.

4. **Grain yield for maturity**: Valid only to compare hybrids of approximately the same maturity (+ or – 4 CRM).

5. **Adaptability to high population**: A measure of the risk of genetic factors that permit a maize plant to withstand the stresses of high population and still give good standability and a high yielding ear of fine quality grain on every plant.

6. **Adaptability to low population**: An indicator of a hybrid’s ability to compensate (fix) its ear size for low planting rates or stand loss from poor emergence or insect attack. Fertility levels and moisture must be adequate for ‘fix’ to be effective.

7. **Early growth ratings**: Taken when two leaf collars are visible.

8. **Plant height**: 9 = Tall. 1 = Short.

9. **Ear height**: 9 = High. 1 = Low.

10. **Staglax**: A measure of a hybrid’s ability to stay as a green growing plant leading up to black layer (physiological maturity). It is a measure of late season plant health which may effect plant standability and suitability for silage. A high rating indicates a wider ‘harvest window’ providing a greater degree of harvest flexibility.

11. **Husk cover**: Measures the length of the husk leaves extending past the end of the cob, with a loose husk cover scoring one point lower for the same length of husk cover.

12. **Grain drydown**: Scores represent the rate of moisture loss after physiological maturity. Hybrids with high scores dry faster. They are not recommended for early harvest where planted as a full season hybrid.

13. **Grain appearance**: In the tin scored down for mould, cracks, red streak, etc.

14. **Grain crude protein**: Ratings indicate the absolute amount of protein in the grain compared with hybrids of a similar maturity. A one score difference represents approximately 0.4% change in grain crude protein.

15. **Grain oil**: Ratings indicate the absolute amount of oil in the grain. A one score difference represents approximately 0.5% difference in grain oil content.

16. **Grain starch**: Ratings indicate the absolute amount of starch in the grain. A one score difference represents approximately 1.5% difference in grain starch content.

17. **Processing use**: HC = Hybrids suitable for high quality food grade grain. HT = Hybrids with hard texture, suitable for dry milling of hard endosperm grain such as grits.

18. **Kernel density**: Relative rating of absolute density of kernels determined by a pycnometer. 1 = Soft (low density). 2 - 4 = Average. 5 - 7 = Hard. 8 - 9 = Very hard.

19. **Kernel crown**: Indicates size of dent with a higher score indicating smoother (flatter) crown on the kernel.

20. **Pericarp removal**: Indicates ease of removing pericarp with a higher score indicating better pericarp removal.

21. **Kernel red streak**: Indicates the tendency of the kernels to red streak with a higher score indicating less tendency.

22. **Kernel size**: Indicates relative percentage of kernels that are smaller than medium flats. A higher score indicates greater percentage of larger kernels.

23. **Horny endosperm**: Score determined from visual observation of cross sectioned kernels. Score indicates that portion of the kernel with hard translucent starch suitable for dry milling into maize grits. Higher scores indicate higher percentage of hard endosperm.

24. **Kernel colour (yellow)**: Higher score indicates a pale coloured kernel. Lower score indicates a darker yellow grain. Scores in the 5 - 7 range indicate a more desirable yellow coloured grain.

25. **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.

26. **Disease resistance ratings**: Scores are mostly based on United States and European data as the New Zealand database is usually too small to give a valid rating. Scores are based on visual assessment only and not on yield reduction data.

27. **Coast environments**. In cool environments including high altitude sites (greater than approximately 150 m/500 ft above sea level) select your growing environment using the definitions below, then increase populations to the next level e.g. for 37Y12 in a medium yield environment at high altitude, plant to achieve 102,000 plants per hectare.

28. **Established plant populations**: The planting populations shown in the Pioneer® brand maize for grain hybrid trait characteristics chart (on page 36) 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., higher than optimum fall periods), planting populations may need to be increased to compensate for reduced establishment due to the higher risk of early seedling mortality.

29. **Growing environment definitions**: May include some or all of the following characteristics:

- **Challenging yield environments (CYE)**:
  - Light, sandy or silty soils of low fertility, unpredictably low summer rainfall (dry-shrunken plants).
  - Exposed sites with very high wind run.
  - High cob, leaf or stalk disease pressure.

- **Medium yield environments (MYE)**:
  - Average fertility soils with predictably adequate summer rainfall.
  - Continuous or repeated soils.
  - Low to medium cob, leaf or stalk disease pressure.

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