

CEREALS

Long-running R&D programme lifts the bar for cereals, again

PGG Wrightson Grain has been developing and breeding cereal varieties for New Zealand arable growers since the early 1970s.

Since the release of Magnum barley in 1977 there have been over 60 cultivars released from the programme up to 2025.

Developing cereal cultivars is a complex long-term process.

It requires significant commitment from companies like PGG Wrightson Grain (PGW Grain) to invest in plant breeders; agronomy and other support staff; land; field equipment; offices/sheds and laboratory resources to run a programme.

Successful breeding programmes also rely on international partnerships and collaborations and PGG Wrightson Grain has excellent international linkages in the United Kingdom, Europe and Australia.

Each cultivar developed is thoroughly tested for its yield consistency, quality and agronomic characteristics before release to the market.

To support our growers, management packages are then developed for each cultivar.

What do our breeders and agronomists focus on?

PGG Wrightson Grain's cereal breeding programme has a primary focus

on boosting yield.

But it also works to tailor plant cultivars to thrive in local soil and climatic conditions, as well as to withstand insect, pathogen and pest pressures.

Product development manager Nick Brooks says for cereal growers, yield is king!

And over the past decade, NZ breeders have steadily increased the yield potential (a.k.a. genetic gain) as follows:

- feed wheat 1% per year
- spring barley 1.6% per year
- milling wheat 0.3% per year

As well as genetic gain for yield, new cereal cultivars are more resistant to pests and diseases. For example, there have been marked improvements in *Septoria tritici* resistance (a fungal disease) and standing power in new feed wheat releases over the past decade. Further out there is also a focus on environmental traits.

Bringing a new commercial plant variety to market, from initial crossing to commercially available seed, typically takes a decade requiring an investment of anything from \$500,000 to \$2.5 million per cultivar.

Cereal trials at Kimihia Research Station.

To illustrate this, take the apparent genetic gain over the past 14 seasons in spring barley.

Assuming this upward trend continues, and if there are no new higher yielding barley cultivars to replace the old, this would mean that in ten years' time, on average, farmers would get 16% (> 1 t/ha) less than they otherwise might if new cultivars were made available.

Nick says the feed wheat genetic gains have improved from 10 years ago when it stagnated around 0.7%.

He is hopeful milling wheat will increase with new releases such as Aston.

New releases combine yield, disease resistance

PGG Wrightson Grain is proud to announce the release of three very strong new/recent release cereal cultivars

Firstly, Skybolt, a small release last year and the first major release this autumn, was sold out by mid-April.

Nick says this was a fantastic result and recognises the cultivar's enhanced disease resistance and strong yields especially in Canterbury and the lower North Island.

Skybolt is very consistent in its performance from year to year and across many sites.

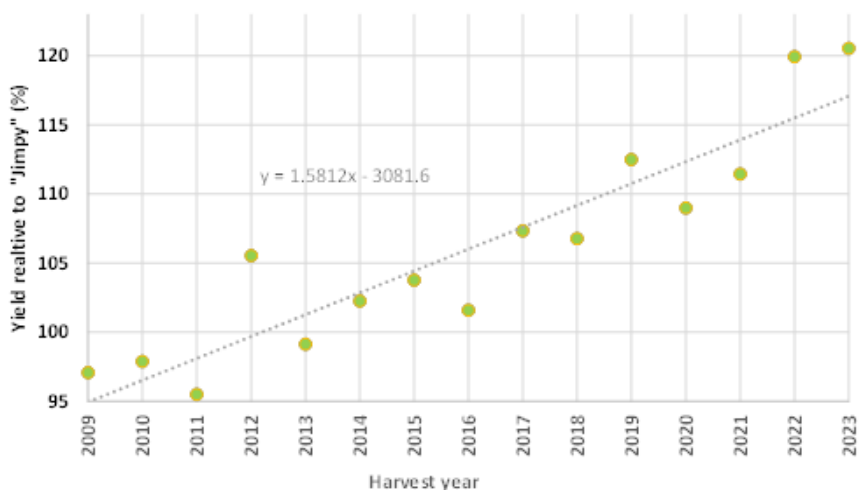
Nick says it is extremely important to PGW Grain that the new cultivar not only yields above the industry standards on average, but is also consistent across farms, regions and seasons and doesn't flip-flop from one year to the next.

Farmers need to have the confidence it will perform regardless of what the season throws at them.

The other exciting wheat release is Aston, a new premium milling wheat.

Nick says this is very exciting for the company as it's been only eight years since its parents (Discovery and an advanced breeding line) were crossed in 2017.

To have a new bread wheat cultivar



Annual mean yield of commercially available spring barley cultivars relative to cv Jimpy - 2009 to 2023 - data source FAR cultivar evaluation booklets.

Feed barley bred for easy management, reliable yield

From the programme that brought growers SY Transformer and SY Silhouette spring barleys, Cropmark Seeds is excited to provide another spring cultivar to the New Zealand market this season.

SY Dolomite is a new feed barley variety from Syngenta's world leading United Kingdom barley breeding programme.

Developed in NZ in conjunction with Cropmark Seeds as head licensee, SY Dolomite started life in the UK as one ear selected out of 20,000 back in 2014.

It is a cross between Laureate and Piper, and has been in 42 replicated trials all over NZ, numerous full paddock evaluations and seed production paddocks prior to its commercialisation, Cropmark says.

With medium height, medium maturity, and moderate-stiff straw, SY Dolomite was selected for its ease of management and reliable yield across all environments.

"It has the genetic ability to yield over 12 tonnes/ha in high yield potential environments by taking advantage of good growing conditions.

"However, it can also produce reliable yields, good grain size and test weights when yield potential is reduced due to dry weather," Cropmark says.

SY Dolomite will produce a reliable high yield at any sowing time and can be sown from May through to early November, with plant growth regulator and fungicide inputs tailored to the different sowing times.

While being an excellent option for grain production, it is also well suited as a whole crop silage variety.

"High quality silage is achievable due to its high grain yield, good straw production and good resistance to most diseases including scald and mildew."

Dolomite has performed well in all Cereal Performance Trials (CPT) trials to date, which have been independently run on commercial arable farms throughout NZ under the organisation of the CPT committee.

Cropmark says the data from these trials, which is published by FAR, represents trial sites across a range of both irrigated and dryland areas throughout Southland, Canterbury, and Manawatu in the North Island over an average of four years.

The trials are sown amongst commercial crops and are treated with the same management inputs and subject to the same climatic conditions.

This gives end-users confidence that varieties that perform at the top of these trials have been rigorously tested and evaluated for yield, grain quality and tolerance to disease throughout a wide range of farm environments.

"We are again anticipating high demand for sowing seed of the new variety this spring."

SY Dolomite is available in either 500 kg or 25 kg bags and can be treated with Poncho and/or Kinto Duo seed treatments.

For more detail talk to your agronomist. 

◀ in the market only eight years on from the initial cross is an outstanding achievement given not only multi-season by site yield testing, but also the extensive quality testing required to gain flour millers' interest.

At the time of writing this article, Aston was still getting evaluated from the recent harvest by the flour mills so it was early days, and he was hopeful the company would be releasing the cultivar very shortly.

Aston provided a sizeable improvement in yield performance for both autumn and spring over existing premium milling cultivars as well as high falling numbers and pre-harvest sprouting resistance.

Aston also demonstrates good shedding resistance which is an improvement on its father, Discovery.

Nick says like any cultivar, nothing is perfect, and growers should apply a robust plant growth regulator program

and watch early signs in the late winter/spring for stripe rust (T0 spray), especially early autumn plantings.

Finally, the third new cereal cultivar release is Ristretto triticale which is a step change in yield (up to 15%) over the old standard Empero.

Nick says it also brings enhanced disease resistance but is a different type of triticale from previous PGW cultivars in the past.

It's much taller but stiff strawed and has a much wider planting window from May to August. Although it can be planted earlier in April, it will need to be managed with a good plant growth regulator program due to the additional bulk created, especially if not being grazed, and there will be an increased frost risk as it will typically flower in the second week of November.

In summary, PGG Wrightson Grain's breeding, cultivar evaluation and agronomy efforts yield valuable

contributions to growers and NZ agriculture.

But Nick says its significant investment to sustain these programmes and royalties (both farm saved seed and end point royalties) as well as certified seed sales, are essential for the company. Royalties, which are also paid back to breeders overseas, are important to ensure ongoing access to their germplasm each year.

Certified seed sales are vitally important in providing a return on the company's investment so that PGW Grain can continue their investment well into the future.

Breeding could play an even greater role in the future with climate change and environmental pressures.

Nick says to all the growers in NZ that support the company, it is much appreciated and the company looks forward to bringing many more new cultivars into the future. 