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ADDING VALUE TO THE BUSINESS OF CROPPING

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From the Ground Up™

ADDING VALUE TO THE BUSINESS OF CROPPING

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It never rains, but it pours...

The old saying has taken on a new life, both literally and figuratively, in the past few months as arable growers have been forced to juggle devasting weather events, decreasing contract prices and increasing costs.

At times like this, when things feel a bit gloomy, it's easy to forget just how good New Zealand arable growers are. The current hard times are not a reflection of your ability to farm or grow, rather, they are the fallout of fast changing international and national policies and markets (and wars).

You're good at what you do! You know it, FAR knows it and our companies and international markets know it too. Here are some things to remember.

The arable sector is a cornerstone of New Zealand's wider agricultural system. The recent AFIC report (see page 22) notes that the industry generated $1.2 billion in direct sales in 2024. Arable crops also underpin the $20 billion livestock industry through the provision of seed for pasture and grain for feed. This makes arable an export industry in our own right as well as an as export enabler... no feed equals no dairy or lamb exports!

We're also really good at what we do, a result of our soils, climate, quality assurance systems and, most importantly, your skills as growers. New Zealand arable is world leading in terms of arable productivity, with yield records bouncing back and forth between here and the UK. We're also acknowledged as expert herbage and vegetable seed producers. New Zealand growers supply upwards of 40% of the world's carrot and radish seed, making them an essential link in the world's vegetable production chain.

And then there's the environmental stuff. New Zealand's arable production systems are internationally recognised for having one of the lowest environmental footprints among cropping industries globally. Arable cropping contributes less than 1% of New Zealand's total greenhouse gas emissions and soil carbon is typically at 3-5%, which is high by global cropping standards.

New Zealand arable growers are also regarded as highly responsible users of agrichemicals, and understanding and implementation of integrated pest management is on the rise.

So, our message to you, as growers, is remember that you are part of an important and valuable industry. Keep doing what you do best.

Anna.Heslop@far.org.nz

A word from the CEO

It's difficult to believe that I have already been at FAR for eight months. It's been a time of building a deeper understanding of the arable sector, meeting key contacts and service providers, building connections with our counterpart industry bodies and working with the team at FAR to deliver value from FAR's work.

A key part of many of the discussions with those outside arable has been to help build their understanding of arable and its role in the broader food and fibre sector in New Zealand. The sector is an exporter in its own right, particularly of high value seeds, but also has a critical role as an enabler of the export-focused livestock sectors through the provision of feed, principally to dairy, and the pasture seeds that drive sheep, beef, deer and dairy production. Further building this understanding of arable, as a stand-alone sector and as an enabler of others will be a key part of my role going forwards.

My conversations have been with farmers, input suppliers, seed and feed processors, manufacturers and users of our products, research providers, other industry bodies and government. They have highlighted their shared interest in a strong arable sector that is sustainably profitable and confident, and has a clear pathway into the future.

However, in recent months the sector has been hit hard by different weather events across many areas of the North and South Islands. Steven has covered this in his column, and I won't repeat the detail here, except to say that FAR understands these challenges and is focused on how our current and past work can be used to address them, and also to help you build stronger arable businesses into the future. It was great to be able to attend farmer events, organised by FAR and others, in early March, responding to the challenging weather. They highlighted the impacts many farms and farmers have felt, but also their determination to push ahead and look to the next season.

Focusing on the future, FAR is currently developing a new strategy to guide its work over the five-year period from 1 July 2026 – 2031. FAR's previous strategy period has come to an end, and we need to ensure our focus is clear and that our work meets the needs of today.

We have deliberately gone out and spoken to many individuals and organisations, people who are deeply connected and can influence the success of the arable sector. They have been generous in providing their time and ideas, and what they want to see for the future of a successful arable sector. This process still has some time to run, but through April and May we will be working to identify what the messages we have heard mean for FAR and where we need to go in the future. We remain a research, development and extension organisation for the arable sector, and the 2026 – 2031 Strategy will guide where we focus our work, how we deliver benefit to arable farmers and growers and the broader arable sector, and how we connect to others to do this most effectively, building on our shared interest and ensuring we don't duplicate.

A big thanks to all who have been willing to share their time and ideas with me through these first few months. Thanks also to the FAR team and Board, and to arable farmers for the warm welcome they have provided.

Dr Scott Champion
CEO

A word from the Chair

Unfortunately, the harvest of 2026 will not be remembered for the right reasons.

Rain and damaging winds in Southland and Manuwatu, flooding in Hawke's Bay and hail and extended rain in Canterbury. The resilience of New Zealand growers has been challenged. Nearly nothing is as heart breaking as seeing crops being devastated by hail or wind.

All these events have highlighted an underlying problem; profitability. In the last couple of years inflation has driven up the cost of production. All inflationary costs have been passed on to farmers who have been expected to factor that in their costs of production. Even in good years the sector hasn't been able to get fat in the system.

Farmers and growers have a few options to reduce their cost of production; increase yield, reduce inputs, sell at a higher price.

History shows that growers have increased yields by 2% per annum, but that has stalled over the last couple of years.

Reducing input costs can be done by increasing efficiency, increasing productivity per person and implementing high tech farming and the use of a lighter touch farm system.

But selling at a higher price, that is easier said than done. Since Covid the import of palm kernel and DDG has boomed, resulting in a negative impact on grain prices; and as they are waste products, they are always price competitive. As wheat is the spill in the world food production market, prices for special seed production haven't followed the international inflation trend.

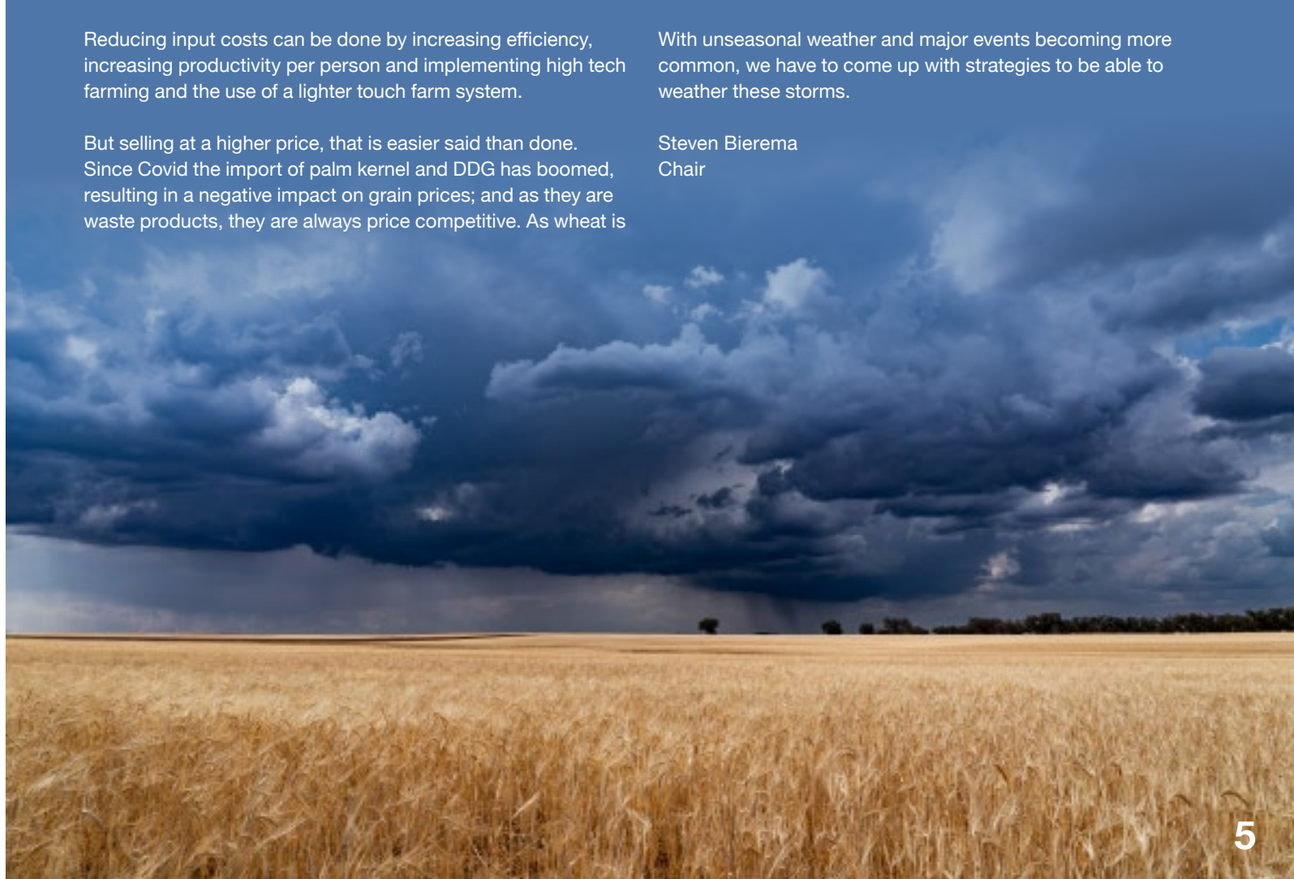
To stay viable, everybody who is involved with the arable sector, has a role to play. The farmers and growers need to optimise productivity and FAR can play a massive role in that. Suppliers should look at their cost of production and not pass it all on to growers. And finally, the seed firms must play their role to sell our seed production abroad at the best possible price, using the quality of the New Zealand product as a selling point And maybe we have to ask ourselves the question, are we in the right market and do we produce what our customers want and need?

If we cannot bring back profitability in the sector, we will see more land use change.

In the short term I would like all of you who have been hit hard to keep on talking with partners, neighbours, suppliers, banks and other rural support people. FAR is aware that it is not in a position to solve all the problems, but we can help with some.

With unseasonal weather and major events becoming more common, we have to come up with strategies to be able to weather these storms.

Steven Bierema
Chair



Food brands sign up for home-grown logo

Harraways chief executive Henry Hawkins says the Dunedin-based company is proud to be putting the New Zealand Grown Grains logo on its oat products.

Some of New Zealand's best-loved food brands have been quick to sign up for a new campaign which reinforces their home-grown status.

By joining the New Zealand Grown Grains branding initiative, everyday pantry staples such as Harraways' oats, The Good Oil edible oils and Otis oat milk can guarantee consumers their food only contains New Zealand-grown grain and seeds. The new grain mark logo is expected to appear on these products' packaging in coming months.

Other food producers are already using the logo which makes it easier for consumers to identify and seek out food and drink products made from domestically-grown grain and seed.

> *"To support local growers and the wider arable industry, we encourage consumers to seek out the logo"*

The arable industry hopes the logo will lift awareness, tapping into a strengthening desire by consumers for locally-sourced food as well as reduce reliance on imported grain.

Many consumers are unaware that three-quarters of the bread sold in New Zealand is made from imported grain, with 250,000 to 300,000 of milling wheat imported each year, mainly from Australia. While dairy and sheep and beef sectors are enjoying record prices, arable farmers are struggling to achieve profitable returns, compounded by a wet, difficult harvest in many regions, and hope the logo can revitalise their sector and expand production.

FAR general manager of business operations Ivan Lawrie says that about 25 companies have signed up to use the logo, including flour millers, bakers and pasta makers, with a steady stream of new applications arriving. Together these use a wide range of crops including wheat, barley, oats, oilseeds and quinoa.

"To support local growers and the wider arable industry, we encourage consumers to seek out the logo," Ivan Lawrie says.

A New Zealand Grown Grains website nzgrowngrains.nz has just been launched and will showcase the companies including bakers Grizzly (Christchurch), Bellbird (Christchurch), FlourBro (Invercargill), Wild Wheat (Auckland), Big Score (Nelson) and Eckh (Timaru).

Harraways chief executive Henry Hawkins says the Dunedin-based company is proud to be putting the New Zealand Grown Grains logo on its products.

"Any way we can promote New Zealand grains is very important to us." Oats, sourced from Southland and South Otago growers, have been sold under the Harraways name since 1867.

> *"Any way we can promote New Zealand grains is very important to us." Says Harraways chief executive Henry Hawkins*

Harraways, which also exports, is undergoing an $11 million investment to upgrade its facilities which will lead to capacity growth in coming years.

Nick Murney, chief executive of Canterbury-based Pure Oil NZ, which produces The Good Oil cold pressed extra virgin rapeseed and sunflower oil brands, says it was an easy decision to support the logo, which underpins brands which source from local growers.

The certification trademark for products made with New Zealand-grown grains is a FAR initiative and FAR, as an independent, non-profit organisation, holds the non-royalty licence for the logo. Asure Quality is responsible for auditing companies, with all products able to be traced back to the farm.

"Although the grain component may represent only a small share of a final product's total cost, even a modest rise in demand can have significant long-term effects, encouraging investment by plant breeders, traders and processors and helping to maintain a diverse and resilient portfolio of cropping options for New Zealand growers," Ivan Lawrie says.

Otis oat milk has joined the New Zealand Grown Grains branding initiative.

Contact Ivan.Lawrie@far.org.nz or visit the NZGrownGrains website

Milling oat breeding programme reaps rewards

New more disease-resistant milling oat varieties bred by the Oat Industry Group are looking promising, with some expected to become commercially available in coming years.

The group's oat breeder Adrian Russell of Plant Research says a key emphasis is breeding cultivars with disease resistance, particularly against yellow dwarf virus transmitted by aphids, and stem rust, with the aim of reducing reliance on chemical inputs.

In addition to cultivar breeding trials in Southland, a disease nursery has been established at Templeton in Canterbury. Oats in this trial receive no fungicide, insecticide or growth regulators and minimal irrigation to stress the rows.

"This is used to identify new sources of disease resistant parents for the breeding programme and to check for shifts in current known resistances. In Canterbury, the predominant diseases seen will likely be leaf blotch, stem and crown rust," Adrian says.

"Improved tolerance ultimately means less insecticide use, more stable yields and improved grain quality."

The annual Oat Industry Day at the Gardyne family farm.

"Improved tolerance ultimately means less insecticide use, more stable yields and improved grain quality."

Larger on-farm planting trials of three new oat varieties – Gardyne, 16-1-1 and 5-3-9 – have been carried out in Southland and South Otago, with their milling quality trialled by Harraways.

New varieties will reduce reliance on the current standard cultivar L5, earlier bred by the group.

Hundreds of entries at different stages of trialling were on display at the annual Oat Industry Day at the Gardyne family farm at Chatton, near Gore in February.

The named Gardyne variety is in recognition of the Gardyne family's contribution to the oat industry, with five generations having grown oats near Gore.

Group chair Graeme Gardyne says the earlier maturing variety is showing good disease tolerance and greater volumes of seed will be available for the coming season.

The Southland and South Otago regions are well suited to growing oats because of reliable rainfall and long daylight hours for ripening.

"The standard of oats in the trials has improved out of sight as far as uniformity and yield, compared to what we were originally getting. After 20 years, the programme is at a stage where we will see more varieties coming through in the next few years," Graeme says.

"The standard of oats in the trials has improved out of sight as far as uniformity and yield, compared to what we were originally getting."

The Oat Industry Group is made up of milling oat growers, oat breeder Adrian Russell and Dunedin-based oat processor Harraways, with both growers and Harraways paying a levy towards the breeding of new cultivars. FAR also makes a small contribution to the group.

Harraways chief executive Henry Hawkins says the business is undergoing an $11 million investment to upgrade its facilities which will lead to capacity growth in coming years.

Southern-grown milling oats are also being increasingly sought by oat milk processors, including Otis, which has made a significant contribution to the group for the last two years, helping to accelerate the development of more disease-resilient oat varieties.

Boring, another oat milk processor which only sources New Zealand-grown oats is developing new products and expanding its markets, including Australian Woolworths stores, founder Morgan Maw says.

NZ GROWN GRAINS™

Southland grower Graeme Gardyne with the promising Gardyne milling oat variety named in recognition of the family's contribution to the oat industry.

FAR cereal researcher Jacqueline Straathof (left) and Lincoln University lecturer and agronomist Mariana Andreucci.

What drives wheat yield?

Are wheat yields still increasing, or has wheat hit a yield plateau?

This is the question being asked by FAR cereal researcher Jacqueline Straathof who manages the Cereal Cultivar Performance Trials (CPT).

Data from the irrigated Canterbury April-sown feed and biscuit wheat CPT shows a clear upward trend from 2005 to 2024. Yields rose from around 10.4 tonne/hectare in the mid-2000s to about 13.8 t/ha, which equates to about 170 kg/ha per year.

In dryland Canterbury April-sown feed and biscuit wheat CPT, the trend is more modest but still positive – an increase from 8.8 t/ha to 10.8 t/ha, which equals to about 100 kg/ha per year. To make trends easier to interpret, four-year means were used to smooth out the effects of weather, disease pressure and input variation to give a clearer picture of underlying genetic progress. They suggest that yields may have levelled off since 2013-16.

"This leaves us with a few possible interpretations. First, that yields are still increasing, just more slowly. Another possibility is that we may be hitting a yield plateau – a point where cultivars can't push yields much higher under current farming systems," Jacqueline says.

"Most international cereal-growing regions have already entered a plateau phase, but we don't know if this also happening in New Zealand."

To explore whether new cultivars still support increases in yield, the relative four-year means of individual cultivars were compared. For example, under both irrigation and dryland, the relative performance of 'Graham' has declined as newer cultivars became commercially available. While 'Graham', which was introduced in the 2010s, was amongst the group of highest yielding cultivars in 2013-16 and 2017-20, it was superseded by new cultivars in 2020-24. "We can also see the same pattern in other cultivars like 'Wakanui' and 'Ignite'."

Figures also show that CPT yields may be increasing faster than on-farm yields.

> *"Most international cereal-growing regions have already entered a plateau phase, but we don't know if this also happening in New Zealand."*

Food and Agriculture Organisation (United Nations) data shows that on-farm wheat yields in New Zealand have increased by only about 90 kg/ha/year in the same time that irrigated CPT trials have increased 170 kg/ha/year and dryland by 100 kg/ha/year.

"This could mean that growers are not fully capturing the performance potential of modern cultivars. We are not sure what is causing this disconnect and more research is needed," Jacqueline says.

Building blocks of wheat yield

Determining the building blocks required for a high-yielding wheat crop has been the focus of a three-year Lincoln University study led by university lecturer, crop physiologist and agronomist Mariana Andreucci.

To understand the yield components of wheat, the study focused on detailed measurements of the number of tillers produced, the number of heads/m² and the number of grains/m² across a range of cultivars and sowing dates.

This showed that sowing any time between mid-February and mid-May can deliver yields of at least 15 t/ha. Across three years of the study, these sowing dates have delivered a range of yields from 13 to 17.6 t/ha.

Yields of 15 t/ha were achieved with at least 30,000 grains/m² and around 600 heads/m².

"It looks like a big number but this is what you need to achieve 15 tonnes," Mariana says.

As the number of grains/m² increases, the size of the grains can decrease slightly, depending on cultivar, but the relationship between number of grains/m² and yield is still very strong up to 15 t/ha.

For milling wheat, growers need to be mindful that maximising grains/m² can result in smaller grains and higher screenings, but feed wheat growers can "go for it".

The study also showed that sowing date or cultivar did not affect the number of fertile tillers at the end of the season, with decisions on plant population being an important determinant of heads/m².

"What growers want is productive heads, not smaller heads taking productive space."

As early tillers are more important for yield than later tillers, getting plant establishment right to support their development is important. Crops need to be set up well, with a good seedbed and good weed control early in the season.

"It is easy to get complacent, but accurate timing of inputs and attention to detail is crucial. You decide the fate of the crop early in the season."

Grain filling takes 745°Cd (growing degree days) from flag leaf to maturity. This means that at an average temperature of 15°C, grain filling will be complete in 50 days. This supports decisions on when to end irrigation and when to start harvest.

"Every cultivar has the same duration of grain filling. What changes is the rate of grain filling – the movement of carbohydrates to fill size in the grain head," Mariana says.

Key points from experiments done at Lincoln University:

- Yields of 15 t/ha can be achieved across a wide sowing window provided there are at least 600 heads/m² and 30,000 grains/m².
- Sowing date and cultivar affect the total number of tillers produced, but on average five tillers per plant went on to produce heads at the end of the season.
- Early tillers are more important for yield than later tillers.
- Getting plant establishment right is an important determinant of yield.
- Maximising grains/m² can result in smaller grains and higher screenings, so is not a suitable approach for milling wheat.

Bridging the gap between growers, millers and bakers

Bread making is both an art and a science and it certainly helps if the key raw ingredient – flour – is of a consistently high standard.

While seasonal differences always play a part, there can be a disconnect between what growers are trying to achieve in terms of grain quality and the key performance traits sought by flourmillers and bakers.

This has led to a "Growers to Bakers" programme being initiated by FAR to bridge the information gap between growers, millers and bakers.

FAR research lead Jo Drummond says that the programme is aimed at opening up the discussion between the three links in the supply chain "so that we can understand each other's needs".

While milling wheat contracts spell out flour millers' preferred cultivars and quality specifications, this is just the start of the journey from seed to loaf.

"Growers are really good at knowing what is required from planting the crop to harvesting and when it goes into the silo. Growers understand about grain quality, but there is a bit of a disconnect about what milling quality and baking quality means. Sometimes these terms get used interchangeably and that is a cause of confusion. As an example, growers are paid for protein in grain, whereas protein in flour is a slightly different matter, even though the way both is measured is the same," Jo Drummond says.

In the field, grain quality parameters are influenced by cultivar, the environment/season and management.

To further the conversation, baking and milling information will be collected from Cultivar Performance Trial (CPT) cultivars and made available to growers.

At FAR's Chertsey arable research site near Ashburton, different management programmes are being trialled for four different milling wheat cultivars of premium and medium grades: Discovery, Duchess, Aston and Reliance.

Milling wheat cultivar trials at FAR's Chertsey arable research site near Ashburton.

As well as utilising soil nitrogen supply, different late nitrogen applications will be trialled to see if these can provide more consistent results in terms of milling and baking quality. Protein content supports dough strength and volume, but protein quality and the ratio of glutenin to gliadin determines the elasticity and extensibility.

Tools like the farinograph and extensograph measure dough strength, water absorption and extensibility but do not give the full picture of how a flour will perform in the bakery. To simulate actual baking conditions, the Baking Industry Research Trust (BIRT) bake test will be utilised, a real-world baking simulation developed in New Zealand to better predict flour performance across cultivars and management regimes.

At FAR's ARIA event, representatives from the NZ Flour Millers' Association and BIRT joined Jo Drummond in a presentation about the programme.

Phil Jackson, a NZFMA board member who works for Mauri, a division of George Weston Foods, says that the only process that can change during milling is water absorption (the amount of water required to hydrate flour for the correct dough consistency). "So, it comes down to the quality of the grain coming in to the mill."

Key traits are consistently high protein (11-13% for bread), good kernel weight and good falling number (more than 300).

Protein numbers aren't absolute when it comes to flour quality. "We've had years where we've had really good protein that performed badly as a flour and others where bad protein performed well. In 2025, we had proteins of 12.5%, which performed the same as 10.5% protein grains the previous year."

Falling number is more straightforward. "You can't manage your way out of a bad falling number. We can cope with high, but not low falling number." An indicator of sprouting damage, low falling number scores mean high alpha-amylase, which harms bread structure and cannot be corrected.

"We mill both Australian and New Zealand wheat and find that New Zealand wheat performs as well if not better in some cases, but water absorption is significantly different between the two."

Customers prefer domestically-grown grain and mills are happy to support the "NZ Grown-Grains" branding initiative. However, ultimately it is a matter of what the consumer is prepared to pay, Phil Jackson says.

BIRT chairman Ralph Thorogood, of Breadcraft bakery in Masterton, says that from a baker's point of view, protein has always been used as the main measure of grain quality and the strength of the flour, but doesn't represent its full characteristics.

A "Growers to Bakers" programme is being initiated by FAR to bridge the information gap between growers, millers and bakers. "So that we can understand each other's needs".

For bakers, and himself personally, other measurements, like stability and resistance are more important, as they are more reliable measurements of the flour's overall strength.

When the flour's resistance measure is too high, bakers can have difficulty developing the dough. This leads to product faults in the bakery, like holes in the bread and blisters in buns (an air pocket under the crust), leading to wastage. While bakers have some tools like dough relaxants to offset this, these are not a cure-all. Doughs which are difficult to mix also require much more energy.

"Getting it right at the mixing stage determines how your product goes through the plant and the quality of the bread at the end," Ralph Thorogood says.

Representing the key stages from seed to loaf at ARIA were (from left), flour miller Phil Jackson, FAR research lead Jo Drummond and baker Ralph Thorogood.

Speeding up grass seed moisture testing

A new portable device which can measure the seed moisture content in ryegrass in seconds will soon be available to farmers in New Zealand.

Until now, measuring seed moisture content (SMC) in ryegrass has been time consuming and prone to error.

Nicole Anderson developed the Grady Sensor over several years with precision agriculture expert Jing Zhou at Oregon State University in the United States. She is now based at the Norwegian Institute of Bioeconomy Research.

Over the last two years, multiple prototypes of the sensor have been developed and tested through field tests in both Oregon and New Zealand. Eight cool-season grass species including tall fescue, annual ryegrass and perennial ryegrass have been calibrated for the device, while settings for other grasses and for carrot seed are under development. Software on the device can be updated via wireless internet connection.

The new sensor doesn't change the way field sampling is carried out, but it does speed up the testing process...a moisture recording can be on screen in less than 10 seconds using the Grady Sensor, compared with hours using traditional drying methods. Data analysis shows the sensor's accuracy is between 95.4 and 98.8 per cent, indicating that it is a reliable replacement for the traditional method, Nicole says.

SMC is the most reliable indicator of optimal harvest timing in many seed crops, including grass seed. However, as grass seed does not mature uniformly, it can be difficult to determine the best time to cut, she told FAR's ARIA event.

New Zealand produces mostly forage grass seed while Oregon is predominantly a turf grass producer. "Harvest timing is a bit more flexible in New Zealand than in the US because of weather conditions leading up to swathing. The rate of seed moisture loss tends to be faster in Oregon where it is almost always hot and dry leading up to harvest."

Cutting when the crop is too dry can cause huge shattering seed losses, while high moisture levels can cause seed germination issues.

Research in the US and New Zealand has shown that perennial ryegrass seed losses can be 25 percent from windrowing/cutting alone, not including harvesting losses. "That's a significant amount of money being left in the field for no good reason," Nicole says.

Currently, to measure SMC, seeds need to be stripped from heads by hand, weighed, dried until all the moisture has been lost, then re-weighed and SMC manually calculated.

"Collecting SMC information in this manner is arduous, time consuming and prone to error. Consequently, this procedure has resulted in inadequate testing or failure to test in a timely fashion."

In addition, SMC is an important factor in the storage of harvested seed, which typically needs to be stored under 12 percent SMC to ensure high seed quality.

The sensor employs near-infrared (NIR) spectroscopy principles that water molecules absorb specific NIR wavelengths. By analysing the light reflected from the seed surface, the sensor predicts SMC based on the intensity of the reflected light at moisture-sensitive wavelengths.

The Grady Sensor is now commercially available in Oregon and will be rolled out elsewhere soon. Currently the only sensors in New Zealand are for research purposes.

Researcher Nicole Anderson at ARIA with the new Grady Sensor.

SIRC
SEED INDUSTRY RESEARCH CENTRE

Alternative chemical-free seed treatment evaluated

Research into cold plasma technologies as a sustainable residue-free alternative to conventional seed treatments has shown promising results.

In contrast to traditional seed treatments, which may include fungicide or insecticide, cold plasma treatment provides a way to clean the seed without chemicals.

There is regulatory pressure to reduce chemical treatments, with the Environmental Protection Authority proposing a new group standard to close a regulatory gap between imported treated seed, which has previously been unregulated, and locally manufactured treated seed. EPA has sought feedback from government and industry stakeholders and the matter is currently under consultation.

Gale Brightwell, science team leader at the Bioeconomy Science Institute (formerly AgResearch), and her team have been developing cold plasma as a food safety technology, but it also has multiple agricultural benefits across seed, plant, soil, and post-harvest systems.

Cold plasma is a partially ionised gas in which electrons are highly energetic, but the overall gas remains near ambient temperature, allowing it to interact with biological materials without causing thermal damage. This is similar to the process of when lightening hits water, Gale says.

Cold plasma for seed treatment is generated by passing electricity through air until it becomes ionised. When this energised gas interacts with a seed, it acts like a microscopic sandblaster, physically and chemically modifying the seed coat to improve water absorption and surface cleanliness. Some of the reactive species produced help inactivate pathogens, while others trigger mild stress responses that enhance germination, seedling vigour, and stress tolerance.

"In effect, cold plasma serves as a non-thermal, surface-level primer for healthier, more resilient seeds. Importantly, our treatment regimens have been shown not to affect the seed's internal endophytes."

The treatment can be precisely controlled (gas composition, exposure time, energy input) to balance microbial activation with seed quality.

"In effect, cold plasma serves as a non-thermal, surface-level primer for healthier, more resilient seeds. Importantly, our treatment regimens have been shown not to affect the seed's internal endophytes."

Gale's study involved radish and beetroot seed, highly contaminated with *Pseudomonas* bacteria. "We identified cold plasma treatment regimens where we completely inactivated the surface bacteria while enhancing or maintaining germination rates. However, responses to different treatments varied, depending on the seed. Every seed is different, and requires optimisation but the technology is very promising," Gale says.

In another trial, Sushma Prakash of BSI (formerly AgResearch) showed similar benefits of the technology on seed germination in tall fescue, perennial ryegrass and wheat.

FAR hosted a webinar on Cold Plasma Technology attracting around 35 participants, including several stakeholders attending in person. The session highlighted strong industry interest in the technology, particularly its potential applications for grass seeds.

While participants acknowledged that CPT shows significant promise, they also emphasised that further development and validation is needed before commercial adoption. The BSI research team is now exploring future funding opportunities to advance CPT, aiming to support New Zealand's seed industry by improving germination, enhancing plant health, and addressing key market access and regulatory challenges.

The research received funding from the Seed Industry Research Centre (SIRC), AgMardt, BSI and T.R. Ellett Agricultural Research Trust.

Seed inspection goes high tech

SEED INDUSTRY RESEARCH CENTRE

A new technology which could speed up the time-consuming and labour-intensive role of seed inspection for certified crops has been proven to be sufficiently accurate for commercial use.

New Zealand is internationally recognised for its production of high-quality seeds, both vegetable and forage, with seed exports worth $345 million in 2024.

However, as exports and volumes grow this can lead to challenges around seed testing and dressing at critical times, says FAR general manager of business operations Ivan Lawrie. After harvest there is often pressure to have seed consignments approved for export, while imported seed needs to be tested to ensure it meets biosecurity requirements before it can be sown.

Services provided by the International Seed Testing Association (ISTA) accredited labs in New Zealand are effective but they are time-consuming, labour intensive and require highly-trained seed experts.

Instead scientists at AgResearch (now part of the Bioeconomy Science Institute) looked to leverage emerging technologies, including hyperspectral imaging and artificial intelligence (AI) to improve detection of contaminant seeds, increase throughput and accuracy and reduce costs.

AgResearch principal scientist Marlon dos Reis says these would be used as a pre-screening tool for the seed technicians. “Such a tool would enable the seed technicians to focus on the samples that are most likely to contain contaminants and reduce the time spent on samples containing no contaminants.

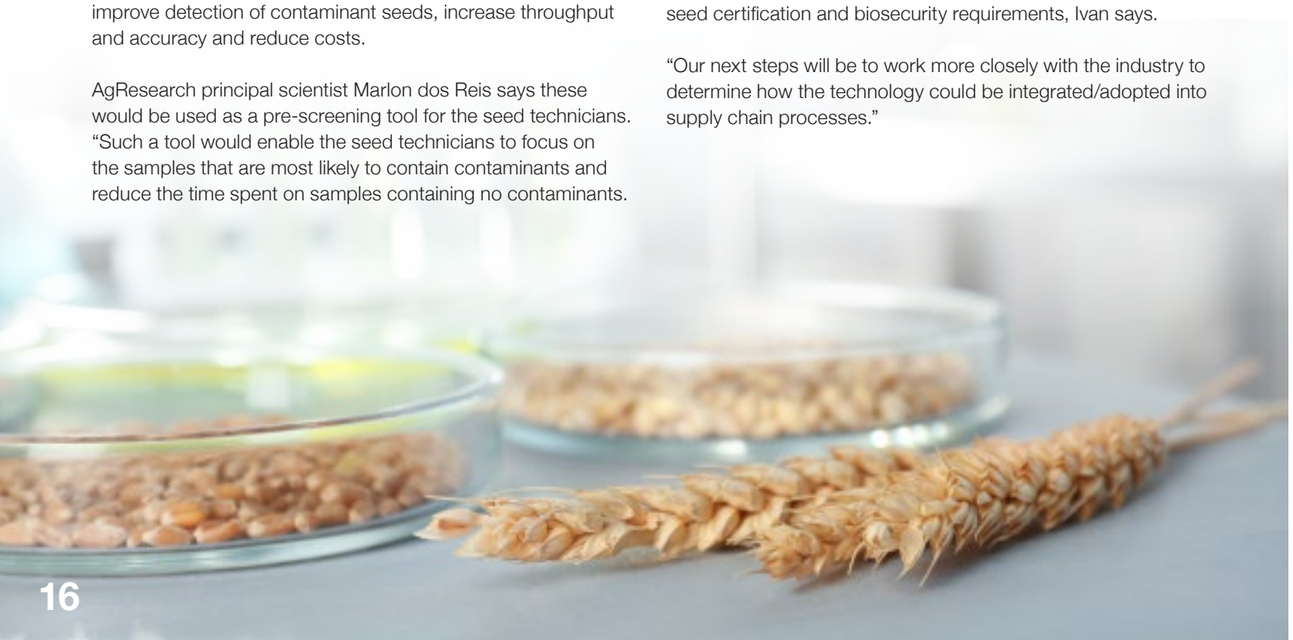
“The tools are not replacing people, but helping them to concentrate on what matters – identifying the few seeds that shouldn’t be there.”

“The tools are not replacing people, but helping them to concentrate on what matters – identifying the few seeds that shouldn’t be there.”

The study achieved its goal by detecting wild oat seeds (the contaminant) in the presence of ryegrass, wheat, and barley crop seeds. The models based on hyperspectral data achieved up to 100 per cent of correct classification depending on the spectral range utilised.

The research, funded by the Seed Industry Research Centre (SIRC) and the Ministry for Primary Industries, aimed to show that the technology could be used to detect seed contaminants at a level of accuracy that would meet the needs of commercial seed certification and biosecurity requirements, Ivan says.

“Our next steps will be to work more closely with the industry to determine how the technology could be integrated/adopted into supply chain processes.”



A LIGHTER TOUCH

New options for Ascochyta control in peas?

Trials carried out in the 2025-26 season identified three, currently unregistered products that slowed the development of Ascochyta blight in Canterbury pea crops.

Trial methods

Four trials to evaluate soft chemistry and biological fungicides for Ascochyta control in peas were conducted in the 2025-26 season, two on-farm process pea trials in Mid Canterbury and two late sown, on-farm feed pea (pea seed proxy) trials in South Canterbury (one irrigated and one dryland). The aim of the trials was to screen unregistered products and identify any with promise for disease control (not yield).

The two late sown feed pea trials were established in November 2025. Products, application rates, dates and methods were selected in collaboration with potential registrants. All the products tested were preventatives, and needed to be on the plant before infection occurred, and reapplied to maintain efficacy. Amistar (250 g/L Azoxystrobin, Group 11) was used as the industry standard for comparative purposes alongside an untreated control treatment.

Disease assessments covered incidence and severity across the lower, mid, and upper canopy layers, as well as pod infection.

Results

Both feed pea trials recorded 100% incidence of Ascochyta blight symptoms on plants and pods across all treatments. This high infection pressure supported stronger discrimination between treatments, especially with regard to disease severity and treatment performance.

Across both trials, the same new products repeatedly showed strong, repeatable performance. The most promising products in these trials:

1. Are primarily copper-based, used to control diseases such as anthracnose, downy mildew, leaf spots, and blights.
2. Act as broad-spectrum, contact (non-systemic) protective fungicides, meaning they must be applied to the plant surface to prevent infection.
3. Are often used in similar, regular intervals (10–14 days) to maintain protective coverage.

Biologicals provided partial suppression of disease, generally up to around a 20% reduction. These sustainable products can contribute to slowing early disease development, but higher-efficacy fungicides remain critical for stronger suppression when disease pressure increases.

Most other products, including the industry standard, gave only minor or inconsistent control. No product protected pods.

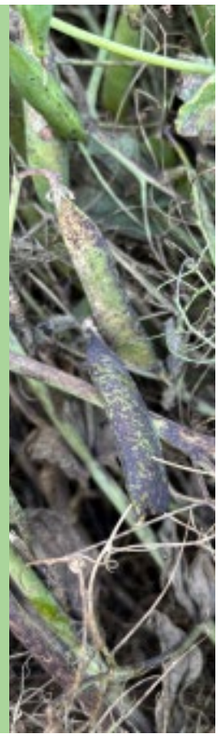
Several products warrant further testing around issues such as optimal rate and timing and integration with existing control options, as well as validation over a larger number of sites. Products in the moderate group (eg. biologicals) still have value in IPM programmes, and more trials are needed to better inform their integration.

Future work will seek to corroborate trial findings and identify how the most promising products might fit into an integrated disease management programme on peas.

Ascochyta blight presents both agronomic and seed quality challenges for both process and seed pea production. The pathogen complex responsible not only reduces plant vigour and pea/seed yield but also transmits via infected seed, jeopardising future plantings and export certification standards.

In New Zealand, current control relies on restricted fungicide options, underscoring the need for more effective treatments to safeguard both the process vegetable and seed industries.

An *A Lighter Touch* initiative, co-funded by FAR (and the Seed Industry Research Centre) and Process Vegetables NZ, was initiated to investigate new solutions, including biologicals and soft protectant fungicides for control of Ascochyta blight, to improve both process vegetable and seed crop protection.



Input efficiency tips for arable

Concerns about fuel and fertiliser prices are increasing at the same time that arable growers are heading into their busy, input heavy planting season.

While they have little control over pricing, FAR Technology Manager Chris Smith, says they can make the most of a range of tools to ensure that inputs are being used as efficiently as possible; noting that many options are already available in tractor cabs or farm offices.

“One of the most reliable places to start is with guidance and auto steer. Manual driving inevitably means overlaps, often 5-10 percent across a typical day’s work. Auto steer trims that down dramatically, usually to between 1 and 3 percent. This small adjustment in accuracy brings a surprisingly large payoff. Straighter passes don’t just look tidier, they reduce throttle variation, lower operator fatigue, and keep machinery working more efficiently.

“The gains become even more pronounced when visibility drops, whether that’s spraying at night, working with wide implements, or operating in the flat, hazy light that often blankets the Canterbury Plains. Most farmers who move from manual steering to a decent guidance system can expect to burn 5-12 percent less diesel across a season.”

Chris says such technology doesn’t have to be expensive.

“Not all GPS systems are equal, but choosing the right level of accuracy can prevent unnecessary spending. SouthPAN, which is free and works anywhere with a clear sky view, is already accurate enough for mapping tasks and jobs that don’t demand precision.

“At the next level up, services like CentrePoint RTX offer near RTK accuracy once they have converged, making them ideal for spreading or spraying where consistent two to three centimetre repeatability is valuable.

“Farmers wanting instant, high accuracy performance for tasks like precision planting or strip till will still find RTK hard to beat; although it’s worth remembering that RTK will never pay for itself through fuel savings alone. Its value comes from a combination of factors including time savings, reduced overlap, lower fatigue, and the ability to manage inputs more precisely.”

Product placement is the other thing growers should be thinking about in terms of input efficiency. Chris notes that even a basic guidance system typically knocks 2-7 percent off chemical or fertiliser use, while adding section control tightens this further, “often delivering total savings of more than ten percent once overlap is removed on headlands and around awkward field shapes”.

“The real step change comes from variable rate application (VRA). Across a set of typical New Zealand paddocks, nitrogen savings of 5-20 percent aren’t unusual, while phosphate and potash can drop by 10-25 percent. Lime is often the standout, with well mapped paddocks showing reductions of 20-50 percent as over supplied zones are corrected rather than blanket treated. Seed savings are normally smaller but can still add up.”

Chris says that to make VRA genuinely effective, several pieces need to work together. Data layers based on soil sampling, canopy imagery, crop sensors, remote sensing, and yield maps provide the guidance system with real intelligence.

“These layers feed into prescription software, where maps are turned into application zones and “what if” scenarios can be run to estimate savings before anything is applied in the field. Rate controllers, terminals, and ISOBUS systems then execute the plan, while applied maps and yield monitors close the loop by showing what actually happened. The cost of upgrading to VRA capable equipment is usually around $20,000 over a standard machine, but in years when fertiliser prices spike, payback can come surprisingly quickly.

“Another thing to think about as fertiliser prices rise is the economic optimum rate. This is the point where margin is maximised. As fertiliser prices increase, the most profitable application rate tends to drop. Chasing maximum yield becomes less attractive than chasing maximum margin, and precision application helps growers achieve that more reliably.

Machinery setup is another area where savings can be made, says Chris.

“Many jobs on an arable farm simply don’t require a large tractor, yet the temptation to jump on the most comfortable or most powerful machine is strong. Matching horsepower to the actual job can cut fuel use by 20-40 percent on lighter tasks. The difference between a 100 horsepower tractor burning eight to 10 litres an hour and a 200 horsepower machine burning up to 20 litres adds up quickly. Tyre pressures are also important; correcting inflation can save 5-10 percent in fuel during light work and up to 20 percent for heavy machinery. Lower pressures in the paddock reduce wheel slip and improve traction, while higher road pressures reduce rolling resistance on the way home.

“Even the combine harvester, often considered a fixed-cost monster, offers opportunities for efficiency. Many growers have found that by slowing the rotor or drum and opening the concave, they can lift throughput while reducing fuel use. We’ve seen examples of fuel savings of over 30 percent. When assessing losses, it pays to consider not just grain left on the ground but the cost of running the machine per hectare. In seasons of high fuel prices, crawling along to save a fraction of a percent in losses may turn out to be a false economy.”

Chris says the key message is that small refinements, applied consistently, can deliver significant savings. All growers can implement some of these ideas and, over time, move towards using them to their full potential.

Do solar and batteries stack up for arable?

A number of arable farmers are partnering in a Government project exploring the use of solar and batteries on New Zealand farms.

The initiative is being run by EECA (Energy Efficiency and Conservation Authority) as part of the Government's Solar on Farms initiative.

Partner farms are receiving financial and technical support in setting up solar and batteries on farm. In return, they will share their solar journey, providing insights into the set-up process and the impact of solar and batteries on their farms' power bills and resilience.

Energy Minister Simon Watts says farmers and growers are generally aware of the technology but lack certainty around the return on investment and whether it actually stacks up for their business.

"These demonstration farms will contribute vital insights and data for our farming community."

Early EECA modelling suggests if 30 per cent of Kiwi farms installed large solar power systems they could generate as much as 10 per cent of New Zealand's current electricity demand.

"Solar and batteries together provide a possible solution to significantly reduce the vulnerability of important domestic and export sectors. Plus, vital systems like chillers and irrigation often use a great deal of power and could be making the most of solar energy during the day," says Richard Briggs, EECA Group Manager Delivery and Partnerships.

Forty farms from around the country have been selected as demonstration farms. Farm types include dairy, sheep and beef, and other livestock farms, poultry, arable, horticulture, plant nurseries, and vineyards. They will receive partial funding, which covers 40 percent of the cost of an inverter and battery and 20 percent for the rest of the solar set up.

The following are arable and mixed arable farmers participating in the programme.

Tim and Victoria Gorton, Gorton Farming, Manawatu

- Battery size 208 kWh, solar capacity 156 kW
- Gorton Farming Ltd is made up of two properties at Cheltenham, near Feilding, an intensive mixed cropping and livestock property and a 400 cow dairy farm run by contract milkers. The two farms are run closely together and as well as growing crops including malting barley, grass seed, wheat and peas, the mixed arable farm also grows maize and grass silage and forage crops for the dairy farm. It also provides grazing for young dairy stock as well as finishing 3500 to 4000 lambs over winter.

Tim says he was keen to explore solar, as the electricity bill, particularly for the cow shed and irrigation, is $30,000 each on average per annum.

The Gortons have invested in two separate projects, for the irrigator and cow shed, as unfortunately these are about 2km apart, too far to be connected.

Planned to be completed in late April, the cow shed solar installation is roof-based, while the irrigator has a ground mounted solar array by the centre pivot. "When you have a big cow shed with heaps of roof space you don't want to put a solar array in a productive paddock beside it," Tim says.

The total cost of the two projects is $340,000, with EECA providing funding of $94,000 as part of its solar on farms demonstration project. As part of the project, farmers must install a battery as well as a solar array, which while doubling the initial cost provides better utilisation.

The cow shed installation is estimated to be a five-year return on investment.

The battery can also operate as a back-up electricity supply for the cow shed during power cuts, something which occurred during a weather event in February, requiring the use of a generator. "The battery and inverter means we can continue to run the shed and pumps for several days, and even longer if it is sunny."

As the irrigator, which covers both the milking platform and crops, only operates three to six months of the year, depending on the season, the ROI takes longer at seven years. "In a wet season like this year, you question the investment. While an irrigator isn't used year-round, the efficiency of when you use it is good as it is in the sunniest months." The battery also means that stored power can be used to drive the irrigator at night. Selling back to the grid is estimated to generate $10,000 in revenue annually.

"The economics are compounding and get better as the price of electricity rises." EECA calculations are that in 25 years the solar installation will have earned or saved the Gortons $500,000 per system. So, a total of $1 million.

While the Gortons' lines charge is low, at $50 a month, this fixed cost can be significantly higher for some other farmers, altering the calculations, particularly for irrigators. "There's plenty to think about," Tim says.

Mark and Sonia Dillon, Dillon Harvesting, Southland

- Battery size 36 kWh, solar capacity 32 KW
- Installed just before Christmas and operating early in the New Year, the solar panels and batteries saved the Dillons $400 in the first month.

Solar power is something that the Dillons had considered for several years because of the huge electricity bills to run their stock feed manufacturing plant.

Mark and Sonia run an arable, sheep, beef and agricultural contracting business at Riversdale. They also run a stock feed operation, supplying custom blends to dairy farming clients throughout Southland.

Solar panels are on the roof of a shed, with an estimated five-year pay back.

The cost is around $80,000, with about a quarter funded by EECA.

Now it is installed the Dillons are looking to optimise its set-up.

"We are considering whether to link it back to the house so we can utilise as much of the power ourselves, rather than selling it back to the grid at half price," Mark says. In New Zealand, the amount paid for supplying electricity to the national grid typically ranges from 8-17 cents per kWh compared with generally more than 30 cents paid for electricity. Higher rates, often above 20 cents kWh, are available for exporting stored energy during evening peaks.

"By utilising the solar and battery, another option is to change when we buy our power; using cheaper night rate power and exporting power back to the grid during peak usage," Mark says.

Simon and Lou White, Ludlow Farms, Hawke's Bay

- Battery size 48 kWh, solar capacity 37 kW
- The Whites run an arable, sheep and beef finishing farm at Otane, south of Hastings. They grow 12 to 15 different crops annually, including vegetable seeds, malting and feed barley, feed and milling wheat and process vegetables such as peas, beans and sweetcorn. In addition, they finish lambs and bull beef and run a seed drying complex for their own use as well as other growers in the region.

Solar makes sense when you live in sunny Hawke's Bay, says Simon.

Simon had already been investigating solar and battery power after talking to suppliers at a conference before the EECA subsidy programme made it an even more attractive proposition. "We live in Hawke's Bay and have a massive amount of sunshine hours."

As well as driving the big seasonal motors for irrigation and grain drying, solar will also be used year-round to power stock water pumps, grain fans and augers and houses on the farm.

The project is estimated to have an 11-year payback. "If we had just done an array of solar panels on the roof, this would have had a payback of seven to eight years, with no exporting to the grid, just utilising sunshine hours. But because of the EECA funding, we went the next step with the battery where we get the big benefit of storing energy and peak shaving when we are utilising the big seasonal motors from November to June."

Peak power shaving is an energy management strategy used to reduce electricity consumption during periods of high demand in the national grid, in this case by utilising battery storage.

Arable underpins other ag sectors, report shows

Arable production underpins the productivity of many key primary industries through the supply of grains and seeds directly to both farmers and industry, and its deep connections with New Zealand's key livestock industries, have been highlighted in a recent economic report.

The 'Economic impact of New Zealand's arable industry' report shows that New Zealand's arable industry generated $1.2 billion in direct sales in 2024. This was made up of around 1.1 million tonnes of grains, 1.1 million tonnes of maize silage and 83,000 tonnes of seeds.

In additional economic activity, the arable industry's contribution to total Gross Domestic Product (GDP) increased from $953 million to $1.2 billion between 2021 and 2024. The industry employs almost 7000 people.

The report was commissioned by the Arable Food Industry Council (AFIC), made up of 10 industry organisations connected with research into and the production of arable food.

In terms of food production, arable provides milling wheat for the milling and baking industries, malting barley to brew beer, oats for breakfast cereals and the expanding oat milk industry, as well as seeds for edible oils. In addition, it provides livestock feed, primarily for dairy cows, but also the pig and poultry industries.

New Zealand's arable sector is also globally recognised for its seed production, producing seed for the domestic pastoral industry as well as export.

AFIC retiring chair Brian Leadley says the three-yearly report recognises the contribution of arable to the wider agricultural sector and economy. It also highlights trends and opportunities.

Expansion of crops such as oats to meet demand for plant-based foods and beverages demonstrates how nimble and adaptable the arable industry is when it comes to meeting market requirements. "However, it's got to be competitive with other opportunities," he says.

Rising consumer preferences for plant-based and health-focused products has led to an increase in sales to industry of oats and pulses, with oats increasing by about 2600 tonnes between 2021 and 2024. The report said that continued global demand for healthier and more nutrient-rich food will continue to support further growth in sales of brassica and legume seed.

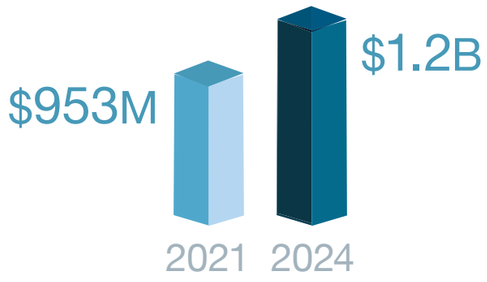
Domestic pastoral seed production means the dairy and sheep and beef sectors don't have to rely on imported seeds, Brian Leadley says. "They want varieties bred for New Zealand conditions." Arable production is also supported by quality assurance programmes.

In 2024, direct sales of seeds for sowing in New Zealand were valued at $411m, with particularly strong sales of grasses, brassicas and legumes, the report by Business and Economic Research Limited (BERL) says.

Direct sales of grain, mainly wheat and barley, were valued at $529m. The wider economic impact of this generated $500m in total production GDP in 2024, up from $420m in 2021.

FAR general manager business operations, and AFIC member, Ivan Lawrie says that while grain volumes remained flat between 2021 and 2024, there was a notable rise in the value of seed exports. Worth $345 million in 2024, these were up $72m from 2023. Vegetable seeds remain the largest contributor to overall arable export revenue, at 36 per cent, followed by ryegrass seed at 28 per cent.

In 2024, seed production generated a total of $389m in production GDP, an increase from $253m in 2021.



The arable industry's contribution to total Gross Domestic Product (GDP)

Information sources changing; what do you prefer?

They say that change is the only constant in life.

This time last year my household, which includes three youngsters, were mainly consuming traditional television content. Less than eight months later our viewing habits and patterns have changed. Listening to the engaging Olly "Blogs" Harrison at the FAR Conference in 2025 convinced me to see what his YouTube channel was all about.

With five years of content to catch up on, Olly Blogs helped keep the kids quiet on those rainy winter (and summer) days. We are now consuming a plethora of farming content on YouTube. We check in daily to see what Olly Blogs and Joe Seels are up to in the UK, and look forward to the days when new content drops from Tom Pemberton, and a little closer to home the Once a Day Dairy Farmer, Canterbury Kiwi and, of course, FAR. We have a vast array of information options at our fingertips. Some of it good, and some of it not so good.

FAR is recognising changing patterns in information sourcing by adding digital options into our event planning, alongside our traditional extension events; the good news is, you get a say in this.

FAR's regional team is about to commence event planning for the 2026/27 year. They are seeking feedback from growers on the Arable Research Groups (ARGs) on what events they would like in their area in next 12 months. The team will be encouraging ARGs to talk to their local growers to get feedback on what events or activities they would like.

As noted above, the phrase 'events and activities' no longer covers just field walks, round ups, sessions with subject matter experts; it can also extend to a series of short form videos on topics of interest uploaded to social media, webinars, discussion groups, or grower visits to sites of interest.

The facilitators will then take the feedback gathered, add in relevant FAR research and results, and develop draft regional extension plans. All of these plans are likely to include a mixture of face to face events, webinars and videos...all based on grower feedback. Final plans are determined based on budgets and will start being actioned from 1 July.

If you have any specific feedback on what events or activities you want in your region, I encourage you to get in contact with your local regional facilitator.

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Cereal harvest 2026

The 2025–26 season was frustrating for cereal growers. Some early sown crops were drowned out, and while things were looking OK by spring, a lack of sunshine, along with large doses of rain and in some cases hail, led to mixed yields and a patchy, drawn out harvest.

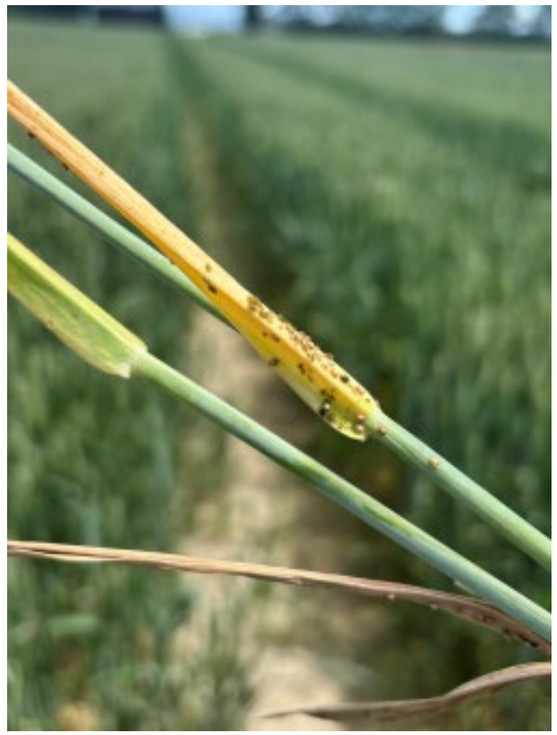
FAR trials reflected growers' experiences; some good results such as 13.7 t/ha in Methven and 10.5 t/ha in a second year wheat at Hook, but other trials lost to waterlogging, ducks, take all, sharp eye spot and hail. Across all regions, one post harvest conversation keeps resurfacing: the increased incidence and severity of YDV symptoms.

Yellow dwarf virus is transmitted by aphids, first by winged aphids flying into crops (primary infection), then by their wingless offspring within the canopy (secondary spread). The biggest yield losses come from infections that occur early, especially before GS 31, when plants are still small and more vulnerable. FAR research from 2015–18 reaffirmed the long standing rule of thumb: once a cereal crop is beyond GS 31, the impact of new infections tends to be minimal.

YDV symptoms can be confusing. Autumn infections often cause yellowing, reddening and stunting, but these can look very similar to nutrient deficiencies or other diseases. Cultivars also differ in how strongly they express YDV. With symptoms highly variable, diagnostic testing remains the only reliable confirmation. qPCR testing of monitor paddock samples collected in late 2025 is now underway and we're looking forward to what the results will tell us.

Weather played a major role in the aphid story this season, especially the warmer than normal early spring temperatures that quietly encouraged rapid aphid reproduction. Aphid Chat's reproduction model is based on a threshold of 5.8°C, the temperature above which bird cherry oat aphid and rose grain aphid are able to reproduce. Weekly averages above this mark indicate conditions that favour population growth.

In mid September and early October, all monitor sites recorded unusually warm weeks, with Lincoln hitting its highest average degree weeks for those periods in 25 years. Methven and Timaru saw their warmest periods in 17 years, and Gore in 39 years. Crucially, this warmth lined up with many wheat crops reaching GS 31...right at the tail end of the high risk window.



Parasitism in action.

Despite this conducive weather, winged aphid counts remained low in many regions early in the risk period. For growers relying primarily on trap numbers, the risk may not have appeared significant enough to warrant close in-crop monitoring.

However, wingless aphids, the main culprits behind secondary spread, cannot be captured in traps. Their presence relies on direct searching, and while Aphid Chat provides some commentary on wingless numbers, it is not precise.

Beneficial insects also played their part. In Canterbury, aphid populations overtook beneficial species in late October, whereas in Clinton the two populations tracked similarly until mid December. These differences highlight how regional dynamics can shift the balance between pests and natural predators.

Wingless aphids and mummies.

Aphid Chat flagged the warm conditions and provided seasonal commentary, but growers and reps who focused only on winged aphid numbers may have missed the bigger picture. The tool was designed to trigger closer paddock monitoring, not to replace it, and this season underscored why integrating temperature trends, crop growth stages and both winged and wingless aphid activity matters.

FAR welcomes feedback as it continues refining Aphid Chat, ensuring it remains a practical decision-support resource for New Zealand farmers.

Looking ahead

The 2025–26 season has reminded us that YDV risk isn't simply about aphid counts; it's about timing, weather patterns, and local population dynamics. With increasingly variable springs, staying alert to early season signals will be key. As always, combining monitoring tools with on the ground crop checks remains the most effective strategy for managing YDV in future seasons.

We'll have more to report once this season's testing results are available.

Contact jo.drummond@far.org.nz

Recognising arable stalwarts

New Year Honours

Congratulations to FAR Board Member Dr Robyn Dynes who was recognised in the 2026 New Year Honours List. She has been made a Member of the New Zealand Order of Merit (NZOM) for services to agricultural science.

The official NZOM citation says: Dr Dynes has a family background farming in Southland, and following her graduation from Lincoln University, she worked for 14 years at the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Animal Production in Western Australia.

In 2004 she started working at AgResearch in Lincoln where she has held various roles, becoming the Principal Scientist and Farmer Engagement Specialist in 2024. She is a member on several boards and advisory groups, including with the Foundation for Arable Research (FAR) and Southern Dairy Hub from 2017, Beef and Lamb New Zealand since 2015, and Lincoln University Dairy Farm. She is an AgResearch representative on Southern Dairy Hub Research Advisory Group.

She actively supports further education through mentorship, leadership programmes, and hosting students. She was instrumental in the facilitation of the Everything to Gain event in 2022, an AgResearch partnership with Thriving Southland, and the Whitiwhiti Ora Land Use Sustainability Programme.

She won the 2022 Sir Arthur Ward Trophy and in 2023 became a Fellow of the New Zealand Institute of Agricultural and Horticultural Science.

In 2025, Dr Dynes won the Bledisloe Medal, Lincoln University's highest accolade, only the fourth woman to receive it in 95 years.

Significant Achievement

Congratulations to Dr Phil Rolston who has been presented with the NZIAHS Canterbury Section 2025 PGG Wrightson Seeds Significant Achievement Award in Agriculture and Horticulture for long-term contribution to the seed industry.

Phil specialised in research into seed production of grasses, clovers and vegetable crops, weed management and herbicide resistance in arable systems. His skills in these areas are recognised both within New Zealand and internationally. He led the Ryegrass 2000 and 3000 projects, designed to increase ryegrass seed yield, working closely with grower extension groups and creating discussion groups. Average seed yields were increased by 50% and the projects affirmed the value of collaborative approaches.

Phil began his career as a scientist with DSIR Grasslands, in Palmerston North, focussing on weed and seed research, and in 1993 he moved south to AgResearch Lincoln as a Senior Scientist responsible for seed research.

After retiring from AgResearch in 2016 he became a Senior Research Advisor for FAR, a position he held until 2022. He is currently the Technical Coordinator for the Seed Industry Research Centre and an Adjunct Professor at Lincoln University where he teaches seed technology and co-supervises postgraduate students.

Accolades bestowed on him include a Ministerial Award for Technological Development (1990), the NZIAHS Technology Transfer Award (2005), FAR Researcher of the Year (2008), AgResearch Technology Award (2015) and an Arable Industry Lifetime Achievement Award (2022).

Remembering Murray Kelly

The death of Murray Kelly, PGG Wrightson Seeds is a huge loss to the arable community.

Murray was a "walking encyclopaedia" and an integral part of FAR and SIRC seed research and extension. He was a great communicator and was always generous in sharing his knowledge with researchers and growers in New Zealand and internationally. He also enjoyed mentoring the next generation of seed researchers and was an 'all-round good guy'. Our thoughts are with his family.

Murray was FAR's 2016 Researcher of the Year. His award was presented by Professor Nicole Anderson, then working at Oregon State University.

Growers shine at environment awards

Congratulations to arable and horticultural award winners in the Canterbury Ballance Farm Environment Awards.

Mike Arnold, LeaderBrand South Island

LeaderBrand is best known for vegetable production, but they also include arable in their rotation. Their focus on soil science, biodiversity and their staff earned them recognition at the Canterbury awards. LeaderBrand South Island won four Canterbury awards: soil management, people in primary sector, agri-science and farming efficiency.

Andrew and Amy Darling, South Canterbury

Andrew and Amy Darling run Adar Farming, a 482 hectare property just south of Timaru that typically grows wheat, barley, oilseed rape, turf ryegrass and feed peas. The judges recognised their use of innovative tools and focus on soil science, noting that their data-driven approach has streamlined practices across the operation, resulting in optimised inputs and exceptional crop yields, even through drier spells. The Darlings won the risk management award.

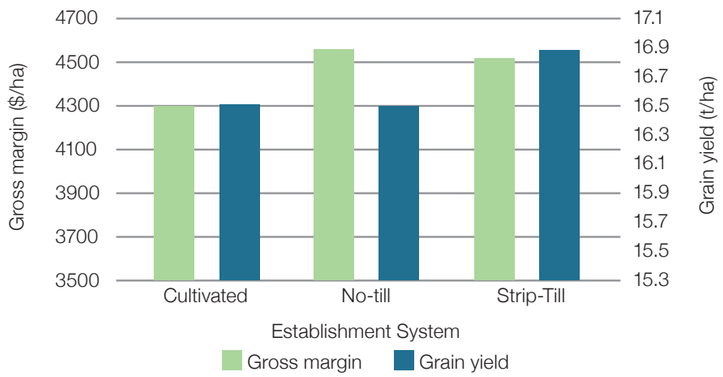
How is maize grain production affected by establishment?

A FAR-Corson collaboration has compared the impacts of no-till, strip-till and conventional cultivation on a Typic Orthic Allophanic soil at the Corson site near Hamilton. The aim was to quantify long-term yield, yield stability and profitability.

Four years of combined data showed:

- Grain yield did not differ across establishment systems.
- Maize grain gross margin did not differ across establishment systems.
- Maize population at harvest did differ among establishment systems.
  - Lower populations under no-till than under cultivated or strip-till systems.
- Emergence was slower under no-till, resulting in higher harvest moisture.

Results



Note: No statistical difference in gross margin or yield between treatments.

Figure 1. Four years combined data showing maize gross margin and grain yield for different establishment systems.

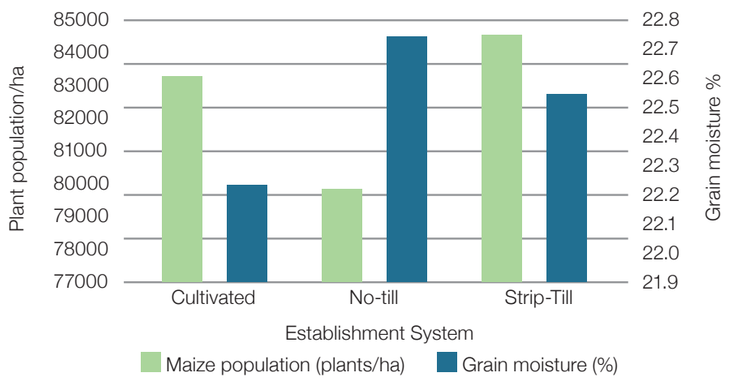


Figure 2. Four years of combined data showing maize established population and grain moisture for different establishment system.

Note: Maize population at harvest differed among establishment systems (P = 0.046, LSD (p=0.05) = 3000 plants ha^{-1})

Grain moisture at harvest differed amongst all establishment systems (P < 0.001, LSD (p=0.05) = 0.2 %).

What about other similar trials?

Over a 15-year period, FAR conducted 38 establishment trials across 15 sites in five regions of New Zealand. Of these, 29 trials focused on grain production. The trials spanned a wide range of soil types, representing multiple soil orders.

Analysis of the long-term dataset provided the following insights:

- On average, full cultivation resulted in higher yields (0.5t/ha grain) than no-till or strip-till systems.
- No-till systems generally delivered higher gross margins (based on farm-gate prices) compared with strip-till or full cultivation.
- Established plant populations were, on average, lower under no-till than under full cultivation or strip-till.
- Grouping soils by soil order did not appear to influence the effect of tillage system on grain yield; however, high variability within and between trials may have masked soil-related responses (Figure 3).

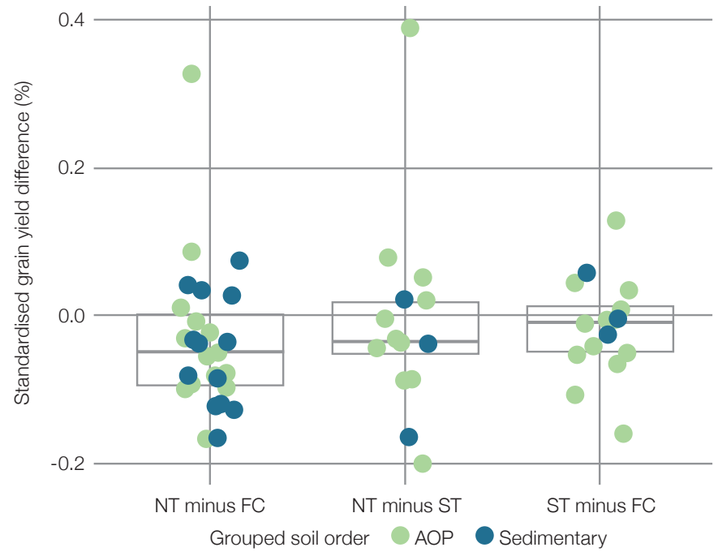


Figure 3. Grain yield tillage treatment differences with the grouped soil order.

Note: AOP= Allophanic, Organic and Pumice soils, and Sedimentary = Brown, Gley and Recent soils.

Scan QR code for FAR Research report.

Does soil matter?

On-farm maize establishment trials have been conducted on two different soils in the Waikato for four to five years. They are: the Alan Henderson silage trial (four years, Allophanic soil) and the Colin Jackson silage trial (five years, Brown soil). The impact of establishment system on maize (silage) differs between these two contrasting soil types.

Scan QR code for more information.

Contact Rene.Vantilburg@far.org.nz

New directors appointed to FAR Board

Three new grower directors have been appointed to the FAR board, taking up their roles on 1 January this year.

They are: Edward White of central Hawke's Bay, Michael Tayler of South Canterbury and Hamish Irwin of Mid Canterbury. Current grower director, Val McMillan, has been re-elected and two appointed FAR Board positions, held by Dr Mike Hedley and Dr John Caradus, have been reconfirmed.

Ed White and his family run a large-scale arable, sheep, beef, and dairy farm at Takapau, with Ed responsible for the arable, grain drying and handling operations. He has also farmed in the United Kingdom. Ed chairs FAR's eastern North Island Arable Research Group and has considerable experience with boards and governance structures.

Hamish Irwin is a fifth-generation mixed cropping farmer based near Rakaia. A chartered accountant, Hamish has practised in the UK and New Zealand with international firms. Hamish is active in the operational and finance side of his arable farm and is involved in governance roles.

Based near Temuka, Michael Tayler farms a range of arable and horticultural crops over multiple properties. Michael was awarded a Nuffield scholarship in 2012. He has held various roles across the arable farming sector and is currently chair of United Wheat Growers.

The new appointments follow the retirement of two long-serving directors Steve Wilkins of Southland (12 years) and Guy Wigley of South Canterbury (six years). While directors normally serve a maximum of three terms (nine years), Steve Wilkins served an extra term to provide continuity during the Covid-19 pandemic.

FAR board chair Steven Bierema thanked the retiring directors for their service. "They have been very thoughtful and insightful, with a massive amount of knowledge of arable farming, so we owe them a lot."

An additional director was appointed following a new requirement for the board to have at least seven farmer members.

Appointments are made by FAR's nomination and remuneration committee.

Associate director

The FAR board's latest associate director Liam Martin comes with both grower and industry links.

Liam, who is Cropmark Seeds' South Island customer relations manager, also runs a family farm at Southbridge in Central Canterbury.

He is half-way through an 18-month stint as associate director. "My first meeting was (chief executive) Scott Champion's first meeting."

As an associate director, Liam is able to observe the workings of the FAR board, but doesn't have voting rights. "I am interested in governance and it is hard to get experience in these roles unless you are sitting in and observing it."

Liam has worked at Cropmark since completing a BAgSci at Lincoln University in 2013. He started as a production agronomist before moving to his current sales role which includes travelling to markets in the United States, South Africa and Japan.

In addition, Liam and his wife Alice lease a family farm in Southbridge growing seed crops, running breeding ewes and trading store lambs.

CROPS

Annual Expo 2026

Chertsey Arable Site, 25 November

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For more information and to register

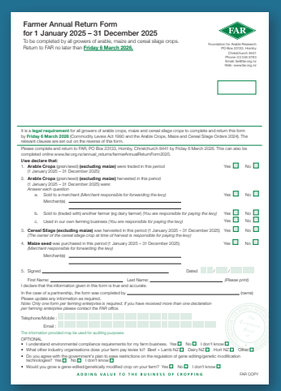
Annual Return Forms

By now you should have received your FAR Annual Return form in the post.

It is a legal requirement, under the Commodity Levies Act 1990 and the Arable Crops, Maize and Cereal Silage Orders 2024, that all growers of arable crops, maize and cereal silage crops complete and return this form by Friday March 6 2026.

We have made it easy for you to fill out the form either by the paper copy that was mailed to you or by going to the FAR website www.far.org.nz. If you use the website, click on the Levies and Annual Returns button on the top of the front page and follow the links. If you don't want to keep a copy, simply fill out a blank online Annual Return and press send. If you want to keep an electronic copy for your records, you will need to log-in to the website before completing and sending the form.

Thank you for taking the time to complete and return your Annual Return, it is appreciated.


Farmer Annual Return Form
for 1 January 2025 – 31 December 2025