FOUNDATION FOR ARABLE RESEARCH

FAR®

Autumn Round-Ups 2026

17 March, ***Darfield***

18 March, ***Canterbury (online)***

19 March, ***Timaru***

26 March, ***Southland (online)***

*31 March****, Lower North Island (online)***

1 April, ***Methven***

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In case of emergency notify a FAR staff member or call 111 and provide the address of the event:

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- **Timaru:** Benvenue Hotel, 16/22 Evans Street, SH1, Timaru 7910
- **Methven:** Methven Resort, 51 Main Street, Methven

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Feedback on Results Round up events

To help with continuous improvement for FAR events, we are seeking your feedback on today's event. We have three ways for you to provide feedback to FAR. You can:

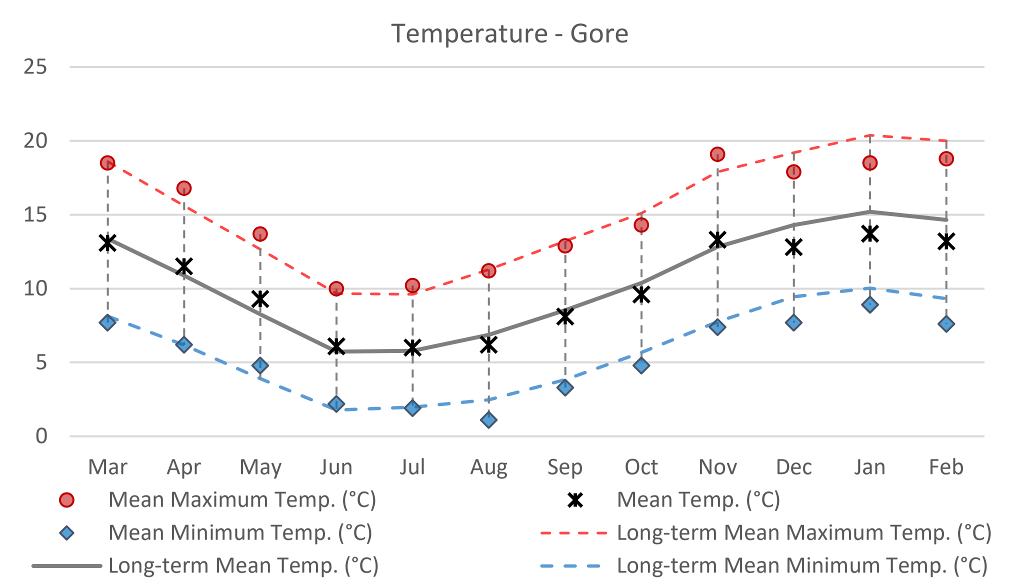
1. Scan the QR code and follow the instructions to complete the survey online.
2. Copy the web link below and complete the survey online when you can.
3. Email philippa.rawlinson@far.org.nz to complete the survey manually.

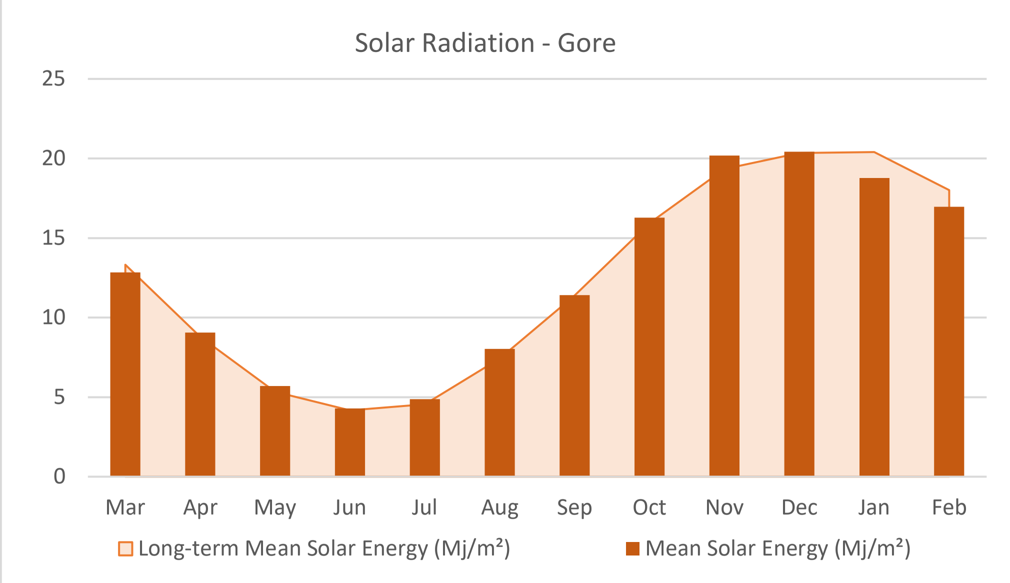
Get in quick though, we will be closing the survey shortly after the conclusion of the series of events.

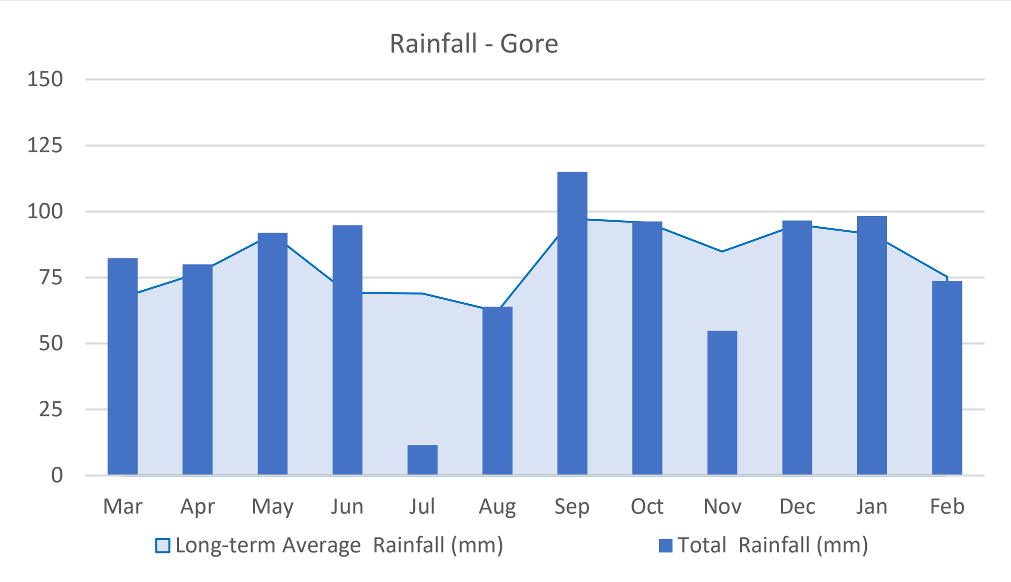
https://www.surveymonkey.com/r/resultsroundupfeedback2026

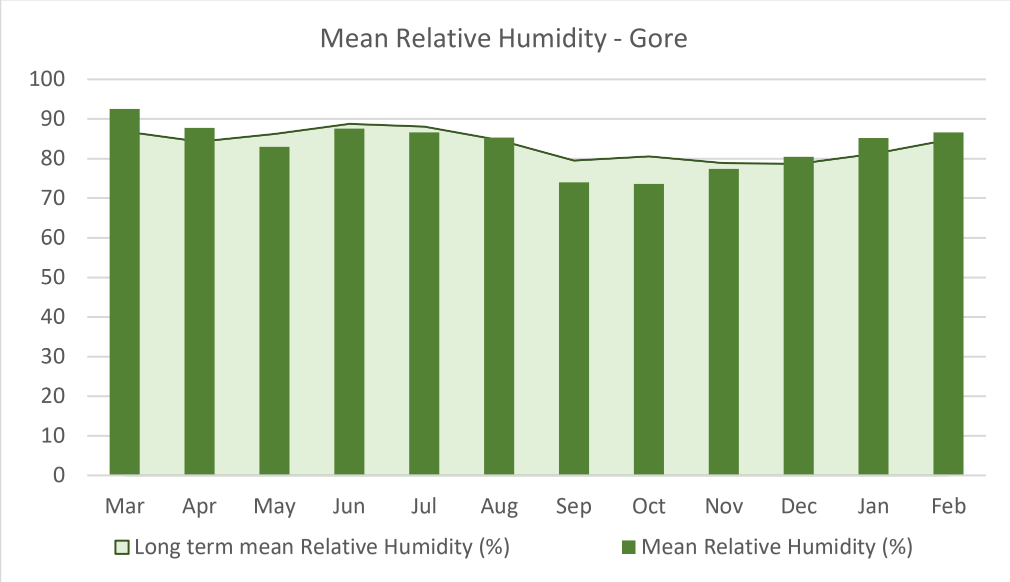
Regional monthly weather summaries, 2025-26 – Gore, Southland

Source: MetWatch (https://www.far.org.nz/) (Note: Temperature, Rainfall and Solar Radiation. LTM starting 2017. Relative Humidity % is average of the 8:00-9:00 AM and 9:00-10:00 AM data. LTM starting 2016).



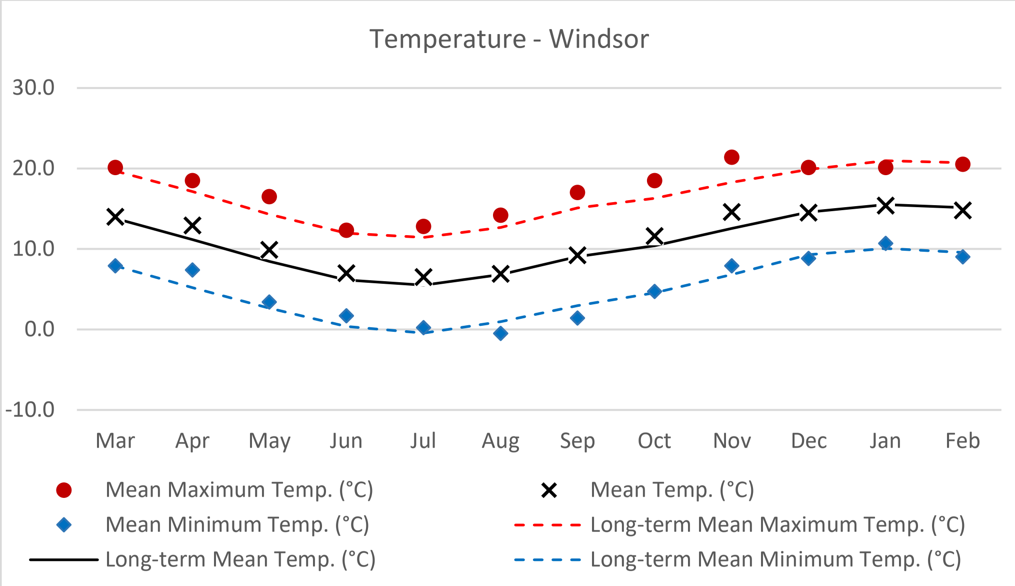


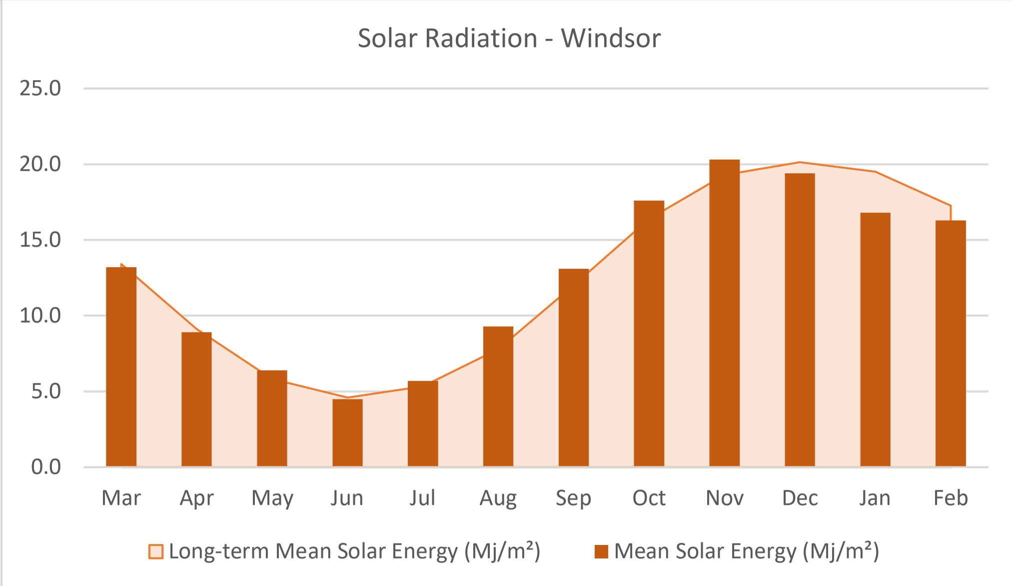


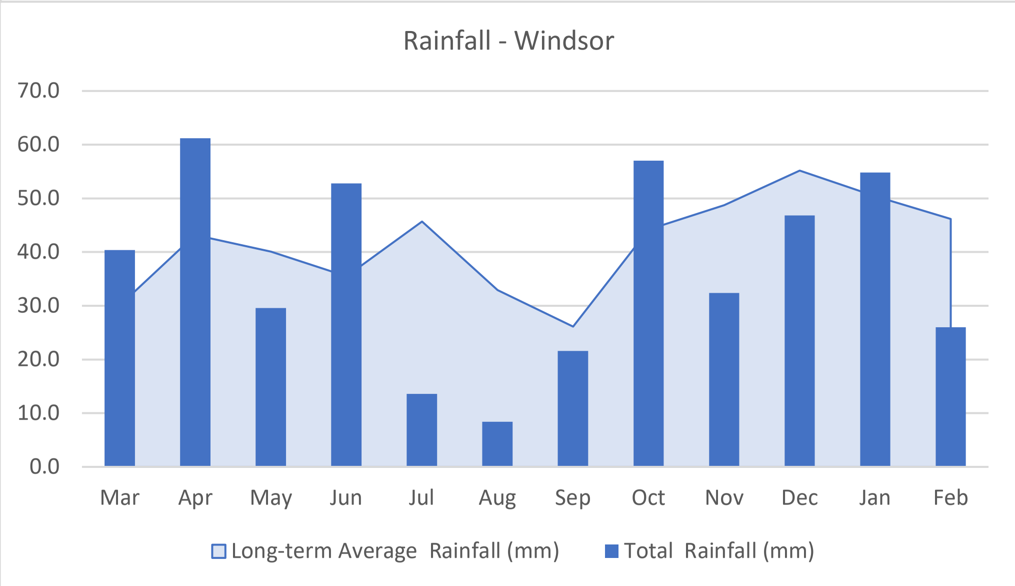


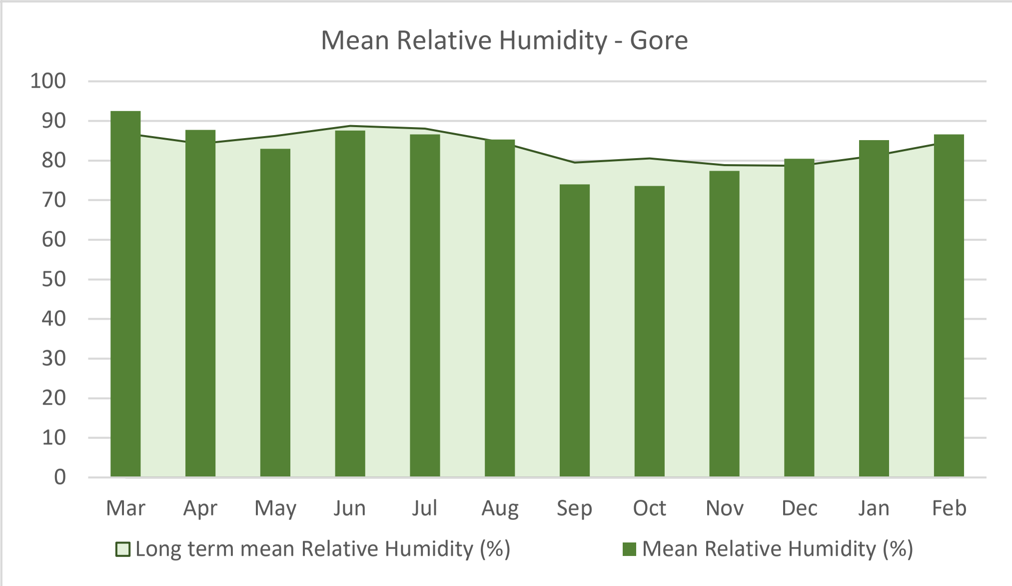
Regional monthly weather summaries, 2025-26 – Windsor, Otago

Source: NIWA, LTM starting 2001.



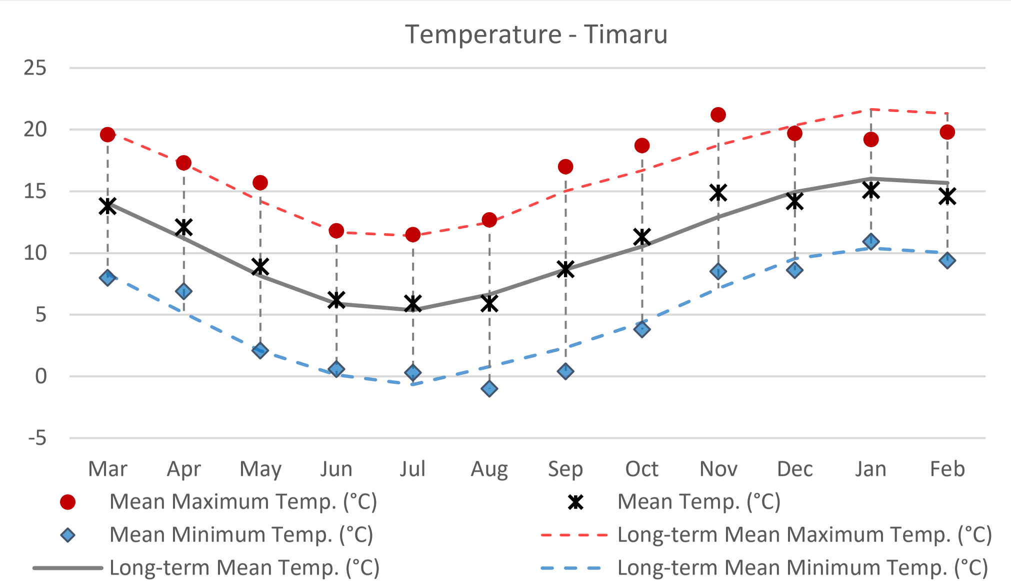


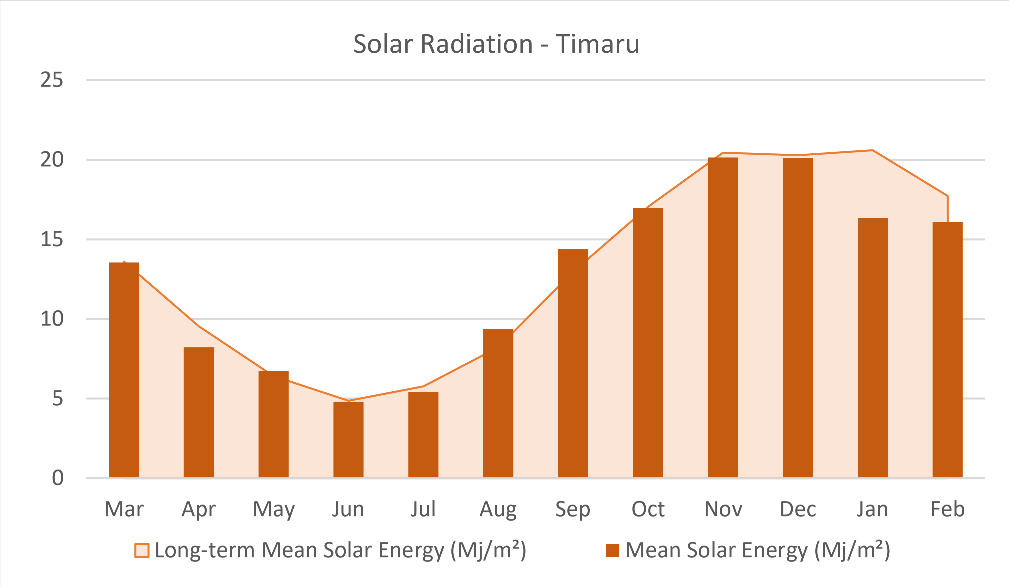


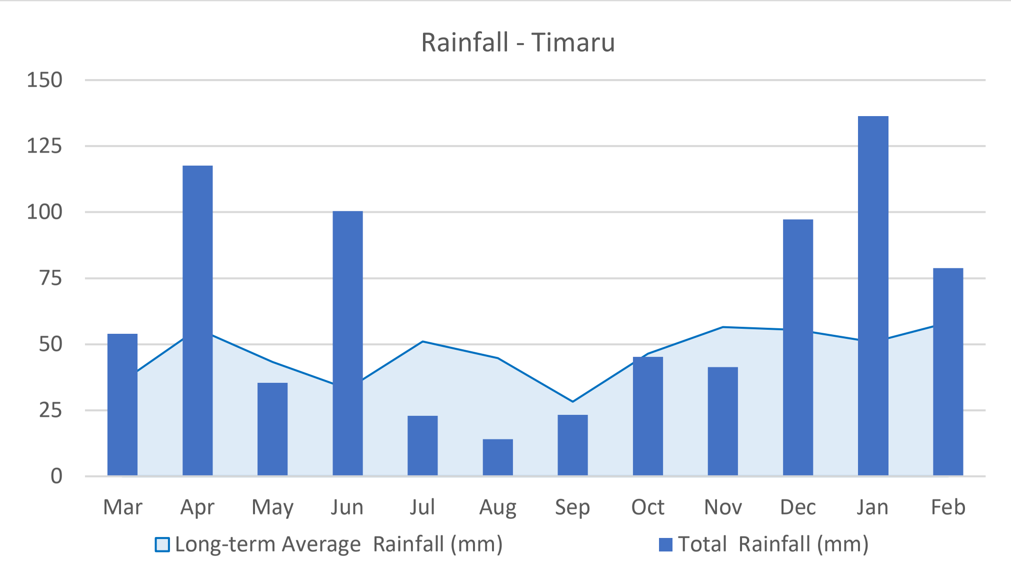


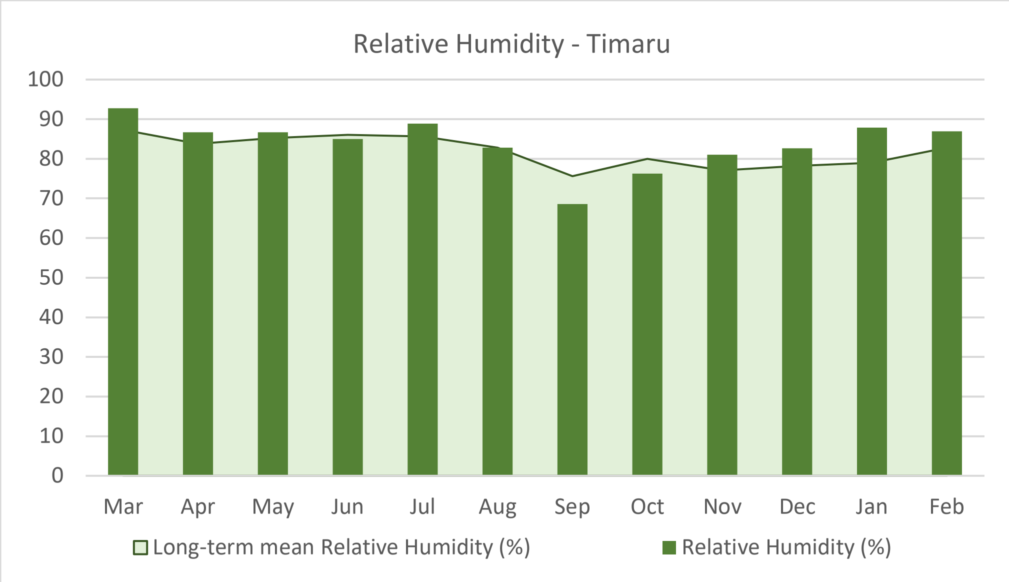
Regional monthly weather summaries, 2025-26 – Timaru, South Canterbury

Source: MetWatch (https://www.far.org.nz/) (Note: Temperature and Rainfall, LTM starting 2008. Relative Humidity % is average of the 8:00-9:00 AM and 9:00-10:00 AM data. LTM starting 2015); NIWA: Solar Radiation: LTM starting 2007.



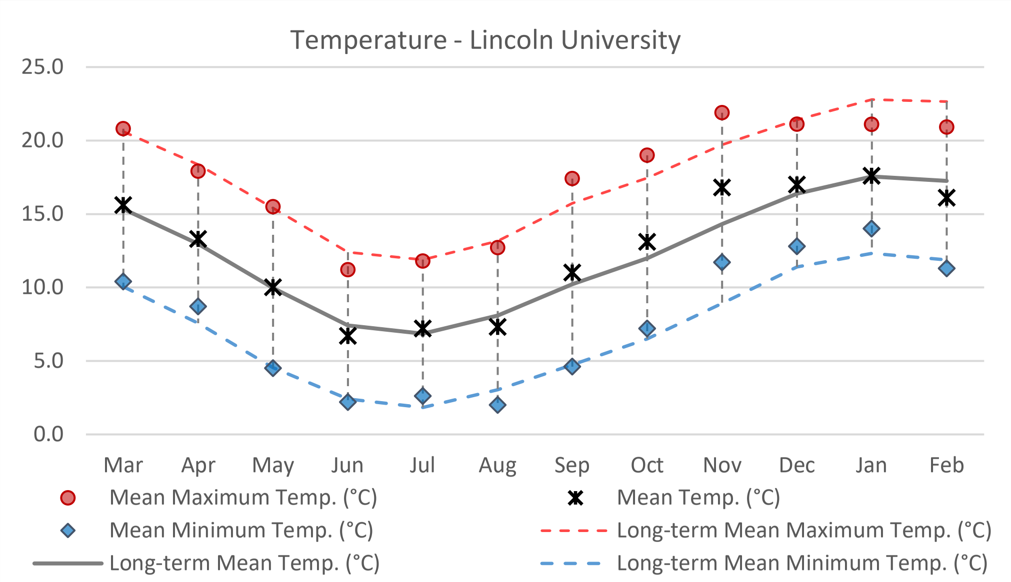


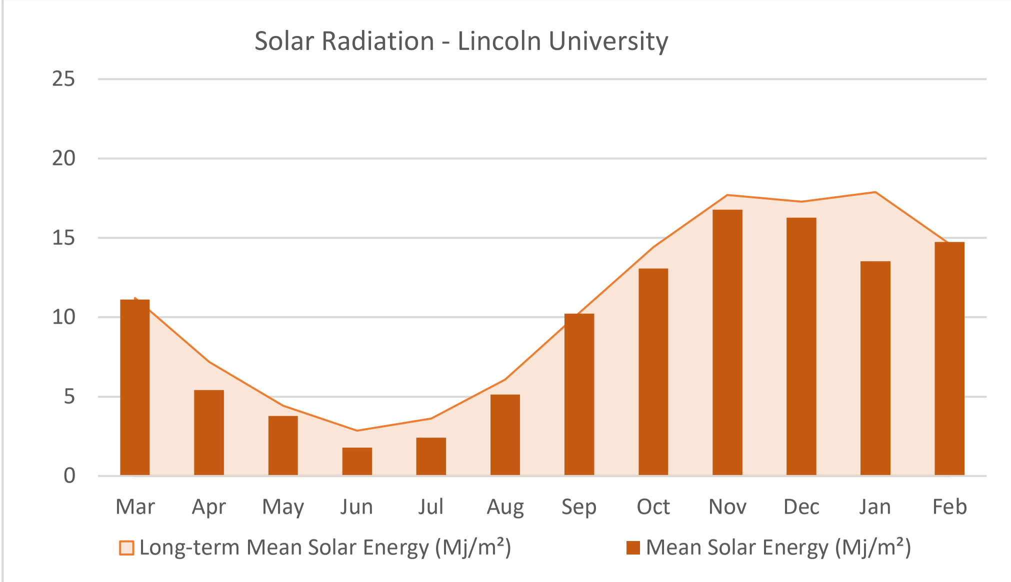


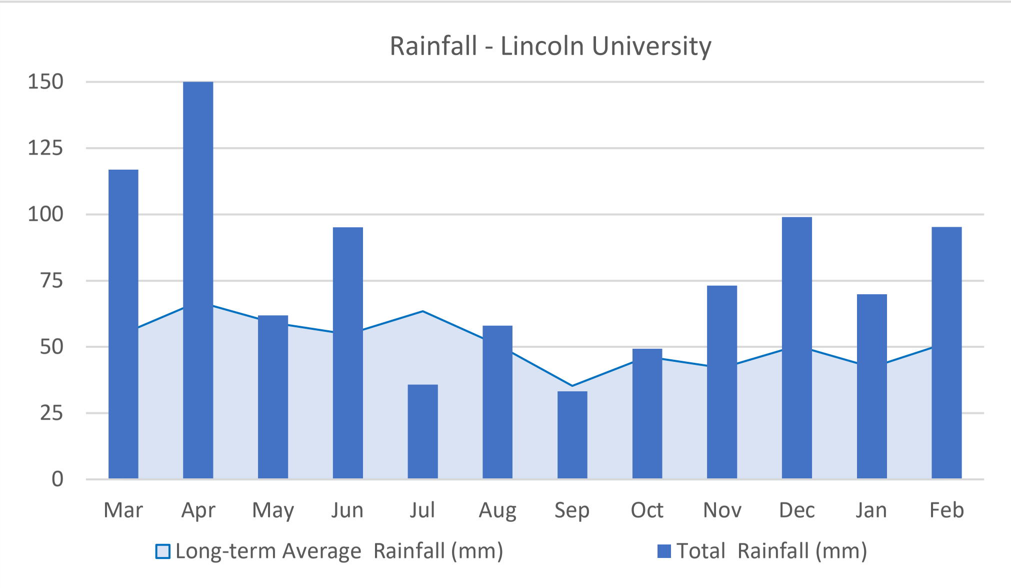


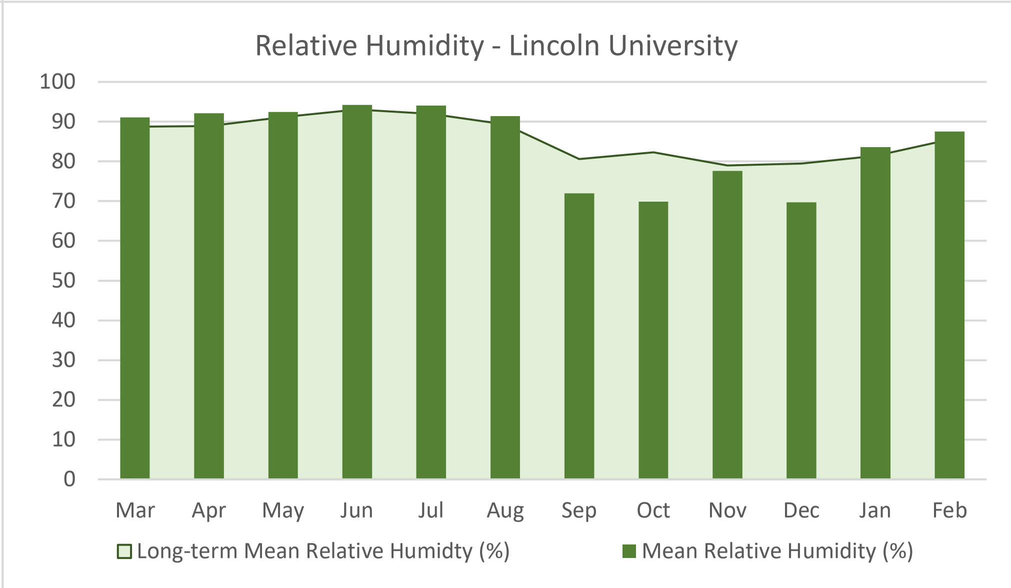
Regional monthly weather summaries, 2025-26 – Lincoln University, Mid-Canterbury

Source: MetWatch (https://www.far.org.nz/) (Note: RH% is average of the 8:00-9:00 AM and 9:00-10:00 AM data. LTM starting 2008)



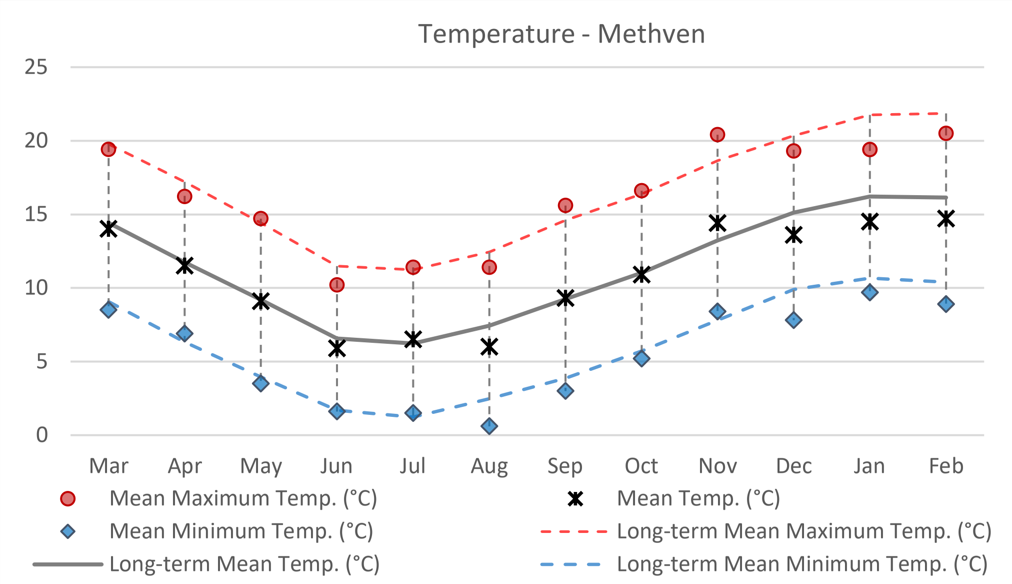


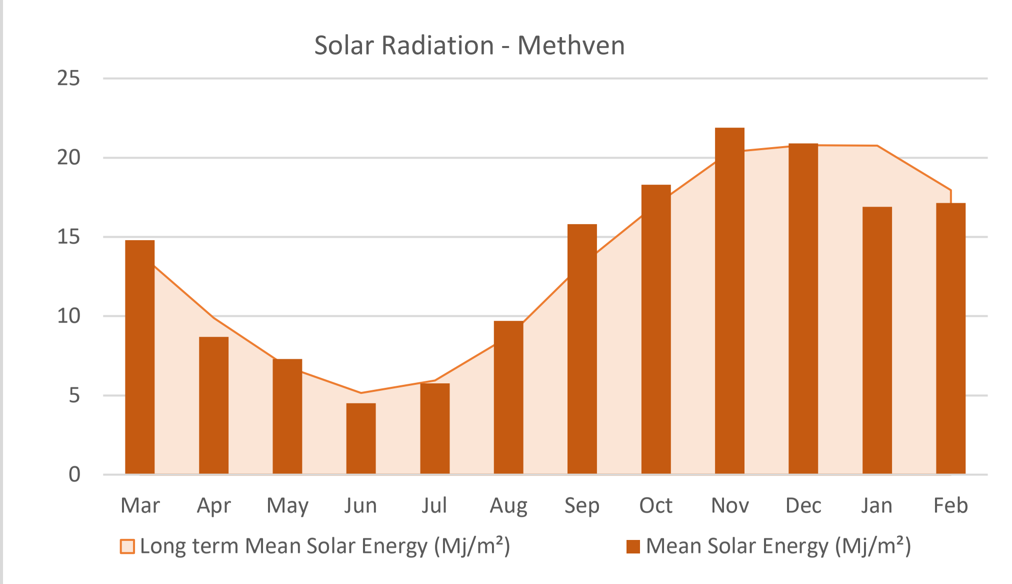


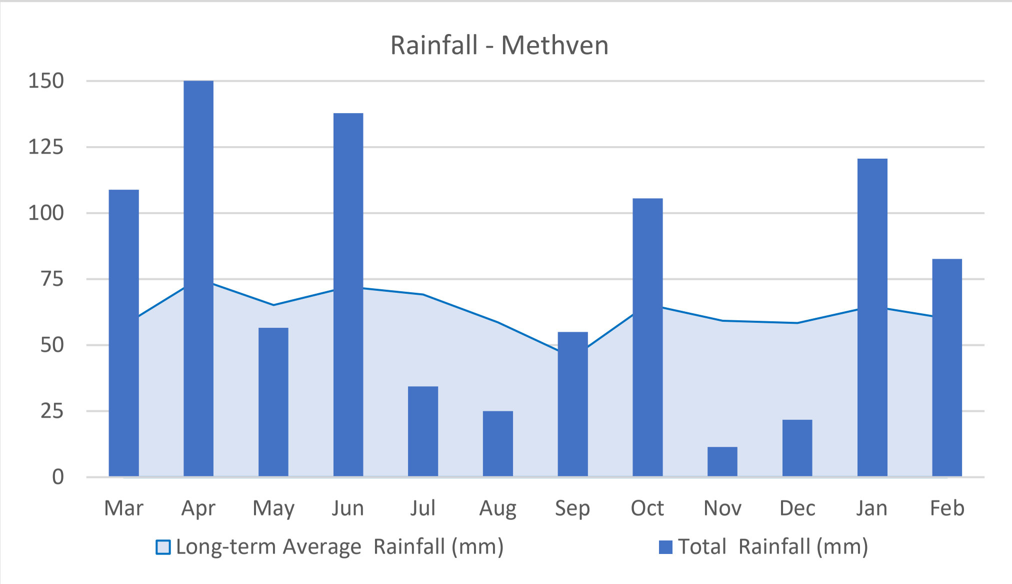


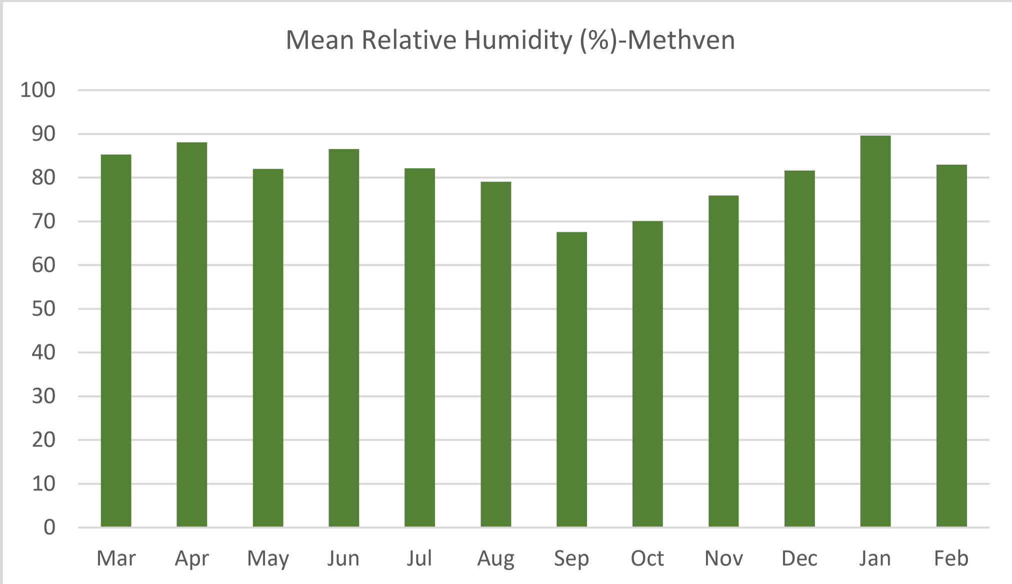
Regional monthly weather summaries, 2025-26 – Methven, Mid Canterbury

Source: MetWatch (https://www.far.org.nz/) (Note: Temperature and Rainfall, LTM starting 2009. Relative Humidity% is average of the 8:00-9:00 AM and 9:00-10:00 AM data. LTM starting 2015); NIWA: Solar Radiation: LTM starting 2009, July 2025 and February 2026 are incomplete data.



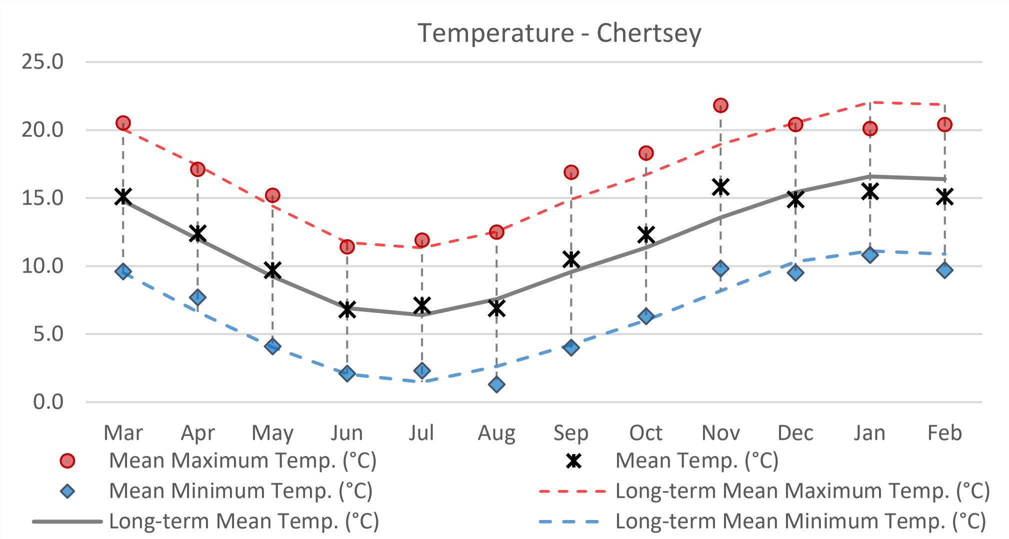


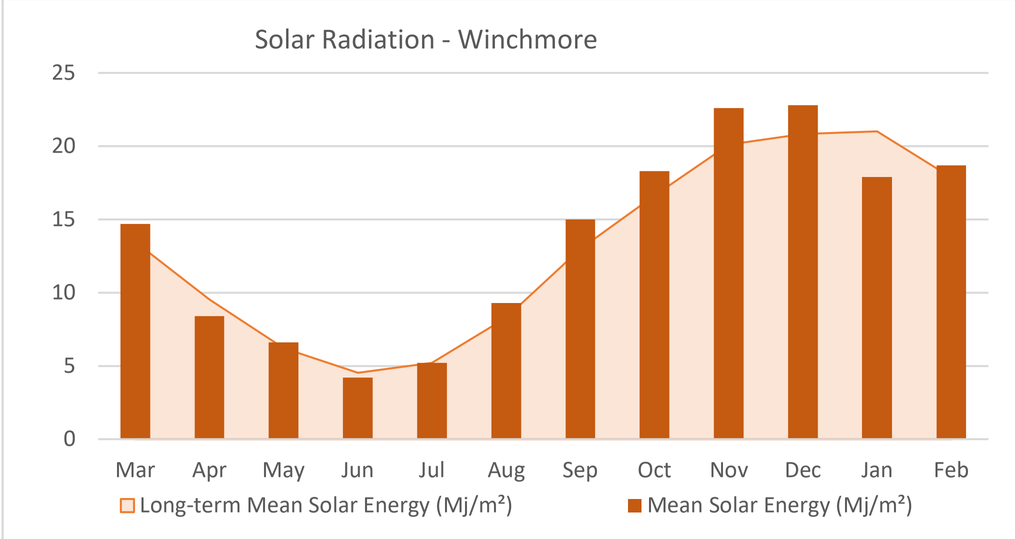


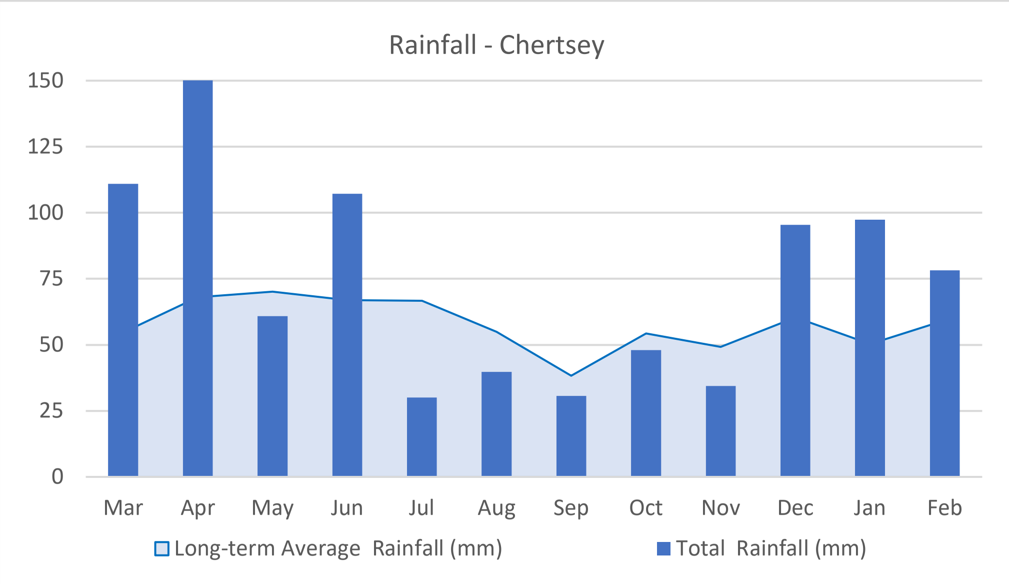


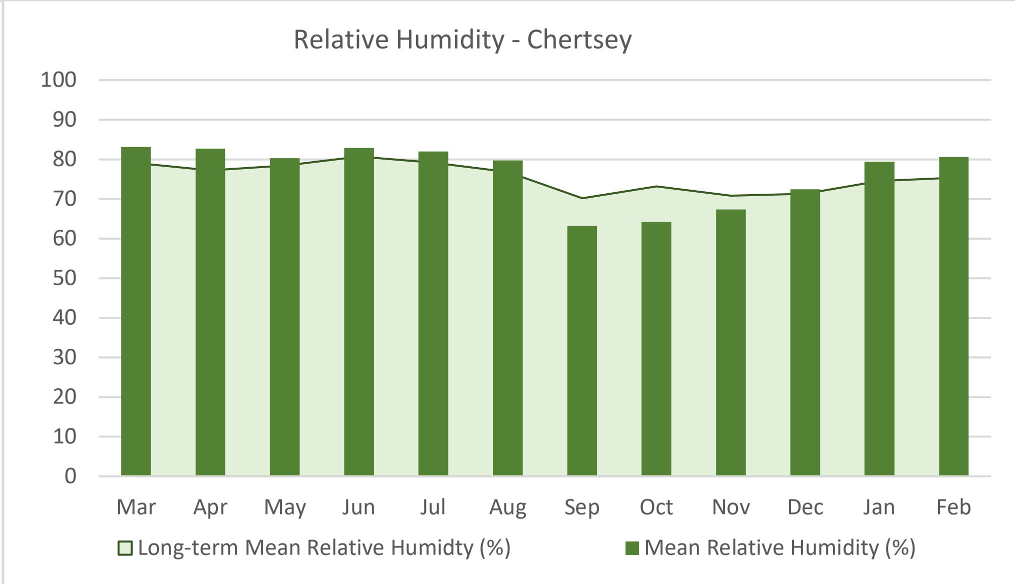
Regional monthly weather summaries, 2025-26 – Chertsey, Mid Canterbury

Source: MetWatch (https://www.far.org.nz/) (Note: Temperature and Rainfall, LTM starting 2008. Relative Humidity % is average of the 8:00-9:00 AM and 9:00-10:00 AM data. LTM starting 2016); NIWA: Solar Radiation: LTM starting 2017.



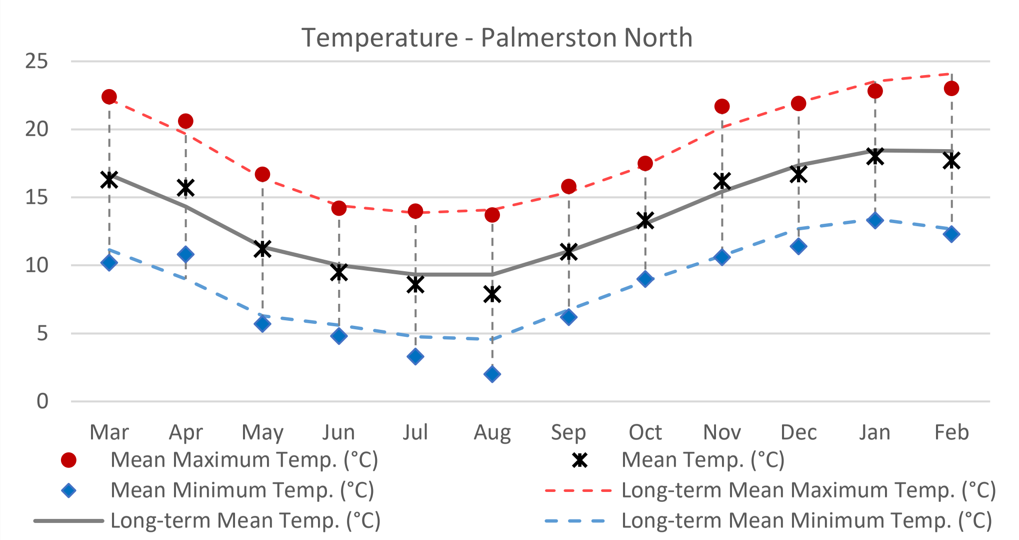


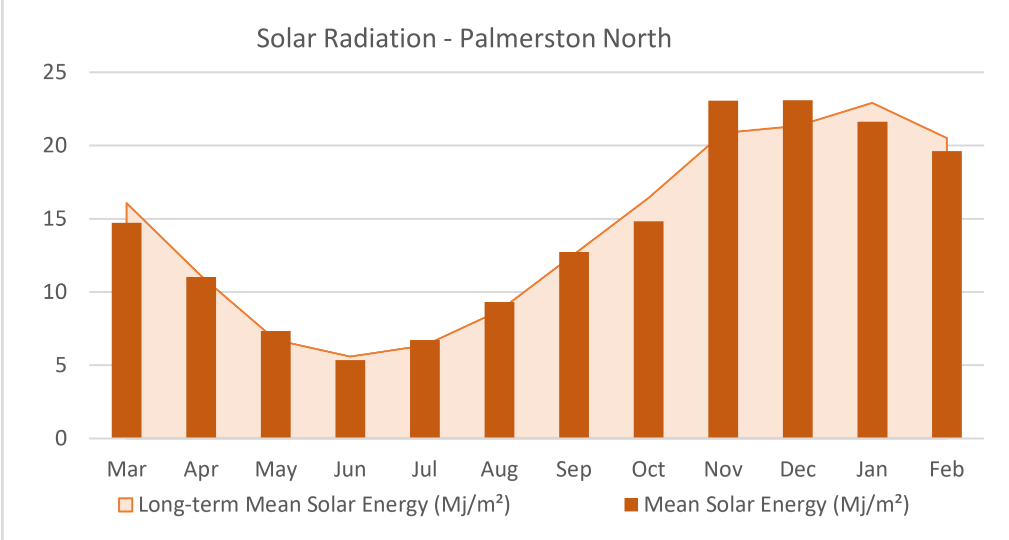


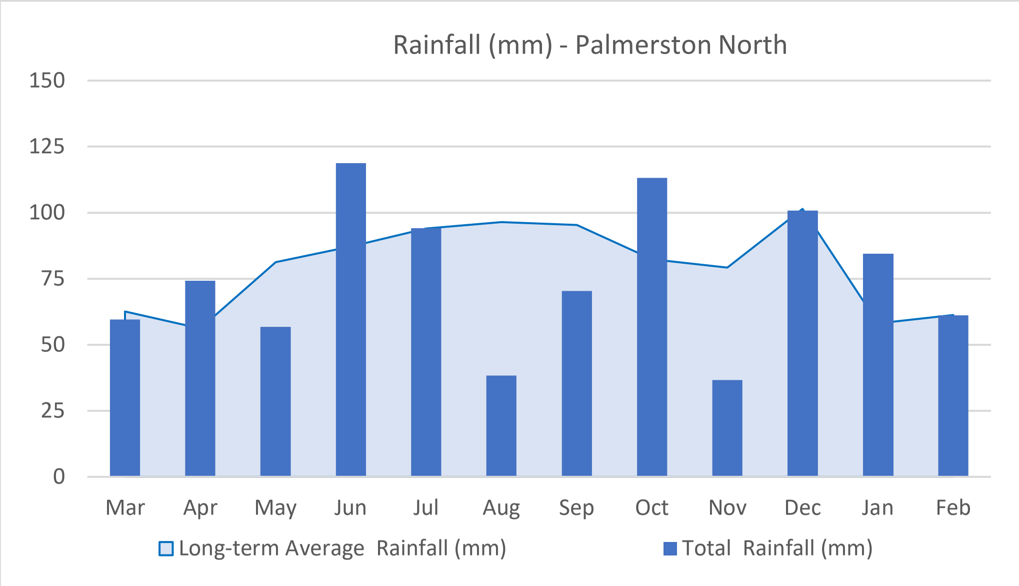


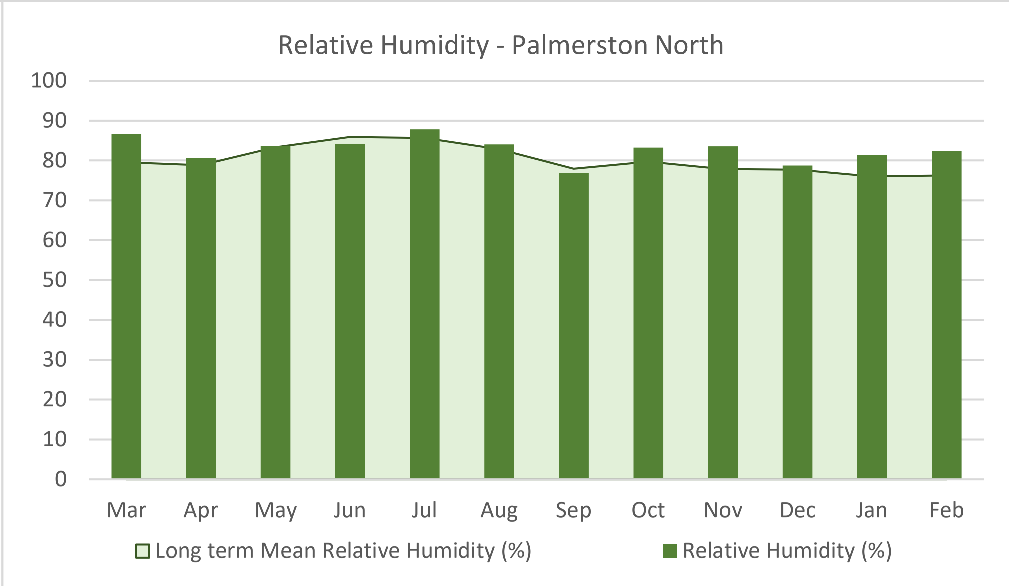
Regional monthly weather summaries, 2025-26 – Palmerston North, Manawatu

Source: MetWatch (https://www.far.org.nz/) (Note: RH% is average of the 8:00-9:00 AM and 9:00-10:00 AM data. LTM starting 2018).



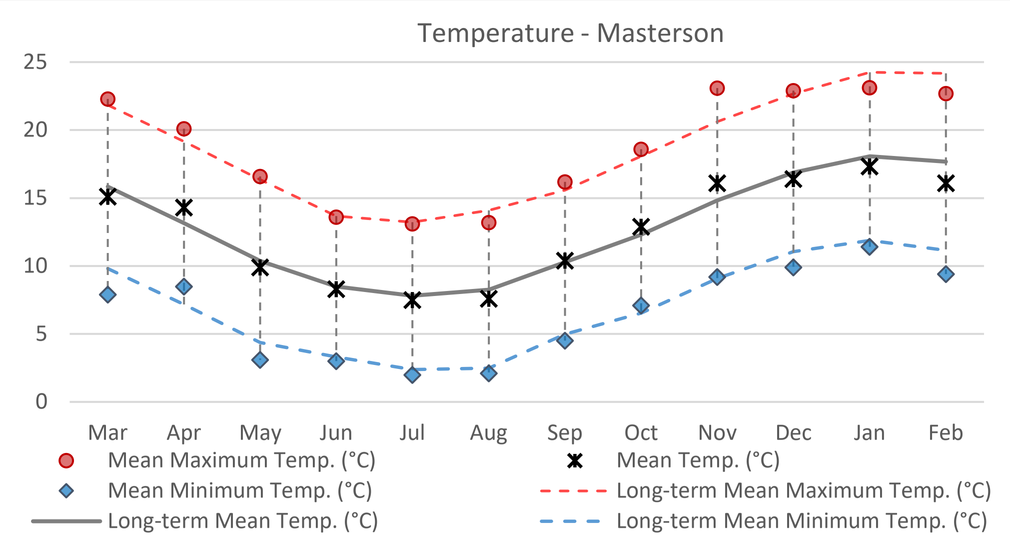


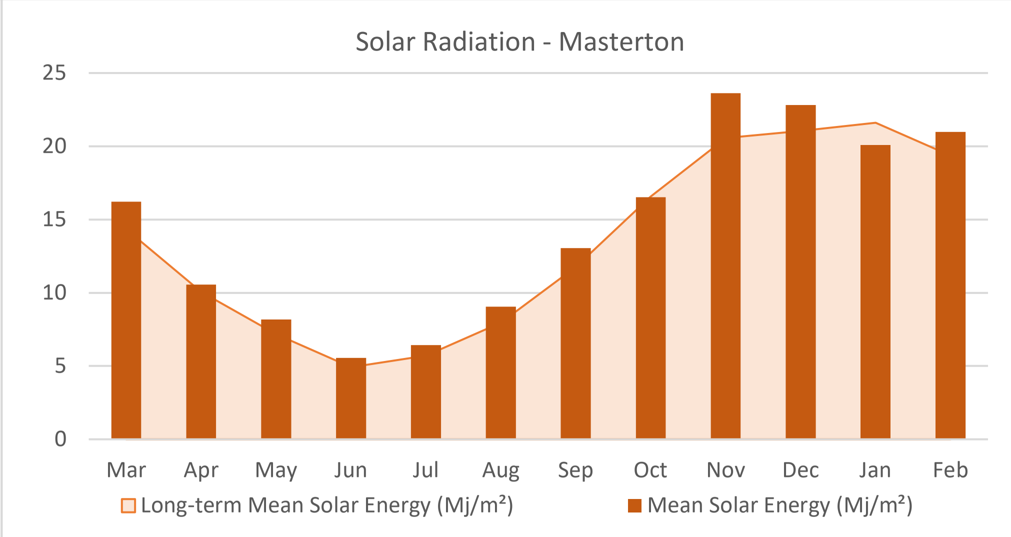


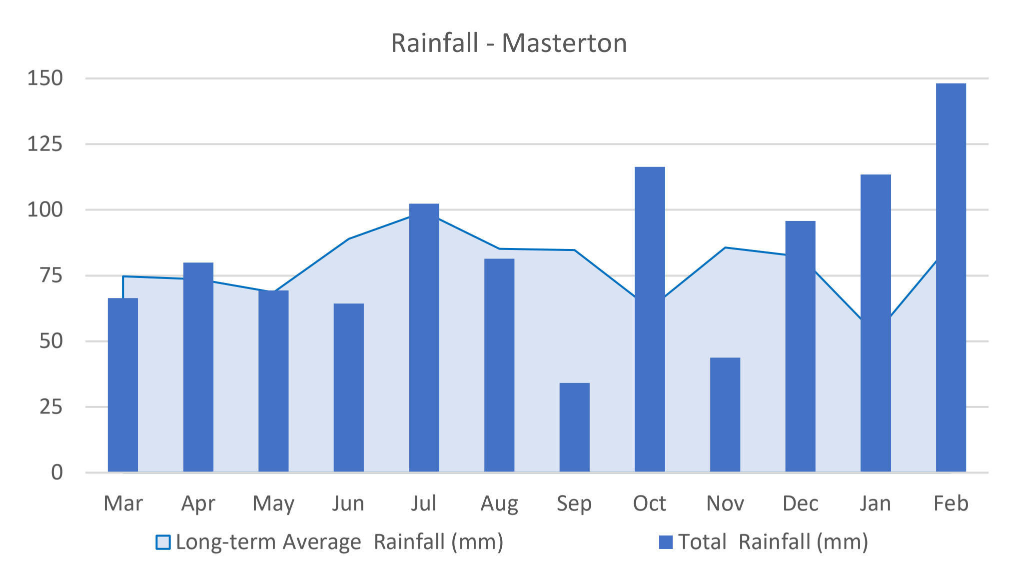


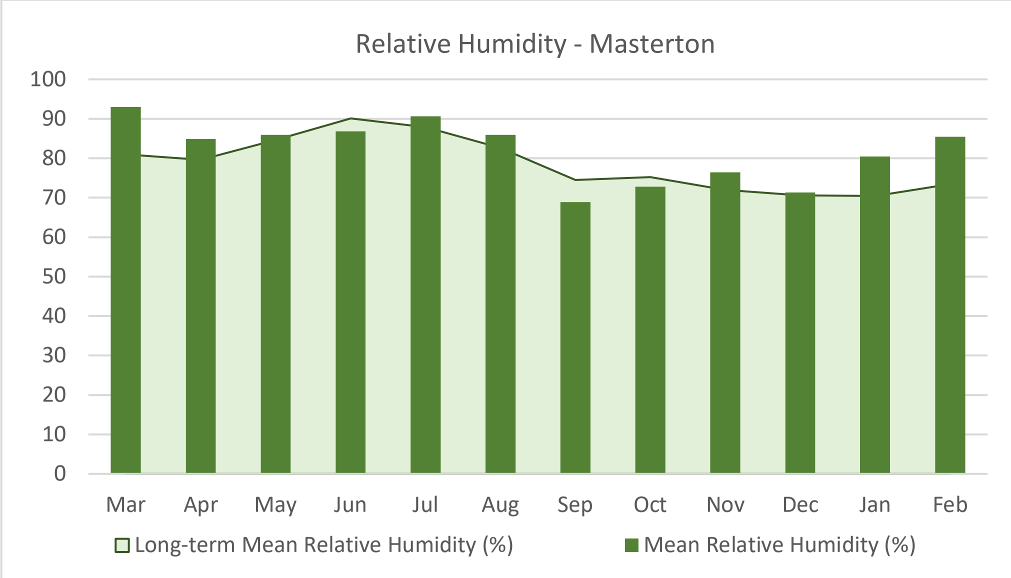
Regional monthly weather summaries, 2025-26 – Masterson, Wairarapa

Source: MetWatch (https://www.far.org.nz/) (Note: Temperature, Rainfall and Solar Radiation. LTM starting 2016. Relative Humidity % is average of the 8:00-9:00 AM and 9:00-10:00 AM data. LTM starting 2015).









Nitrogen management – a review of the season

Abie Horrocks, Emmanuel Chakwizira and Dirk Wallace (FAR)

Key points

- Tough seasons offer valuable learning opportunities, and recording outcomes helps refine future nitrogen (N) decisions and reduce unnecessary costs.
- Tools such as variable rate technology, Quick N tests, and partial N balances work alongside farmer knowledge to improve decision-making and profitability.
- Quick N tests are a cheap way to assess N left behind in a low yield season.
- They can also track release of N mid-season, for example following legumes, to help make more informed fertiliser decisions.
- Factoring soil N into fertiliser decisions can save money.

A season overview

The 2025–26 season created significant challenges for many growers. In some regions weather patterns, long stress periods, and waterlogging all played major roles in lowering yields, creating uncertainty about how much N crops actually used. This talk outlines practical approaches and tools that help make sense of what happened to the N in your system, how you can learn from the season, and how these insights can refine future decisions.

Even in a difficult year, asking a few key questions helps build understanding: What actually happened in the paddock? How did actual yields compare with targets? How were N rates decided, and with hindsight, what would you change? By consistently recording this information, you build a personal data bank that highlights long-term patterns.

In any season, it's important to focus on what can actually be controlled. When crops undergo long periods of stress before fertiliser is applied, yields can drop. This creates an opportunity to revise total N applied to match a more realistic yield. However, yields are also vulnerable to events such as waterlogging later in the season after fertiliser has been applied, which can impact yield and leave N unutilised. So, an important question in a tough season is where the N ends up. If yields fall short of expectations, the crop may not have used all the applied N. It may still be in the soil, potentially available for the next crop, or it may have leached if drainage occurred (this can happen over summer). Knowing whether residual N remains, and whether it will be available at the right time for the next crop, can help save money and better target fertiliser rates.

What tools are available to support future N management decisions?

The Quick N test is a practical, affordable way to assess soil nitrate levels. While a full laboratory mineral N test costs around $50–60 per sample, quick test strips cost just $2–5 per sample. The method measures nitrate, not ammonium, but the result can still be used in nitrogen calculators in place of a lab value. Samples must be collected as usual and kept cool until testing. The quick test nitrate guide can be found https://assets.far.org.nz/Quick-test-nitrate-guide.pdf . Kits can be purchased from www.labsupply.co.nz (enter nitrate test kit or CHENITRATE-N into the search bar).

The standard Quick Test method estimates nitrate by comparing the colour of a test strip with a colour swatch on the side of the test strip container. LandWISE have tested a Nitrachek device (KPG Products Ltd – United Kingdom) which eliminates subjective visual estimation of test strip colours through adoption of electronic colour analysis, potentially reducing operator error and improving consistency. More information and the link to the Nitrachek online calculator can be found on the LandWISE website.

Quick N testing is valuable post-harvest, particularly when yields are low and residual N is suspected. They can also be useful mid-season, for example when tracking N release after a legume crop. Legume residues often release more N than predicted by the potentially mineralisable N (PNM) test as the laboratory procedure removes residue and focuses on measuring the release of N from soil organic matter.

A trial at the Kowhai Research Farm highlighted this. Quick N testing showed that the N release from legumes into a following wheat crop was greater than predicted. The N calculator estimated an extra 26 kg N/ha would become available over a three-month period where ryegrass regrowth included faba beans, compared with ryegrass regrowth without a legume. However, the actual release measured over the three-month period leading up to the first N application was 70-80 kg N/ha greater following the faba inclusion (Figure 1). As a result, fertiliser N was reduced by 70 kg N/ha without reducing yields. However, not adding a late-season N application to increase protein to the ex-ryegrass+faba treatment did not pay off, and the milling grain ended up with significantly lower protein compared with where 40 kg N/ha had been added to the other treatments.

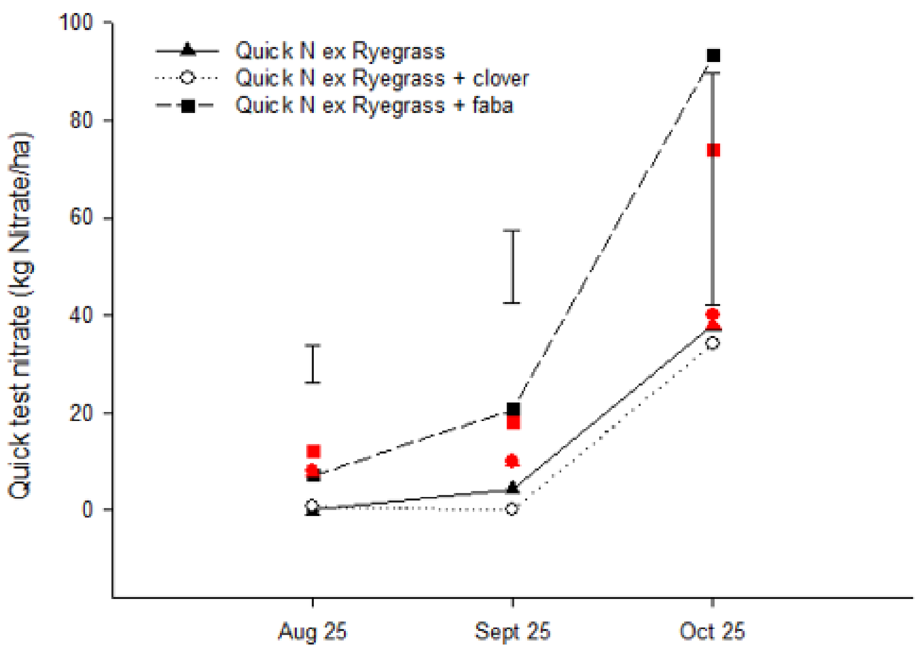


Figure 1. Monthly quick N's up to applying fertiliser to spring wheat in 31 October 2025, Kowhai Research Farm, Lincoln. Red symbols are laboratory mineral N results for comparison.

Variable rate technology can help manage difficult areas by identifying zones that consistently underperform because of drainage issues or compaction. In many cases, these areas will not respond to additional N, so applying more is a waste of money. Variable rate tools, whether satellite-based platforms like ATFarm, drone imagery, grid sampling, or the N-Sensor, allow exclusion zones or reduced rates to be applied where appropriate. The N-Sensor's biomass cut-off feature, for example, enables operators to prevent backward areas from receiving unnecessary N by setting a threshold below which rates drop quickly to a minimum. This ensures N is directed only to the parts of the paddock capable of responding.

Partial nitrogen balance (PNB) is another useful tool. Developed through a FAR-led MfE project, PNB is calculated by dividing the N removed in product by the N applied as fertiliser. It helps guide decision-making by highlighting which areas should be soil-sampled first, those where the greatest financial gains or savings are likely. As Farm environment plans become increasingly required nationally, auditors will ask for evidence that N decisions are well considered and that N is being used efficiently. PNB provides a simple way to demonstrate efficient N use.

Acknowledgements
Development and evaluation of the Partial nitrogen balance (PNB) tool was funded by MfE contract #26036.

The evaluation of soft chemical and biological fungicides for *Ascochyta* control in process peas and pea seed crops.

Bruno Gatimel (A Lighter Touch), Nigel Rowe-Lucas (Kraft Heinz) and Andrew Pitman (FAR)

Key points

- Ascochyta blight pressure was extreme in feed (seed) pea trials - every crop got infected – but three products clearly slowed the disease in the canopy.
- Most other products, including the industry standard, gave only minor or inconsistent control. No product protected pods.
- Process pea trial results were consistent with those observed in the feed pea trials; however, disease pressure was only moderate and therefore did not clearly differentiate product efficacy.
- The best products all work as protectants, not cures. This means that they need to be on the plant before infection and applied regularly to maintain coverage.
- 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 and its impacts on process pea and pea seed production

In process pea and pea seed production, Ascochyta blight (Figure 1) presents both agronomic and seed quality challenges. 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.

Figure 1. Ascochyta blight on pea pods in a feed pea crop in South Canterbury in the 2025-26 season.

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, 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.

Methods

Four trials to evaluate soft chemistry and biological fungicides for Ascochyta control in peas were conducted in Canterbury 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 an initial screen to identify unregistered products with promise for disease control (not yield).

Information on the on-farm feed pea trials

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, recognising that products that are preventative require use patterns that may be different to those used for curative synthetic fungicides (Figure 2). AMISTAR (250 g/L Azoxystrobin, Group 11) was used as the industry standard for comparative purposes alongside an untreated control treatment.

APP.	TIMING	TREATMENTS											
A	21 Days after emergence									ALTPVNZ1-9	ALTPVNZ1-10	ALTPVNZ1-11	
B	14 DAA	ALTPVNZ1-1	ALTPVNZ1-2	ALTPVNZ1-3	ALTPVNZ1-4	ALTPVNZ1-5	ALTPVNZ1-6	ALTPVNZ1-7	ALTPVNZ1-8	ALTPVNZ1-9	ALTPVNZ1-10	ALTPVNZ1-11	
C	14 DAB	ALTPVNZ1-1	ALTPVNZ1-2	ALTPVNZ1-3	ALTPVNZ1-4	ALTPVNZ1-5	ALTPVNZ1-6	ALTPVNZ1-7	ALTPVNZ1-8	ALTPVNZ1-9	ALTPVNZ1-10	ALTPVNZ1-11	IS
D	7 DAC	ALTPVNZ1-1	ALTPVNZ1-2	ALTPVNZ1-3	ALTPVNZ1-4	ALTPVNZ1-5	ALTPVNZ1-6	ALTPVNZ1-7	ALTPVNZ1-8				
E	10 DAD	ALTPVNZ1-1	ALTPVNZ1-2	ALTPVNZ1-3	ALTPVNZ1-4	ALTPVNZ1-5	ALTPVNZ1-6	ALTPVNZ1-7	ALTPVNZ1-8	ALTPVNZ1-9	ALTPVNZ1-10	ALTPVNZ1-11	IS
F	10-14 DAE	ALTFAR1-1	ALTFAR1-2	ALTFAR1-3	ALTFAR1-4	ALTFAR1-5	ALTFAR1-6	ALTFAR1-7	ALTFAR1-8				
G	10-14 DAF	ALTFAR1-1	ALTFAR1-2	ALTFAR1-3	ALTFAR1-4	ALTFAR1-5	ALTFAR1-6	ALTFAR1-7	ALTFAR1-8				

Figure 2. Application timings for soft-chemistry and biological fungicides evaluated for efficacy against Ascochyta blight in feed pea crops in South Canterbury in the 2025-26 season.

Disease assessments covered incidence (how often) and severity (how much) across lower, mid, and upper canopy layers, as well as pod infection. Only assessment timings and metrics which showed statistically significant differences between treatments are used in this report (Table 1).

Table 1. Assessment timings and disease metrics used for comparative evaluation of product performance in this report.

Trial	Assessment Timing/Date	Metrics Used in Analysis
ALT2572a	**20/01/2026**	Plant incidence, plant severity
	5/02/2026	Mid-leaf severity, upper-leaf severity, pod incidence, pod severity
	(Final) 18/02/2026	Plant incidence, mid-leaf severity, upper-leaf severity, pod incidence, pod severity
ALT2572b	**5/02/2026**	Lower-leaf severity, mid-leaf severity, upper-leaf severity, pod incidence, pod severity
	(Final) 18/02/2026	Plant incidence, mid-leaf severity, upper-leaf severity, pod incidence, pod severity

Unused assessment dates/metrics are the ones where data were collected but not used in the statistical analysis because they did not show treatment differences, or they were early-stage incidence-only assessments that provided no discrimination.

Results

Overall disease pressure

Both feed pea trials recorded 100% incidence of Ascochyta blight symptoms on plants and pods across all treatments. This was indicative of extremely high infection pressure and meant disease incidence could not distinguish between treatments. Meaningful differences were observed in severity measurements.

Consistent findings across both trials

No product prevented infection of the crop. Pod infection and pod severity were not reduced by any treatment in either trial. However, disease severity in the canopy was a key differentiator, with both trials showing statistically significant differences in Mid-leaf severity and Upper-leaf severity. In Trial 2, lower-leaf severity was also significant (Trial 1: Mid-leaf severity ($P = 0.0065$), Upper-leaf severity ($P = 0.0069$); Trial 2: Lower-leaf ($P = 0.0004$), mid-leaf ($P = 0.0001$), and upper-leaf ($P = 0.0137$)). These canopy layers are where products can slow disease development and protect photosynthetic area.

Performance of products

Across both trials, the same three products repeatedly showed strong, repeatable performance (Table 2). Product ALTFAR1-9 (Tri Base Blue) was best or equal-best in lower, mid, and upper canopy severity in Trial 2 and among the top three in mid and upper canopy severity in Trial 1. This product produced consistent statistical separation from untreated crops in both trials.

Crops treated with Product ALTFAR1-10 (YUKON) had consistently among the lowest canopy disease severity values in both trials, often statistically grouped with ALTFAR1-9 (TRI BASE BLUE). In particular, it performed strongly in reducing disease severity in the mid- and upper-leaf canopy in Trial 1 and in the lower, mid, and upper canopy in Trial 2.

Product ALTFAR1-11 (POTUM) performed strongly in Trial 1 (the top performer in mid- and upper-leaf severity) and moderately in Trial 2 (not as dominant as the two other top performing products, but still consistently better than untreated). It was never among the worst treatments and often statistically grouped with ALTFAR1-9 (TRI BASE BLUE).

Other products, including AMISTAR (IS), the industry standard, were moderate or inconsistent in reduction of disease severity, clustering in the middle of the severity range in both trials and rarely achieving statistical separation from the untreated crops, suggesting they may offer minor suppression but lack the more reliable performance of the top performing products ion the trials.

The untreated crop was consistently among the worst for disease severity in both trials. Only one product consistently produced poor canopy protection and was statistically grouped with untreated in most metrics.

Common features of the most promising products.

The three most promising products in these trials ((ALTFAR1-9 (TriBase Blue), ALTFAR1-10 (YUKON), and ALTFAR1-11 (POTUM)) are all:

1. 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.

Conclusions

The combined feed pea trials showed:

- Similarly, high levels of disease incidence (≈100%), meaning infection pressure was extremely high.
- Reduction in canopy disease severity—not incidence—was the meaningful indicator of product performance under these conditions.
- Three products had repeatable performance, consistently protecting the canopy.
- Pod infection remained uncontrolled by all soft-chemistry and biological treatments tested.
- Their consistency across two independent trials strengthens confidence in the top performers.

What this means for future work:

- Several products warrant further testing (i.e. Rate optimisation, timing optimisation, integration with conventional chemistry; multi-site validation).
- Products in the moderate group may still have value in IPM programmes, but require more evidence.

Acknowledgements

Kraft Heinz, PGGW Seeds, Field Tek, Hamish Dunbar (trial host)

Table 2. Ascochyta blight severity for soft chemistry and biological fungicides evaluated for efficacy in two trials in feed pea crops (cv.) in South Canterbury in the 2025-26 season. Treatments are categorised in Rank Groups based on significantly different canopy scores.

Rank Group	Coded Treatments	Treatments	Trial 1 Disease Severity Range	Trial 2 Disease Severity Range	Interpretation
			Mid leaf, Upper-leaf (% area)	***Lower leaf, Mid leaf, Upper leaf (% area)***	
Top Performers	ALTFAR1-9 ALTFAR1-10 ALTFAR1-11	TRI BASE BLUE YUKON POTUM	Mid leaf: 17.5–19.1 Upper leaf: 57.5–61.9	Lower leaf: 3.5–13.8 Mid leaf: 1.0–1.38 Upper leaf: 37.5–50.0	Strong, repeatable canopy suppression across both trials; ALTFAR1-9 and ALTFAR1-10 consistently lowest; ALTFAR1-11 slightly more variable but still clearly superior to untreated.
Moderate Performers	ALTFAR1-1 ALTFAR1-2 ALTFAR1-3 ALTFAR1-5 ALTFAR1-6 ALTFAR1-7 ALTFAR1-8 IS	ESTEEM SERGOMIL ACTINOVATE TRIPLE X BOTRY ZEN SENTINEL SERENADE PRIME AMISTAR	Mid leaf: 20.0–26.6 Upper leaf: 59.4–71.6	Lower leaf: 7.5–12.5 Mid leaf: 1.0–2.0 Upper leaf: 45.6–56.3	- Mid range values with overlap into both top and weak groups; inconsistent statistical separation; moderate suppression but not reliable.
Weak Performers	ALTFAR1-4 UN	BAS 974 71 F UNTREATED	Mid leaf: 23.1–25.9 Upper leaf: 68.1–69.4	Lower leaf: 12.5–13.4 Mid leaf: 1.5–1.75 Upper leaf: 58.1–60.6	Consistently highest severity values; ALTFAR1-4 performs similarly to untreated; defines the disease pressure baseline.

Note: Treatments will need to be removed for publication as confidential

Grass weed management in cereals

Matilda Gunnarsson and Charles Merfield (FAR, *now Merfield Agronomy Ltd)*

Ministry for Primary Industries
Manatū Ahu Matua

SIRC
SEED INDUSTRY RESEARCH CENTRE

Vegetable RESEARCH+ INNOVATION

Key points

- Ryegrass with resistance to Group 2 herbicides is the most common on arable farms.
- Pre-emerge herbicides in wheat work well to control ryegrass, however overuse risks developing resistance.
- Wheat cultivars in New Zealand differ significantly in their ability to suppress weeds.
- Early canopy closure reduces light to weeds and limits their growth.
- Any tool we rely on too heavily, chemical or otherwise, will eventually come under pressure.

Around a decade ago, the first signs of herbicide resistance in grass weeds were starting to appear across New Zealand arable farms. Group 2 herbicide resistance, already widespread overseas, was becoming increasingly common here as well. It was through a coordinated five-year (2018-2023) national weed survey supported by MBIE carried out by FAR and AgResearch that we realised the scale of the problem.

The survey results were a turning point. They highlighted the need for reliable alternatives to Group 2 chemistry, especially in cereal crops. Follow-up trials showed that grass weeds can be effectively controlled in wheat using pre-emerge options, reducing the reliance on Group 2 post-emerge herbicides.

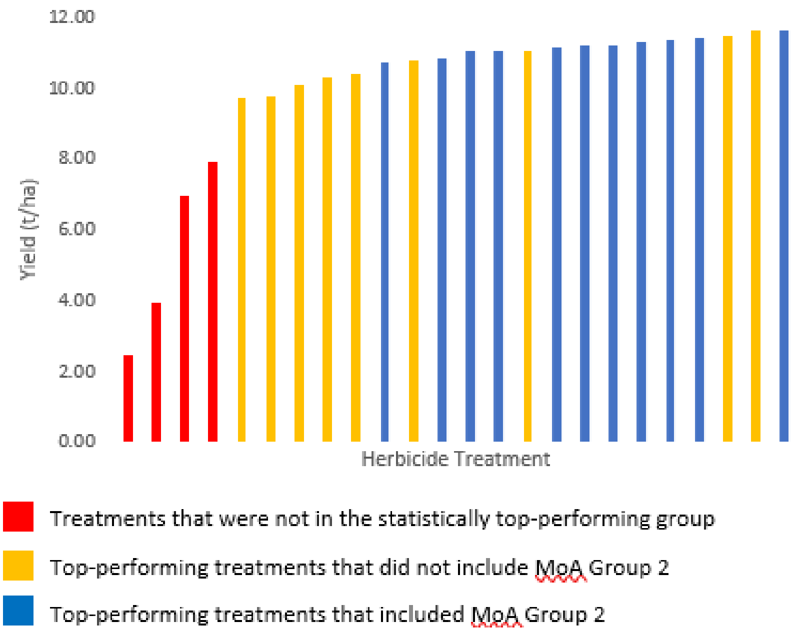


Figure 1. Results from the 2021-22 trial. Wheat (cv. Firelight) grain yield under different herbicide regimes designed to remove annual ryegrass weeds.

The most effective ryegrass weed control treatments in our 2021-22 trial were based on pre-emergence herbicides from MoA Group 15, such as Sakura® (850 g/kg pyroxasulfone) and Firebird® Group 12 (400 g/L flufenacet + 200 g/L diflufenican) (Figure 1).

However, shifting pressure onto pre-emerge tools introduces its own risks. Relying heavily on Group 15 herbicides increases the chance of resistance developing there too. While Group 15 resistance is currently far less common than Group 2, Australia is already detecting it in both random surveys and grower-submitted samples; an early signal of what could happen here if we're not careful.

To remain one step ahead, we are now moving into a new phase of weed-resistance testing, supported by the Primary Sector Growth Fund (PSGF). This time, pre-emerge herbicides have been added to the screening programme, giving us a fuller picture of resistance risks and helping guide future management strategies. The weed collection for the 2026 harvest has been completed in the Northern South Island (NSI) region.

Shifting toward integrated weed management
As always, the message remains the same: any tool we rely on too heavily, chemical or otherwise, will eventually come under pressure. Because of this, FAR's weed research has shifted into a wider integrated weed management (IWM) programme, part of the four-year PSGF MPI-funded project designed to help arable growers stay ahead of resistance and manage weeds long-term.

IWM is about combining multiple tactics so no single tool carries all the load. It doesn't need to be adopted all at once, start small. Try adjusting sowing dates, or bring in a new crop that disrupts weed lifecycles. Over time, these practices layer together: crop competition, herbicides, cultivation, and timing all reinforcing each other.

Mechanical weed control – tine weeding
A trial at Kowhai research farm showed tine weeding compared to no tine weeding significantly reduced weed biomass and slightly increased barley yield (Table 1). The weed biomass reduction was statistically significant and showed that tine weeding can achieve good levels of weed control. The increase in yield, while statistically not significant, was just over half a tonne a hectare. This shows barley has the capacity to tolerate competition and maintain yield.

Table 1. Spring barley, cv. Silhouette, biomass (dry weight) head count and yield, and weed biomass (dry weight) with or without tine weeding, grown under irrigation at Kowhai farm planted 1 September 2023 the barley autumn and spring weed control trial at Kowhai, Lincoln in 2023-24.

Treatment	Barley dry weight grams	Barley head count	Weed dry weight grams	Barley yield t/ha
No tine weeding	200 ns	155 ns	38 a	10.34 a
Tine weeded	186 ns	149 ns	7 b	10.92 b
Mean	193	152	22	10.63
P value	0.247	0.529	<.001	0.005
$LSD_{0.05}$	24.1	20.1	7.0	0.406
CV%	26%	26%	118%	10%

Crop and weed competition
Competition between crops and weeds can be viewed in two different ways: the ability to tolerate competition (i.e. maintain yield in the presence of weeds) (Figure 2) and the ability to suppress weeds. A crop's competitive ability is influenced by things like rapid germination, early emergence, seedling vigour, rapid leaf expansion, rapid canopy development, plant height, early root growth, and extensive root systems.

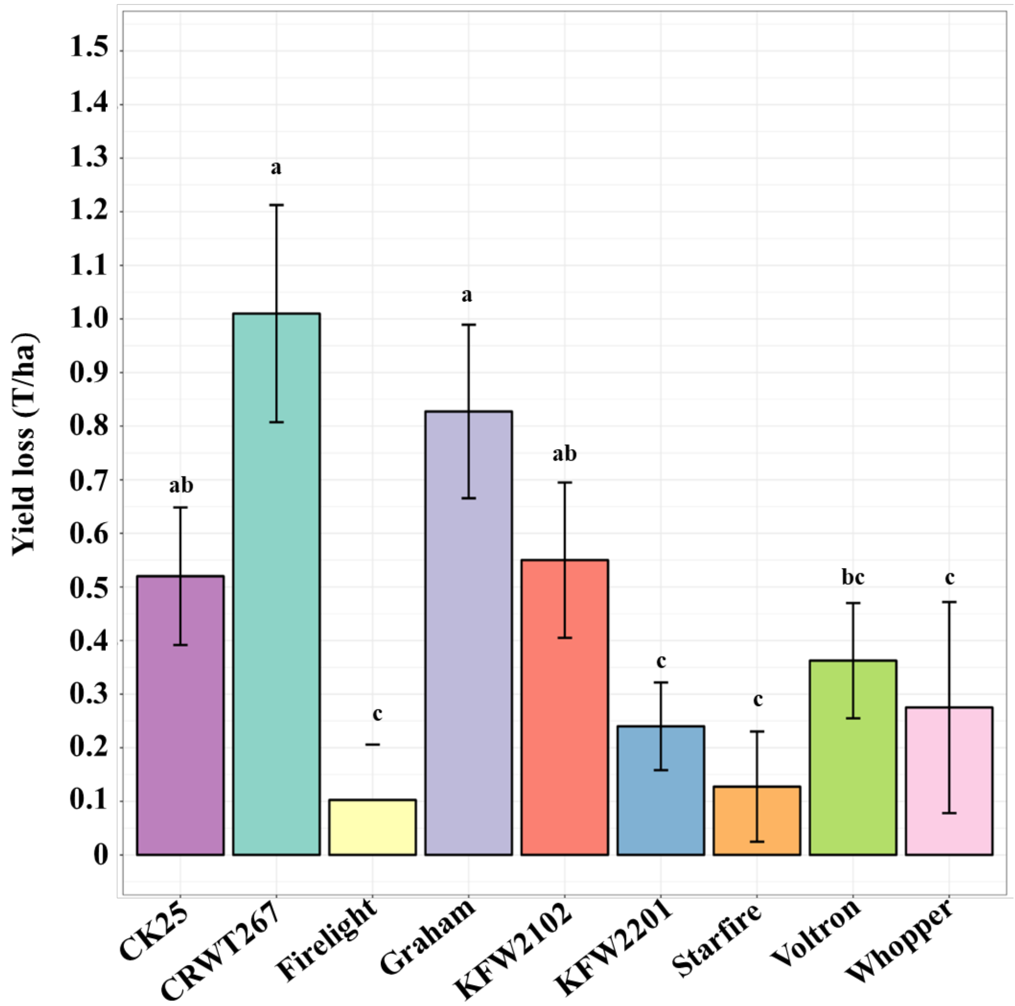


Figure 2. In results from a Wheat cultivar competition trial at Kowhai in 2024 cultivars Firelight, Starfire, Whopper and KFW2201 lost the least yield under the full pressure of weeds.

Findings from a cultivar-comparison trial carried out in the 2023-2024 season revealed that New Zealand wheat cultivars vary in how effectively they compete with weeds. Above ground competition is a key component of early crop canopy closure as it reduces the amount of light available to weeds, and thus limits their growth (Figure 2). This is because the percentage of photosynthetically active radiation (sunlight) available under the crop canopy is generally positively correlated with weed growth and seed set. These results show that these wheat cultivars display significantly different levels of light interception from early tillering onwards.

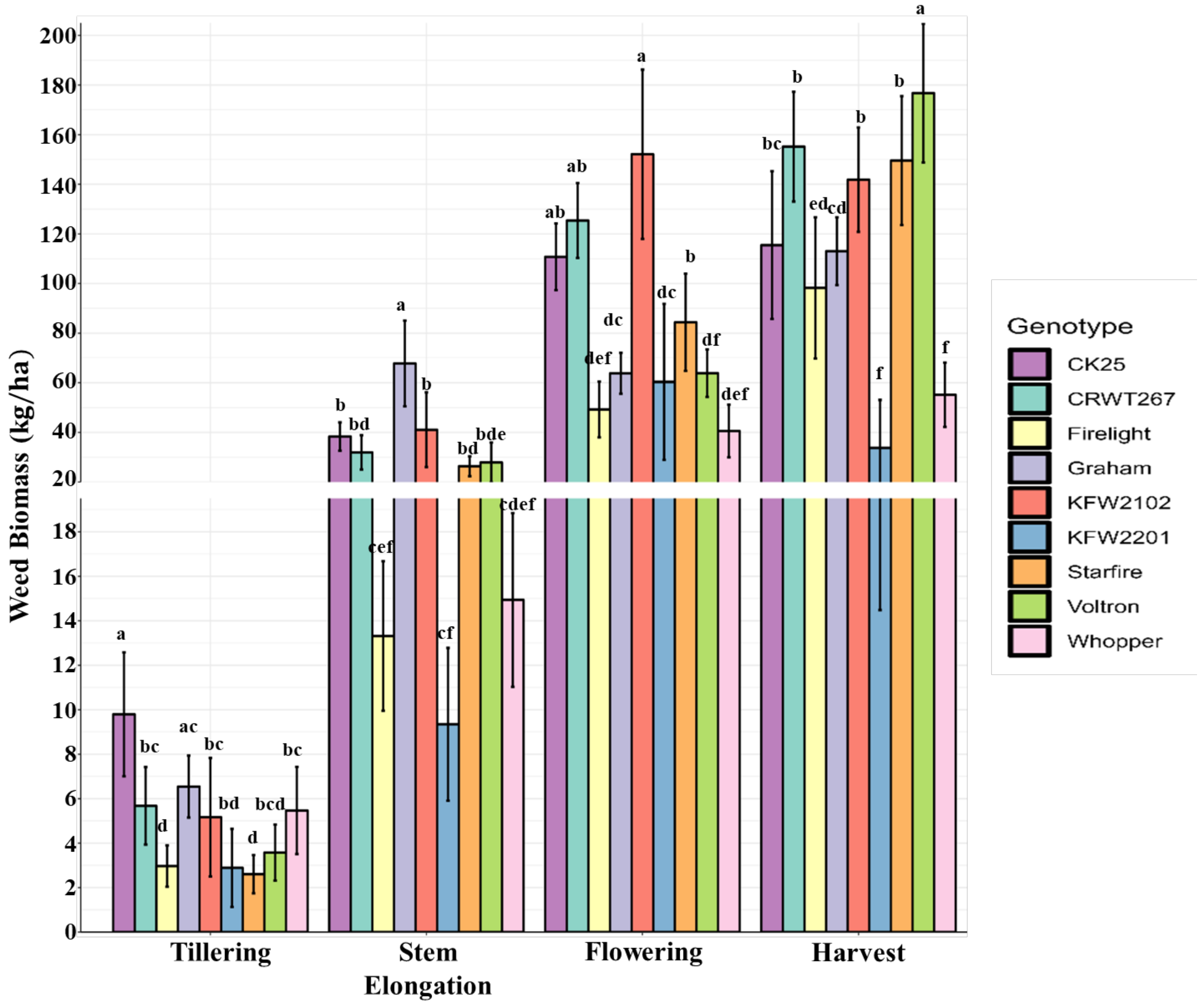


Figure 3. In Wheat cultivar competition trial results from Kowhai in 2024, Whopper and KFW2201 were the most suppressive over the growing season.

Acknowledgements

Weed management trials were funded by FAR.

Integration of these approaches into IWM was funded by MPI Primary Sector Growth Fund contract PSGF-24091 (Integrated weed management in a world of herbicide resistance), co-funded by FAR, the Seed Industry Research Centre (SIRC) and the Vegetable Research & Innovation Board (VR&I).

Crop competition research was completed by Pieter-Willem Hendriks and Cameron Holmes (Lincoln University).

Managing Vulpia hairgrass in ryegrass seed crops (2025-26)

Ben Harvey, Sean Weith and Richard Chynoweth (FAR, *now Macfarlane Rural Business)*

Key points

- Vulpia hairgrass is a common and problematic grass weed in ryegrass seed crops.
- This trial followed on from work carried out at Kowhai during the 2024–25 season and aimed to demonstrate the importance of using sequences of different herbicides, applied at several strategic timings, to effectively manage Vulpia hairgrass infestations.
- Treatments containing Nortron® at 4 L/ha, along with either a pre-emergence mixing partner, or a sequence including post-emergence herbicides, were most effective at reducing Vulpia hairgrass plant numbers.
- Final yield and margin-over-cost data are still needed to fully evaluate the efficacy and economic viability of the treatments included in this trial.

Background

Vulpia hairgrass (*Vulpia* spp.) poses a significant challenge in perennial ryegrass (*Lolium perenne* L.) seed production due to its impact on both seed yield and quality. Effective Vulpia hairgrass management in perennial ryegrass seed crops requires early intervention and the use of diverse herbicide modes of action.

The main product currently used for the control of Vulpia hairgrass is Nortron® (500 g/L ethofumesate, Group 15). FAR has run herbicide trials on Vulpia control in ryegrass seed crops across several seasons. This study builds on work conducted during the 2023–24 and 2024–25 seasons at FAR's Chertsey and Kowhai research sites, respectively.

This presentation reports on the results from a trial that was conducted at FAR's Chertsey research site during the 2025-26 growing season. The main objectives of this trial were to:

- Investigate how sequences of different herbicides can be applied strategically across key ryegrass growth stages to improve efficacy on Vulpia hairgrass.
- Investigate the viability and efficacy of late post emergence applications of herbicides for managing Vulpia hairgrass that escape the initial pre-emergence herbicide applications.

Methods

- A small plot trial was established at FAR's Chertsey research site near Chertsey (-43.791278, 171.959833) in an irrigated block of perennial ryegrass (cv. Three^{60}) that was drilled at a rate of 8 kg/ha on 16 April 2024.
- Within the trial site, Vulpia hairgrass seed was hand spread at a rate of 5 kg/ha before the sowing of the perennial ryegrass and incorporated using a Cambridge roller.
- The trial had 15 treatments (Table 1) arranged in a doubly resolvable row-column experimental design with four replicates. The individual plot size was 1.65 m wide and 10 m long (plot area = 16.5 m^2).
- Treatments were applied at five different timings, either at pre-emergence of the perennial ryegrass (GS 00- 07) on the 11 April 2025, when 50% of perennial ryegrass plants were at beginning of tillering (GS 21) on the 23 May 2025, when 50% of perennial ryegrass plants had two detectable tillers (GS 22) on the 17 June 2025 or when 50% of Vulpia hairgrass

plants had either four (GS 24) or six (GS 26) tillers detectable on the 17 July and 25 August 2025, respectively.

- The number of emerged Vulpia hairgrass plants per plot was determined by counting all plants present within two in-between row spacings by 0.5 m length (0.150 m^2) (24 September 2025).
- Total weed and crop biomass were determined for each treatment plot by cutting a quadrat from three drill rows by 0.5 m in length on the 18^{th} December 2025. The number of perennial ryegrass and Vulpia hairgrass seed heads per m^2 was determined by separating and counting all ryegrass and Vulpia hairgrass seed heads present within biomass samples.
- The level of Vulpia hairgrass control was recorded on a plot basis relative to the untreated control using a scale of 0% to 100%, where 0% = no control and 100% = full control.
- Data were analysed using a either a one-way or multi-way linear mixed model analysis of variance (ANOVA). The percentage of control relative to untreated control was calculated using the number of Vulpia hairgrass plants per m^2 for all treatments using Abbott's formula for corrected efficacy.

Results and discussion

- The use of Nortron® pre-emergence at 4 L/ha was more effective than at 2 L/ha. This was consistent with the 2024-25 trial at Kowhai.
- Based on visual estimates of weed biomass reduction and calculated (Abbott) control (Table 1) of Vulpia hairgrass, applying 4 L/ha Nortron® pre-emergence as the sole herbicide was not as effective as including a pre-emergence partner or post-emergence options.
- There are a number of viable options for follow-up post-emergence control of Vulpia hairgrass in ryegrass seed crops. Pre-emergence hairgrass control is never 100%, and escapes will need to be managed. A notable result was Treatment 12, which showed zero Vulpia heads present at 18 September. However, a number of other treatments were within the same LSD (5%) group of Treatment 12.
- As observed in the 2024–25 Kowhai trial, ryegrass seed head numbers were strongly negatively correlated with Vulpia hairgrass seed head numbers (R^2 = 0.87) (Figure 1), indicating that increasing Vulpia hairgrass pressure reduces ryegrass seed head production.
- Some phytotoxicity and reductions in ryegrass biomass were observed in plots treated with Treatments 9 and 10 on 14 August (data not shown), following applications at ryegrass growth stages GS 22 and GS 23 (Figure 2). Phytotoxicity in these treatments was higher than in the previous season's trial. Although ryegrass seed head numbers had recovered by December 2025, particularly in Treatment 10, the biomass loss could still impact grazing management.
- Prominent® continues to show potential for Vulpia management; further work is likely needed to identify key rates and timings and factors that influence crop safety. All the treatments that contained Nortron® at 4 L/ha and post-emergence Prominent® showed high levels of Vulpia hairgrass control.
- Final yield and margin-over-cost data are still needed to fully evaluate the efficacy and economic viability of the treatments included in this trial.

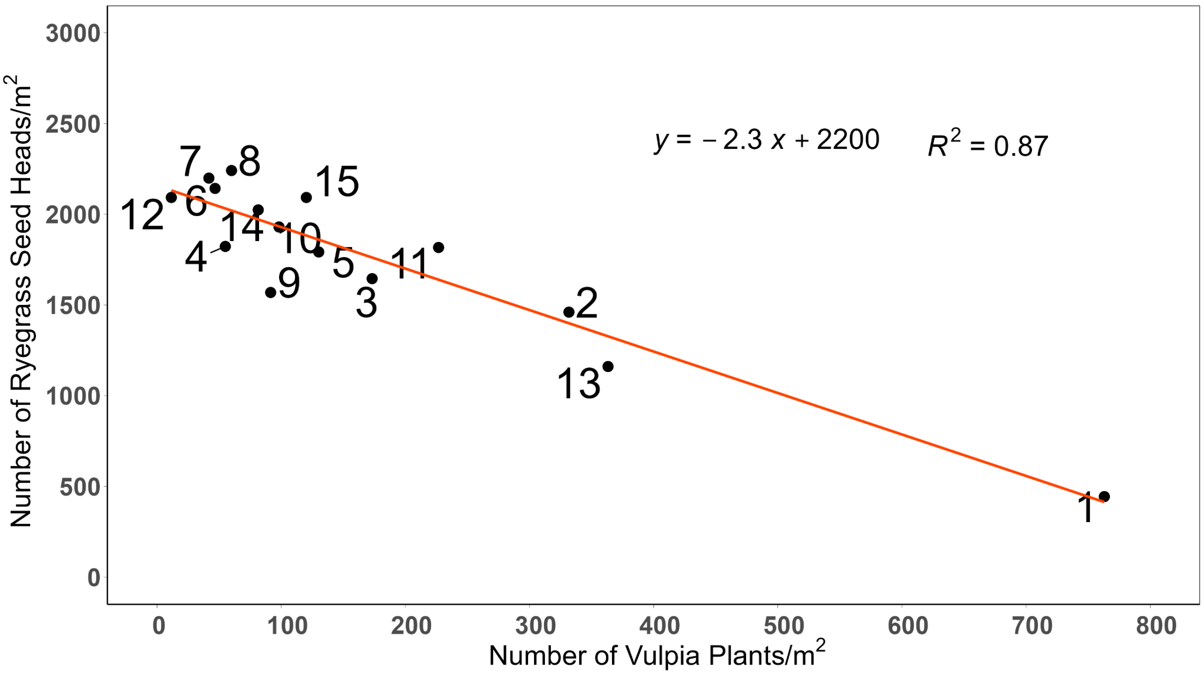


Figure 1. Relationship between perennial ryegrass (*Lolium perenne* L.) cv. Three[60] seed head density and Vulpia hairgrass (*Vulpia* spp.) plant density following treatment with 14 different herbicide programmes in an irrigated trial that was drilled on 16 April 2024.

Figure 2. Examples of damage to perennial ryegrass and Vulpia hairgrass plants on the 14 August 2025 for treatments 9 (a) and 10 (b) (Refer to treatment tables for products in treatments).

Table 1. Number of perennial ryegrass (*Lolium perenne*) and Vulpia hairgrass (*Vulpia* spp.) seed heads per square metre on 18 December 2025 and estimated level of control of Vulpia hairgrass and calculated Abbott control scores recorded on 18 September and 24 September 2025 respectively in a perennial ryegrass (*Lolium perenne*) (cv. Three[60]) crop treated with 14 different herbicide treatments conducted at FAR's Chertsey research site.

Treatment No.	Product [1], Application Rate and Timing (Zadoks *et al.*, 1974)					Ryegrass Seed Heads per m^2	Vulpia hairgrass seed heads/m^2	Estimated Vulpia Control Score (0-100%) (plot basis)	Vulpia hairgrass Control (%) (Abbott) (Plant Count)
	Ryegrass - Pre-emergence (GS 00-07) (11th April 2025)	Ryegrass - Beginning of tillering (GS 21) (23rd May 2025)	Ryegrass - 2 tillers detectable (GS22) (17th June 2025)	Vulpia - Four tillers detectable (GS24) (17th July 2025)	Vulpia - Six tillers detectable (GS24) (25th August 2025)				
1	Negative Control					444	2298	0	0
2	Nortron® (2 L/ha)					1460	1450	59	57
3	Nortron® (4 L/ha)					1645	876	69	77
4	Nortron® (4 L/ha) Quantum® (100 mL/ha)					1822	196	98	93
5*	Nortron® (4 L/ha) FAR_H2501					1792	834	88	83
6	Nortron® (4 L/ha)				Prominent® (2 L/ha)	2142	208	97	94
7	Nortron® (4 L/ha)	Protugan® (0.75 L/ha)				2199	159	93	95
8	Nortron® (4 L/ha)	Atrazine 500 (500 mL/ha)				2241	387	93	92
9			Atrazine 500 (500 mL/ha) Quantum® (100 mL/ha) Protugan® (0.75 L/ha)	Prominent® (2 L/ha)		1569	759	88	88
10			Nortron® (4 L/ha) Quantum® (100 mL/ha)	Prominent® (2 L/ha)		1930	269	92	87
11	Nortron® (2 L/ha)				Atrazine 500 (500 mL/ha) Quantum® (100 mL/ha) Protugan® (0.75 L/ha)	1817	789	69	70
12	Nortron® (4 L/ha)		Protugan® (0.75 L/ha) Asulox® (4 L/ha)	Prominent® (2 L/ha)		2092	0	99	98
13*		Tine Weeding			Nortron® (2 L/ha) Prominent® (2 L/ha)	1161	1322	73	52
14*	Nortron® (4 L/ha)	Tine Weeding			Nortron® (2 L/ha)	2024	354	95	89
15*	Nortron® (4 L/ha)				Sencor® 480SC (0.55 L/ha)	2092	518	92	84
					LSD ($P≤0.05$)	**606**	**893**	**17**	**18**
					***P* value**	**<0.001**	**<0.001**	**<0.001**	**<0.001**

*** Experimental Treatment**

[1] Asulox® (a.i. 400 g/L asulam, Group 18 Herbicide); Atrazine 500 (500 g/L atrazine, Group 5 Herbicide); Nortron® (a.i. 500 g/L ethofumesate, Group 15 Herbicide); Protugan® (500 g/L isoproturon, Group 5 Herbicide); Prominent® (500 g/L prometryn, Group 5 Herbicide); Quantum® (a.i. 500 g/L diflufenican, Group 12 Herbicide); Sencor® 480SC (480 g/L metribuzin, Group 5 Herbicide);

Note: Cells highlighted yellow show the top statistical group (best treatments) based on least significant difference (LSD) for each presented variable.

Summary

- A number of herbicide treatments were shown to reduce Vulpia hairgrass plant numbers in a perennial ryegrass seed crop.
- Many of the treatments that provided the highest levels of Vulpia control included pre-emergence applications of Nortron® (at 4 L/ha). Vulpia control was improved by either adding a pre-emergence partner herbicide or employing a sequence of post-emergence herbicides.
- Treatments 9 and 10 caused higher phytotoxicity and biomass reductions than the previous season, although ryegrass seed head numbers in Treatment 10 recovered by December 2025.
- Final yield and margin-over-cost data are still needed to fully evaluate the efficacy and economic viability of the treatments included in this trial.

Acknowledgements

- This work was funded by MPI Primary Sector Growth Fund contract PSGF-24091 (Integrated weed management in a world of herbicide resistance), co-funded by FAR, the Seed Industry Research Centre (SIRC) and the Vegetable Research & Innovation Board (VR&I).

Perennial ryegrass harvest timing – maximising yield and minimising losses

Owen Gibson & Richard Chynoweth FAR, *now Macfarlane Rural Business*

Key points

- Greatest seed yield was obtained when crops were cut at seed moisture contents (SMC) between 55% and 41%.
- When SMC fell below 41%, seed yield decreased by 25.2 kg/ha for every 1% drop in SMC.
- Reductions in seed yield were largely driven by harvest losses, which increased as SMC decreased.
- Harvest losses increased from 400 kg/ha at SMC levels above 50% to more than 1100 kg/ha at 29% SMC - equivalent to yield losses of up to 40%.
- Thousand seed weight increased as SMC decreased, reaching a plateau at approximately 33% SMC.
- Pre-cut irrigation did not significantly influence seed yield or harvest losses.

A long and uneven flowering period makes harvest timing particularly difficult in perennial ryegrass. Cutting too early, when seed moisture is high, shortens the seed-filling period and produces smaller, lighter seed. Cutting too late, when seed moisture drops below 40%, risks heavy losses through seed shattering. Previous studies have identified cutting between 35% and 45% seed moisture content (SMC) as optimal.

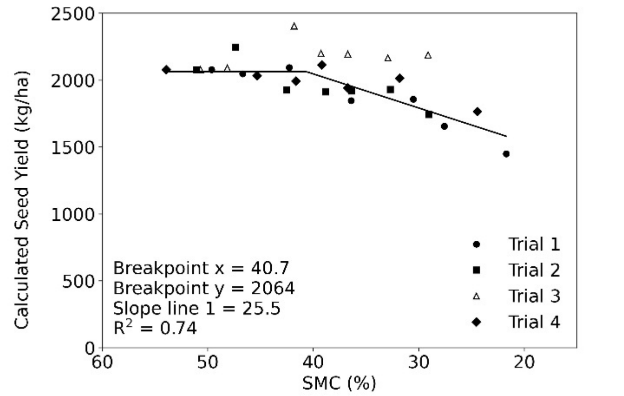


Figure 1. Calculated seed yield from four trials when cutting occurred at multiple levels of seed moisture content (SMC) grown during the 2022-25 seasons. Trial 3 (open triangles) has been omitted from the regression analysis.

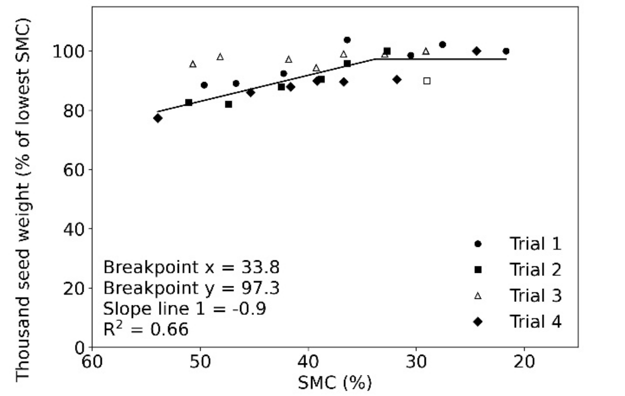


Figure 2. Calculated TSW from four trials when cutting occurred at multiple levels of seed moisture content (SMC) grown during the 2022-25 seasons. Trial 3 (open triangles) has been omitted from the regression analysis.

Harvest losses were strongly linked to SMC. When crops were cut above 50% SMC, losses were generally under 400 kg/ha. By contrast, cutting at 29% SMC resulted in losses of more than 1100 kg/ha, equivalent to 40% of total yield. At a seed price of $3 kg, this represents a lost income of $3300/ha. These losses occurred both before and during harvest, as mature seed shattered from early-formed tillers.

Applying 6 mm irrigation before cutting had no impact on seed yield, harvest losses or germination. A slight reduction in TSW was observed, but this was not considered agronomically significant. These results suggest that irrigation does not mimic the protective effect of natural dew and does not reduce shattering losses.

Acknowledgements

This work was funded by the Seed Industry Research Centre (SIRC) and field work was managed by NZ Arable. Thanks also to PGG Wrightson Seeds Ltd and Graham Marshall for hosting trials.

Making the most of a challenging maize harvest

Chris Smith (FAR)

Key points

- The aim of harvest management is to get losses down and productivity up with regular measuring as you can't manage what you don't measure.
- Get the grain in the tank, not on the ground. Not only are the losses a real harvest cost, but there is also a potential risk and extra cost to manage (i.e. a green bridge).
- Increasing your current machine's capacity reduces the need to upgrade to a bigger machine, if that was the driving factor. It also allows you to make the most of windows of opportunity.
- By measuring, you know the financial cost of continuing, so you can make a quantifiable decision while harvesting in poor conditions. However, getting consistent readings is often challenging under such variable crop harvest conditions.

Maize harvest background work

You need to measure losses to manage productivity. It doesn't matter whether you use a commercial drop pan or a homemade one; what matters is that you measure. Assessing harvest losses gives growers both the insight and the confidence to make small, in-field adjustments to their harvester settings. Those small tweaks often increase ground speed or simply improve efficiency. From our work across the country in a range of crops, we've consistently seen that growers who measure their losses achieve, on average, over 50% lower losses than those who don't measure at all.

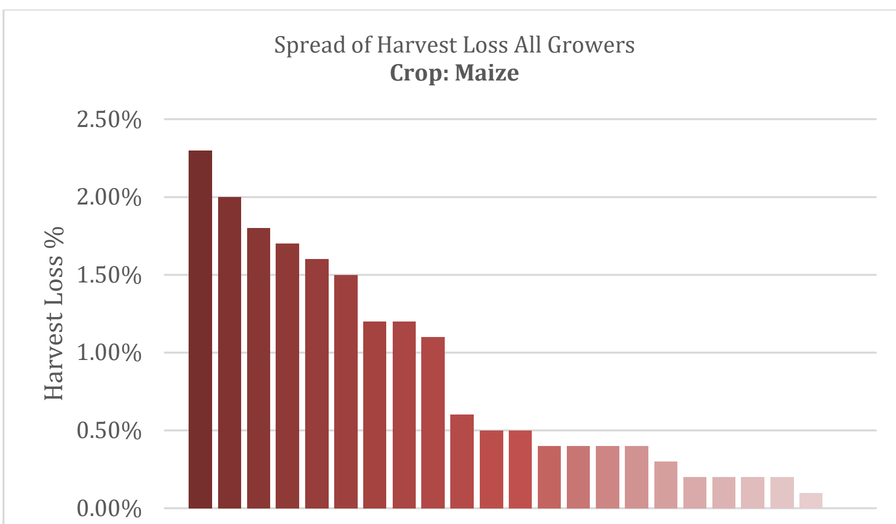


Figure 1. The range of harvest losses measured from harvesters in FAR field work in May 2025.

FAR's 2025 work found maize harvest losses ranged from 2.25% to 0.1% (mean 0.8%), equating to $180–$8/ha at an average yield just over 16 t/ha—reminding us that you don't know unless you measure.

You can measure losses by dropping pans in front of the machine so both the header and combine pass over them; this gives a total loss value. Then drop a pan just behind the machine to estimate combine-only losses (excluding the front). This second measure often tells you more about what you can fix; if most loss is from the front, there's usually less scope for improvement. Matching the planter row width to the combine front width can reduce potential issues. There may also be a trade-off between moisture content penalties at the drying plant (not for starch) and losses from front shatter, with penalty tiers above 20% MC; the ideal MC is around 22%.

When adjusting the machine, change one setting at a time so you can measure its impact on productivity and losses; make an extreme change first, then dial back, which can help you quickly see the direction of effect and find the sweet spot.

There is also a balance between productivity (cost per ha) and losses: sometimes increasing field speed (ha/hour) reduces losses, and even if it doesn't, the total cost per hectare may still be lower than going slower—but you need to measure and quantify this for your conditions.

Figure 2. The harvest cost components - machine operating costs & losses

Once acceptable loss rates and forward speed have been established, conduct brief spot checks throughout the day, particularly when temperature, humidity, crop moisture, or field conditions change, to confirm that all parameters remain within tolerance.

FAR has set up a Combine MAIZE grain WhatsApp group for growers to exchange knowledge and settings for different hybrids and conditions. In certain years, conditions are a big challenge.

Harvesting lodged maize

Use the manufacturer's recommendations as the baseline settings, then fine-tune to paddock conditions.

Grain harvest plan in a challenging year

- Prioritise risk blocks: Harvest lodged and disease-affected paddocks first. Consider an earlier harvest where ears are close to the soil to limit mould and quality loss.
- Height threshold: If cobs are ≥200 mm above ground, the likelihood of salvaging the crop improves.
- Work with conditions: When downed maize is at its worst (e.g., damp, cool periods), harvest standing areas; target problem areas in the heat of the day when stalks are drier.
- Direction of travel: Where stalks lean consistently one-way, practical experience suggests approaching from the base of the lodged crop, with stalks leaning slightly away from the header; approximately the 11 o'clock or 1 o'clock angle relative to travel.
- Forward speed: Expect to slow right down in severely lodged zones; around 3.2 km/h (2 mph). Slower speeds typically save more ears.
- Row tracking and visibility: If it is difficult to see rows and stay aligned, consider running the outside row unit over a previously harvested row (e.g., harvest five rows with a six-row header). Add coloured snout tips to improve visibility in the stalks.

Machine set-up

- Threshing system: Reduce rotor/drum speed and open the concave as required to protect kernels. Adjust in small increments once near sweet spot, recheck the sample, and measure losses. Opening concaves and slowing rotors can increase throughput by lowering engine load and fuel use.
- Cleaning system: With lighter, stop-go crop flow, back off the fan to avoid blowing kernels out of the shoe. Monitor sieve losses closely.

Expect variability: Highly variable crops make set-up more difficult, and achieving consistent loss results can be challenging; frequent checks are necessary.

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- FAR Measuring losses: https://www.far.org.nz/resources/measuring-losses-at-harvest
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Yellow Dwarf Virus: Take-aways from a challenging season

Jo Drummond, Ben Harvey, Abie Horrocks (FAR)

Key points

- The 2025-26 season has been challenging with many reports of increased YDV incidence and severity across cereal growing regions.
- Across the monitor paddock network, warm early-spring temperatures saw favourable conditions for aphid reproduction, especially in mid-September and early-October.
  - Cross checking historic data revealed the highest average degree weeks for these periods in 25 years at Lincoln, 17 years at Methven and Timaru and 39 years in Gore.
- While this coincided with growth stage (GS) 31 for many crops, winged aphid numbers remained low, and may not have been considered enough of a risk to prompt further in-crop monitoring.
- The actual risk was harder to gauge because wingless aphids, the main driver of secondary spread, are included in Aphid Chat commentary but not well represented in trapping data as their detection relies on direct searching.
- When aphid populations did increase, many crops were at or past GS 39, but it was noted that aphid populations increased earlier and more rapidly than the previous season.
- In Canterbury, aphid populations in late-October outstripped beneficial species, but in Clinton, aphid and beneficial species populations were similar until mid-December.
- Aphid Chat identified when warmer conditions were conducive to aphid reproduction and provided seasonal commentary but this may have been missed if users were only looking at winged aphid numbers, highlighting the importance of considering all the risk factors.
- FAR welcomes feedback on Aphid Chat.

Seasonal overview

The 2025-26 season started well but has finished with challenging harvest conditions and disappointed growers. For many mild, albeit windy conditions meant that management inputs during spring were largely applied at the right time and low disease pressure meant that in spite of the weather during harvest, some crops performed better than expected. FAR's own trials were a mixed bag. Highlights included trial yields of 13.7 t/ha in Methven and 10.5 t/ha in a second-year wheat at Hook. However, many trials didn't fare as well, with trials lost due to poor establishment (including waterlogging), ducks, take-all (in first year wheats), sharp-eye spot and hail. A consistent post-harvest theme has been the incidence and severity of YDV.

Yellow Dwarf Virus 101

Yellow dwarf virus (YDV) in cereals and grasses is caused by a virus infection. The virus is transmitted by aphids that fly into the crop (primary infection) and by their offspring within the crop (secondary infection). YDV can be problematic when autumn and winter temperatures are mild due to prolonged aphid survival and reproduction in crops (Figures 1 and 2). There is also a risk in spring as crops reach growth stage (GS) 31 (Figures 1 and 2).

As aphid populations naturally increase in late spring, there is sometimes concern about damage due aphids directly feeding on heads, particularly from the start of flowering until mid-grain fill. This damage is not associated with YDV. In places like the UK, very late insecticides are based on thresholds that are very rarely reached and are not considered standard practice.

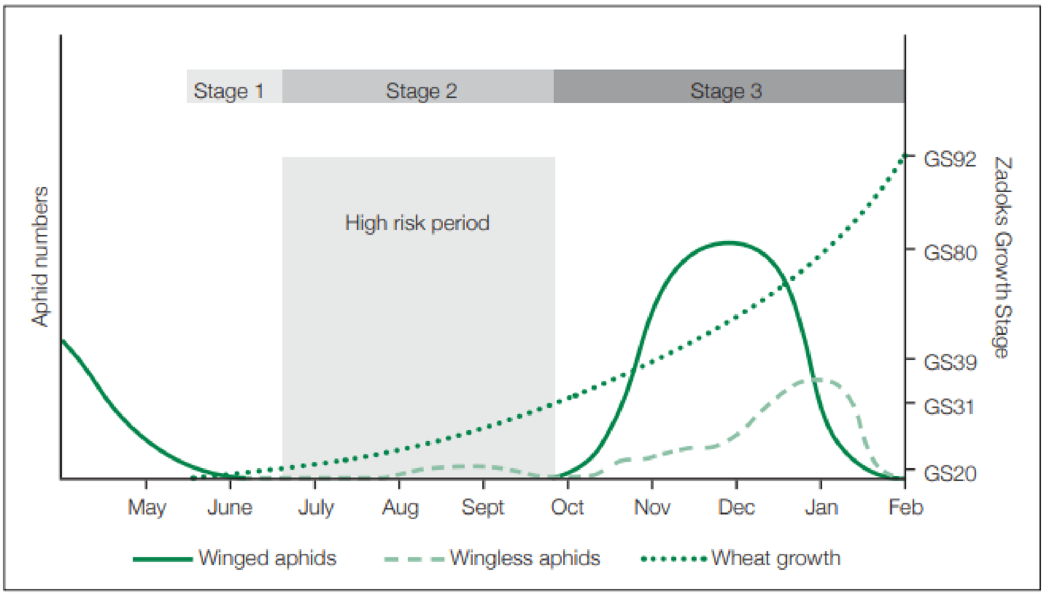

Figure 1. Example of low aphid pressure (winged and wingless) in autumn-sown wheat

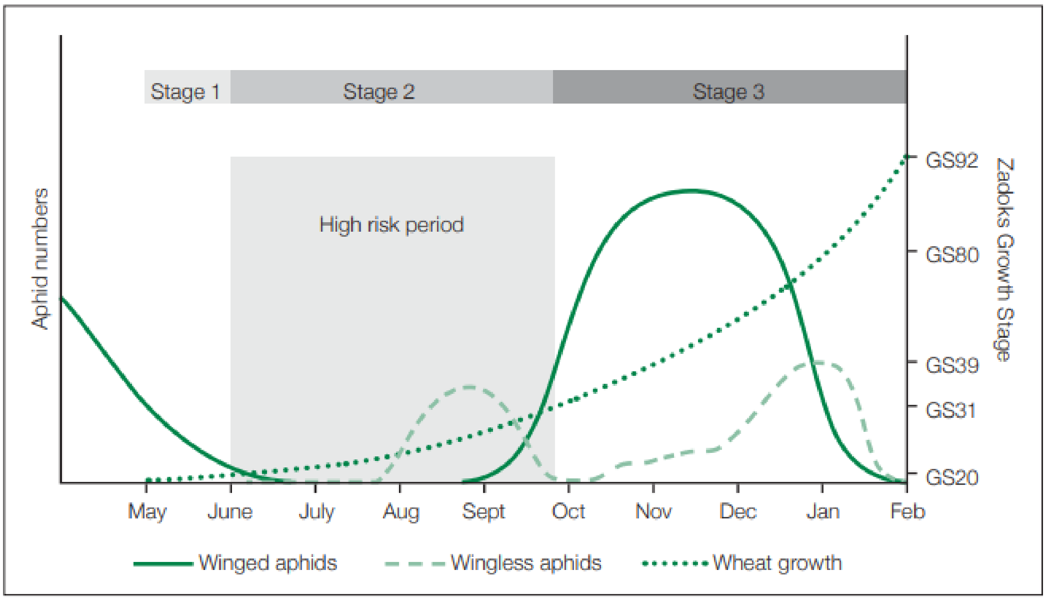

Figure 2. Example of high aphid pressure (winged and wingless) in autumn-sown wheat.

YDV damage does not appear until later in the season and is most serious in plants infected at early growth stages (Figure 3-5). FAR trials conducted between 2015-16 and 2017-18 confirmed the 'GS 31 rule of thumb' that beyond GS 31 plants are considered large enough that any virus-induced yield losses are minimal (Figures 3-5).

Autumn infections of YDV tend to show characteristic symptoms of yellowing and reddening of leaves and stunted growth. However, YDV symptoms can be confused with nutritional disorders (which is in fact how the virus affects the plant) or other diseases. It is also important to note that different cultivars will express YDV differently, so diagnostic testing is the only way to determine if YDV is present. Samples from the current monitor paddock network were collected in late 2025, and diagnostic testing using qPCR (quantitative polymerase chain reaction) is still in progress.

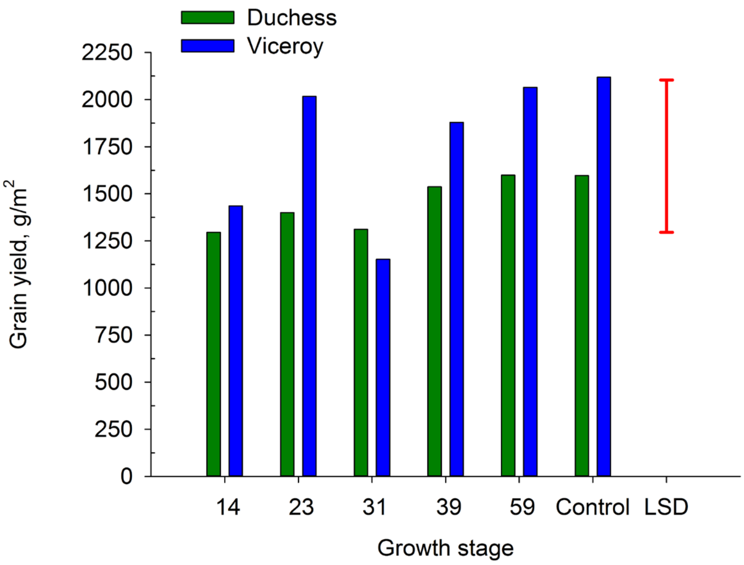

Figure 3. Mean grain yield (g/m^2) of wheat plants exposed to YDV-infected aphids in shade houses at different growth stages, or not exposed to any aphids (control), harvested at Lincoln in 2016. Bar = LSD (P<0.05). Yield was harvested from all plants within a replicate, including those that were not positive for YDV infection, based on ELISA samples.

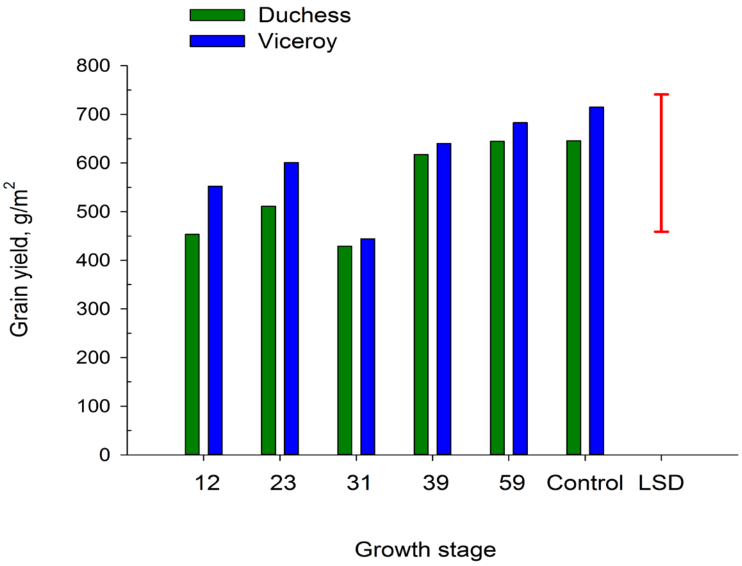

Figure 4. Mean grain yield (g/m^2) of wheat plants exposed to YDV-infected aphids in shade houses at different growth stages, or not exposed to any aphids (control), harvested at Lincoln in 2017. Bar = LSD (P<0.05). Yield was harvested from all plants within a replicate, including those that were not positive for YDV infection, based on ELISA samples.

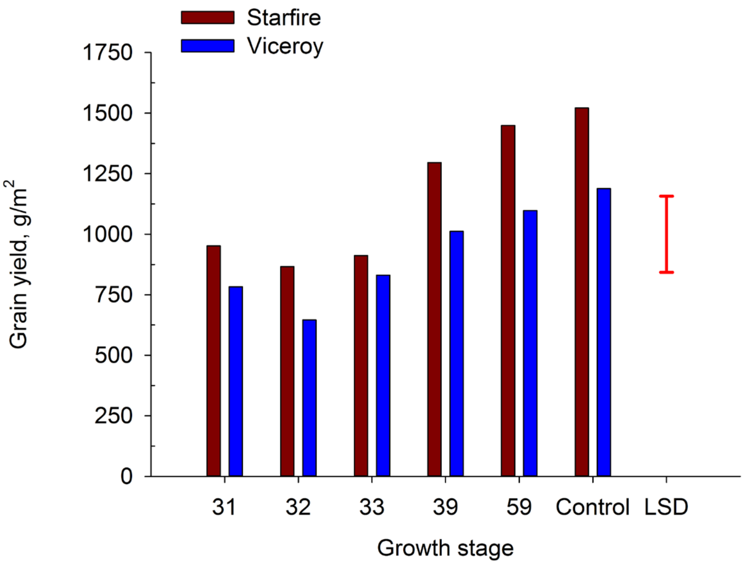

Figure 5. Mean grain yield (g/m^2) of wheat plants exposed to YDV-infected aphids in shade houses at different growth stages, or not exposed to any aphids (control), harvested at Lincoln in 2018. Bar = LSD (P<0.05). Yield was harvested from all plants within a replicate, including those that were not positive for YDV infection, based on ELISA samples.

Aphid Chat

Aphid Chat was developed to help growers understand the risks in their crops using data from through a network of regional monitor paddocks and a supporting development and reproduction model. Monitoring data on winged aphid and beneficial species, temperature and crop growth stages allows Aphid Chat to provide basic risk information and encourage growers and advisors to monitor their paddocks more closely. They can then decide whether to apply a foliar insecticide.

The question is...considering the many reports of crops affected by YDV in the 2025-26 season, did Aphid Chat sufficiently identify when these risk periods occurred, or do we need historical data to help build our risk profile?

Weather

When we talk about weather, we are often referring to periods of cold, wet and windy weather, which can suppress aphid activity, but weather is also important when considering how quickly aphid populations can develop and reproduce. As secondary infection is spread by the offspring of the aphids that fly into the crop, understanding when and how quickly they are likely reproduce can help build the risk profile. This is especially important in early spring as the crop is reaching GS 31.

The Aphid Chat reproduction model is based on 5.8°C, the base temperature for reproduction of the main virus vectoring species, the bird cherry oat aphid (*Rhopalosiphum padi*) and the rose grain aphid (*Metopoliphium dirhodum*). Generally, the warmer the temperature, the faster an aphid will develop into an adult. A weekly average temperature above the threshold for reproduction suggests temperatures were warm enough for aphid reproduction. A more detailed model is linked in FAR's weather platform (Figure 6).

Last season, the Aphid Chat model identified periods in mid-September and early-October, at Lincoln where the average weekly temperature above 5.8°C was higher than the previous season (Figure 6). These higher temperature periods were identified across all monitor paddock locations. This in isolation may not be enough to trigger concern, but checking historic data using the degree week model on which Aphid Chat was based, revealed the risk was greater than it appeared at face value.

The degree week model calculates the number of hours above 5.8°C for the week. The higher the degree week, the more favourable conditions are for aphid development. This model was developed following the high YDV season in 2005.

Historic data for Lincoln revealed that not only were degree weeks higher in mid-September and early-October than the previous season, the degree weeks for week 38 (last year between 14 – 18 September) and 41 (last year between 3 – 12 October) were the highest in 25 years (Figure 7). This period coincides with the crop reaching GS 31, the end of our high-risk period in spring. This is consistent across the monitor paddock sites.

Regional information can be found in Appendix 1.

Aphids
When aphid populations are overlaid, the risk associated with these warmer periods starts to take shape. In 2025, wheat at Southbridge reached GS 31 in late-September (between weeks 38 and 41), suggesting the crop may have been vulnerable during this period (Figure 7). However, winged aphid numbers on traps were low at this time, although they did increase more rapidly than the previous four seasons (Figure 8). Like all monitoring systems, it is easier to report on winged species because they can be caught in traps (e.g. sticky, pitfall or suction). Detection of wingless aphids (the ones responsible for secondary spread) relies on direct searching. Aphid Chat provides some commentary on wingless aphids from direct searching, but it is not as comprehensive as the trapping data. This is consistent with monitoring systems in other parts of the world.

Natural predators and parasitoids
Aphid Chat reports on the presence of beneficial species, which support aphid control. Species like ladybirds feed on aphids as larvae and adults, while others, such as hoverflies and lacewings, only feed on aphids in their larval stages. Parasitic wasps can be particularly effective when aphid populations are low. It is normal for there to be a lag between aphid and beneficial insect populations, which can be more pronounced when broad spectrum insecticides are used. At Southbridge in the 2025-26 season, aphid and beneficial species populations were the same at the end of October (Figure 8). After this, the aphid population increased earlier and more rapidly than the beneficial species population. This was similar for all Canterbury monitor paddocks. In Clinton, however, the beneficial species population was in line with the aphid population until monitoring stopped in mid-December (Appendix 1).

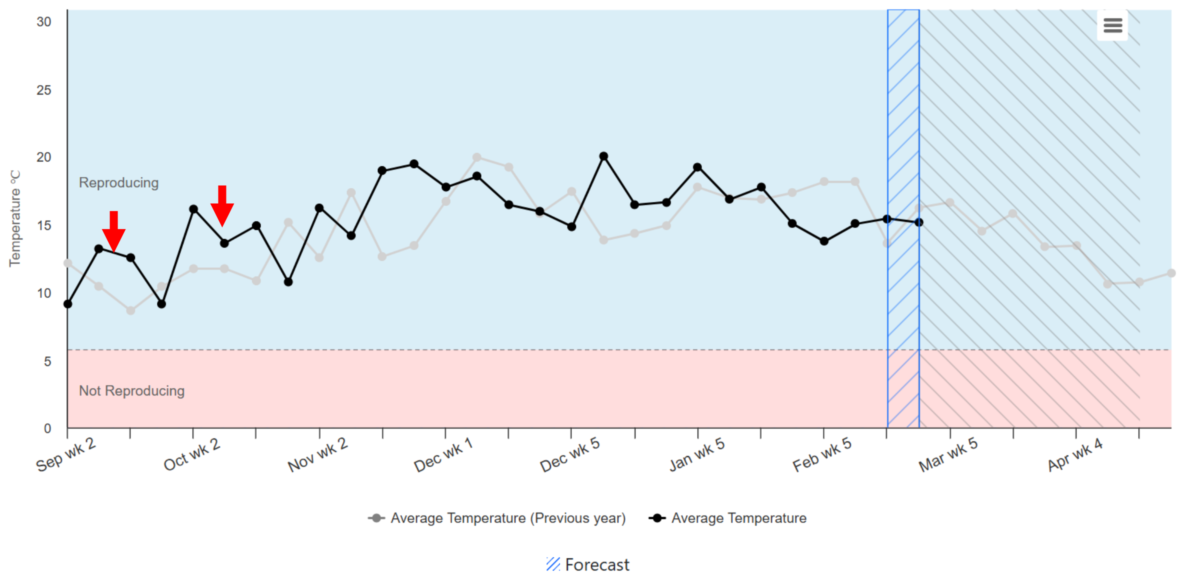

Figure 6. The weekly average temperature above 5.8°C (threshold for reproduction) for Lincoln, Canterbury in 2025-26. Source: FAR weather platform.

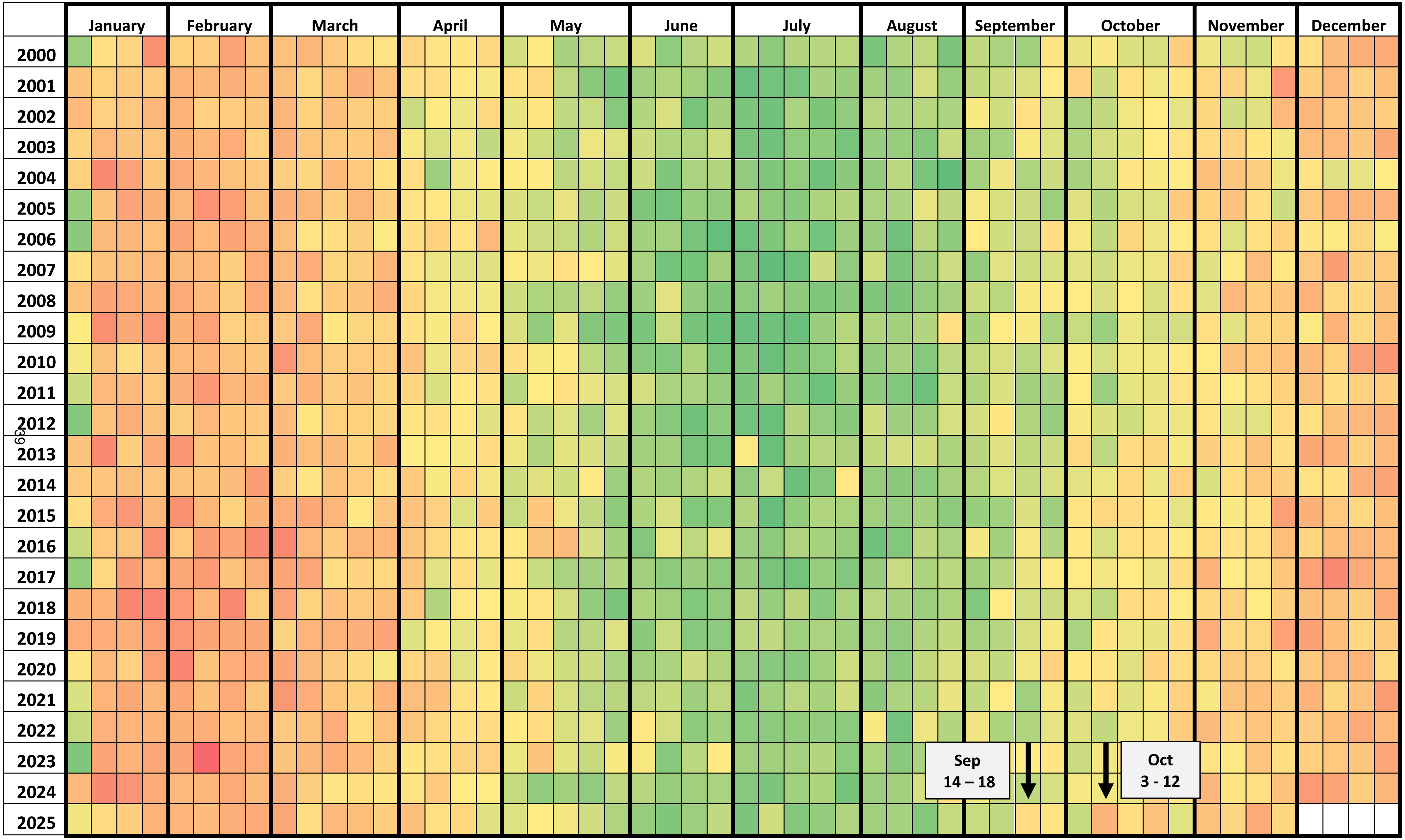

Figure 7. Degree weeks above 5.8°C (the minimum threshold for aphid development and reproduction) for Lincoln, Canterbury from 2000 – 2025. Green = low risk; Red = high risk.

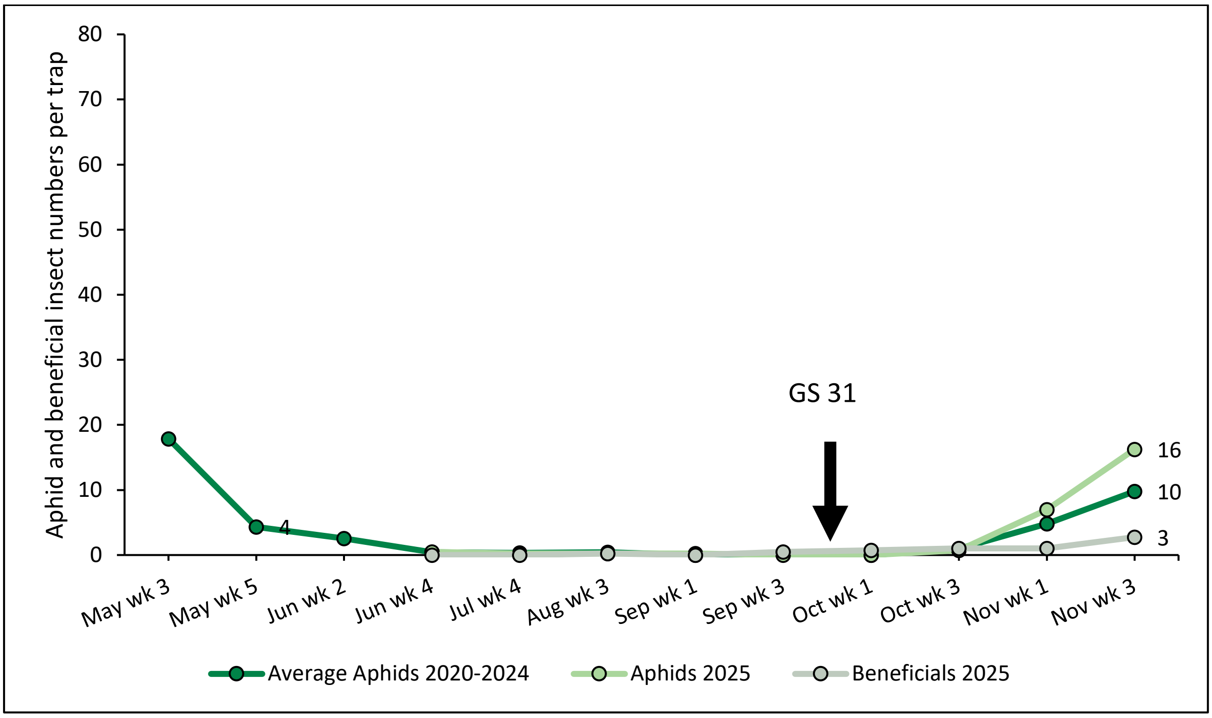

Figure 8. The average number of winged aphids per trap in 2020-24, 2025 and beneficial species in 2025 in autumn sown wheat at Southbridge.

Appendix 1:

Methven

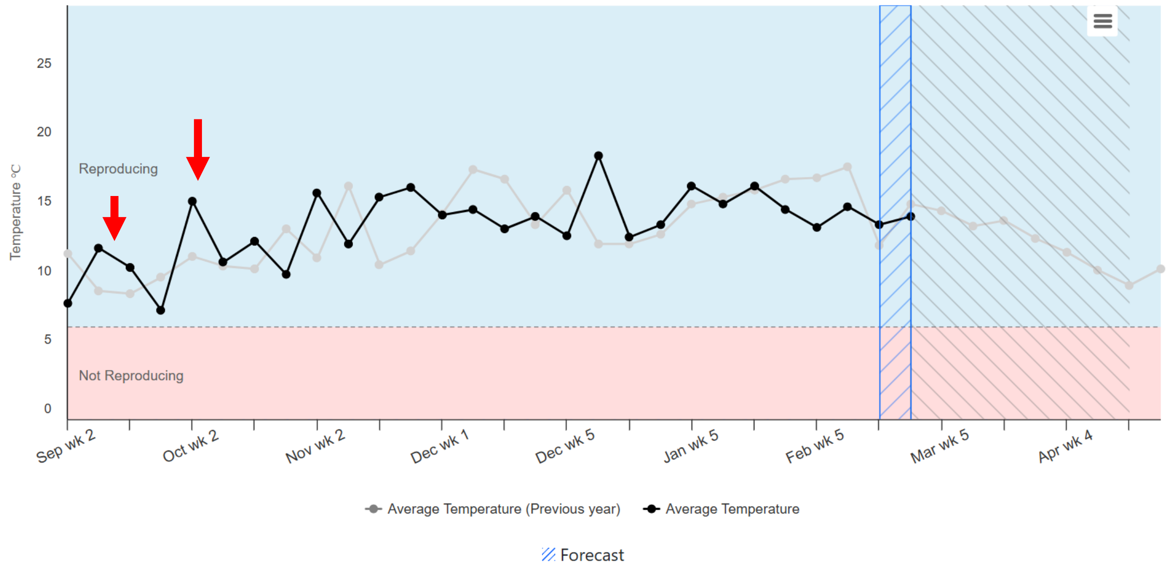

Figure 9. The weekly average temperature above 5.8°C (threshold for reproduction) for Methven, Mid Canterbury in 2025-26. Source: FAR weather platform.

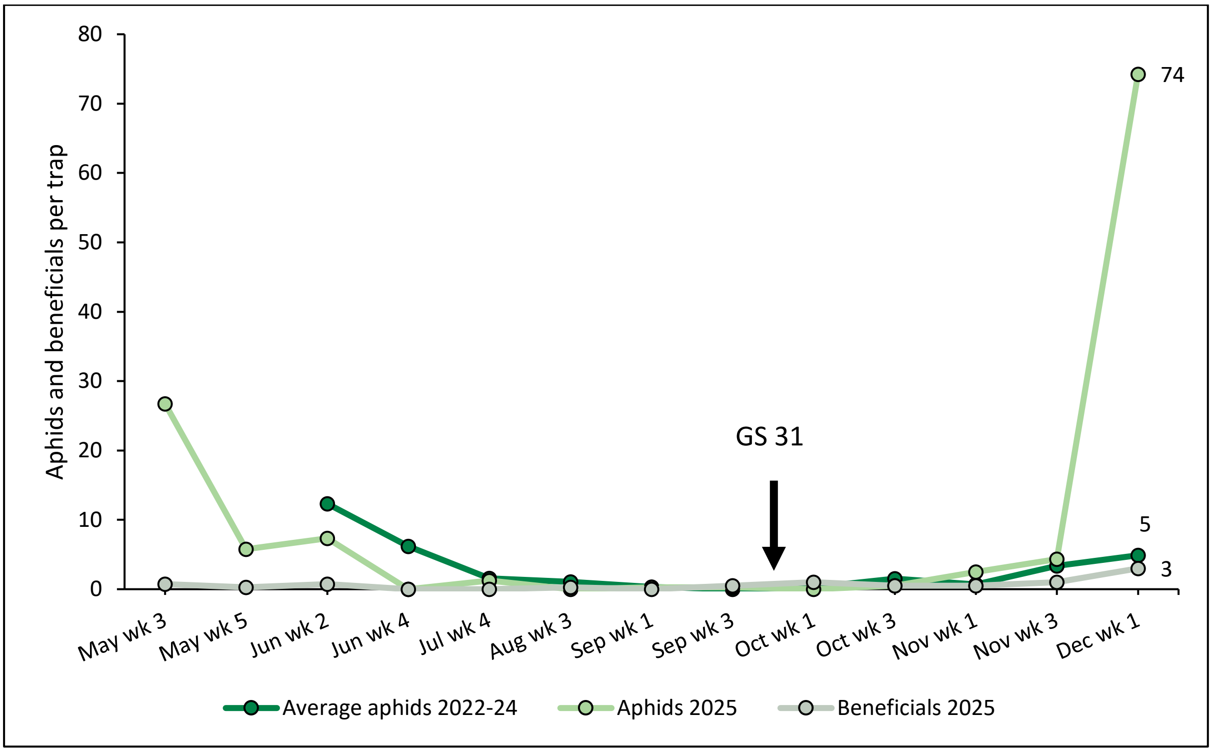

Figure 10. The average number of winged aphids per trap in 2022-24, 2025 and beneficial species in 2025 in autumn sown wheat at Methven, Mid Canterbury.

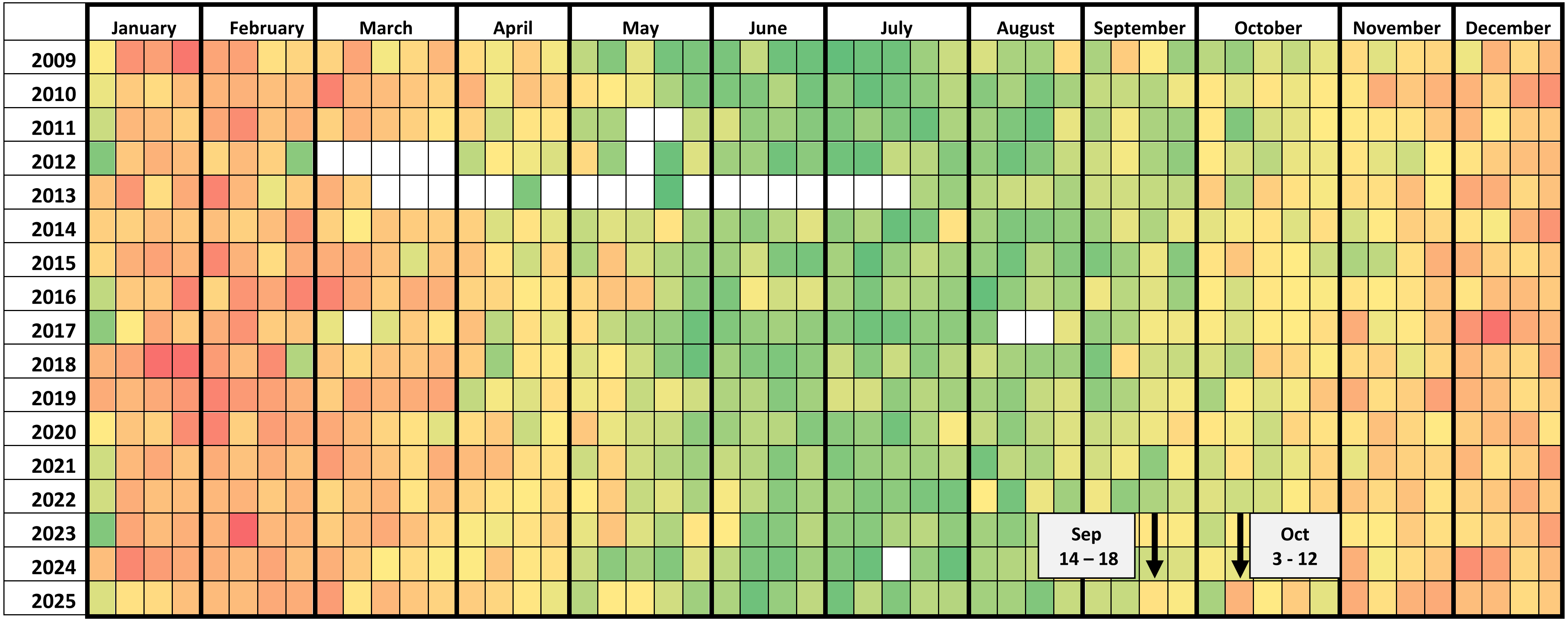

Figure 11. Degree weeks above 5.8°C (the minimum threshold for aphid development and reproduction) for Methven, Mid Canterbury from 2009 – 2025. Green = low risk; Red = high risk.

Timaru

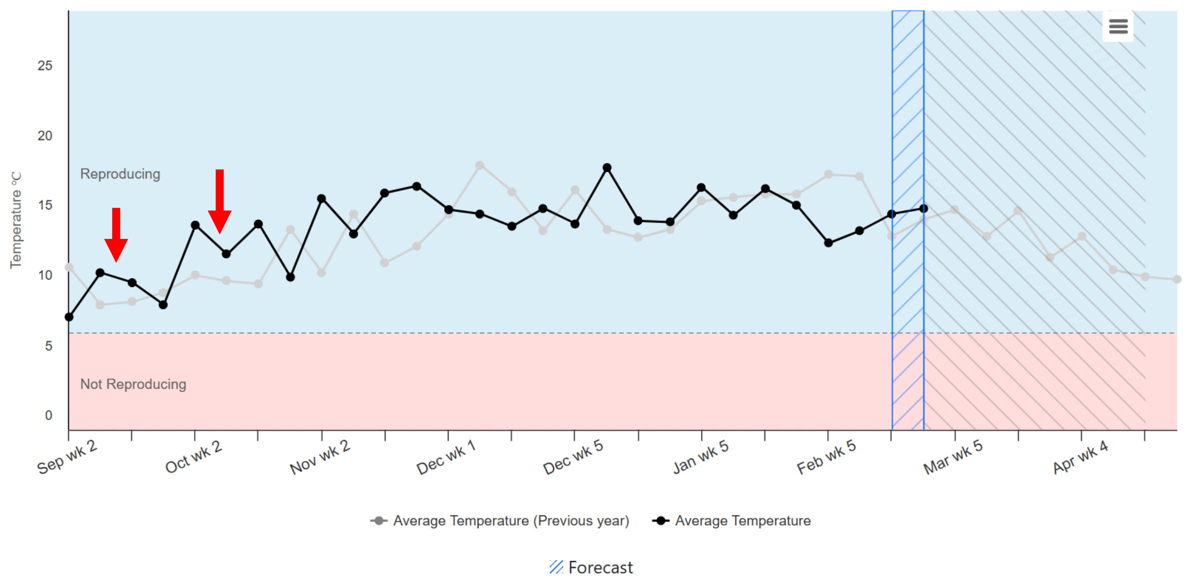

Figure 12. The weekly average temperature above 5.8°C (threshold for reproduction) for Timaru, South Canterbury in 2025-26. Source: FAR weather platform.

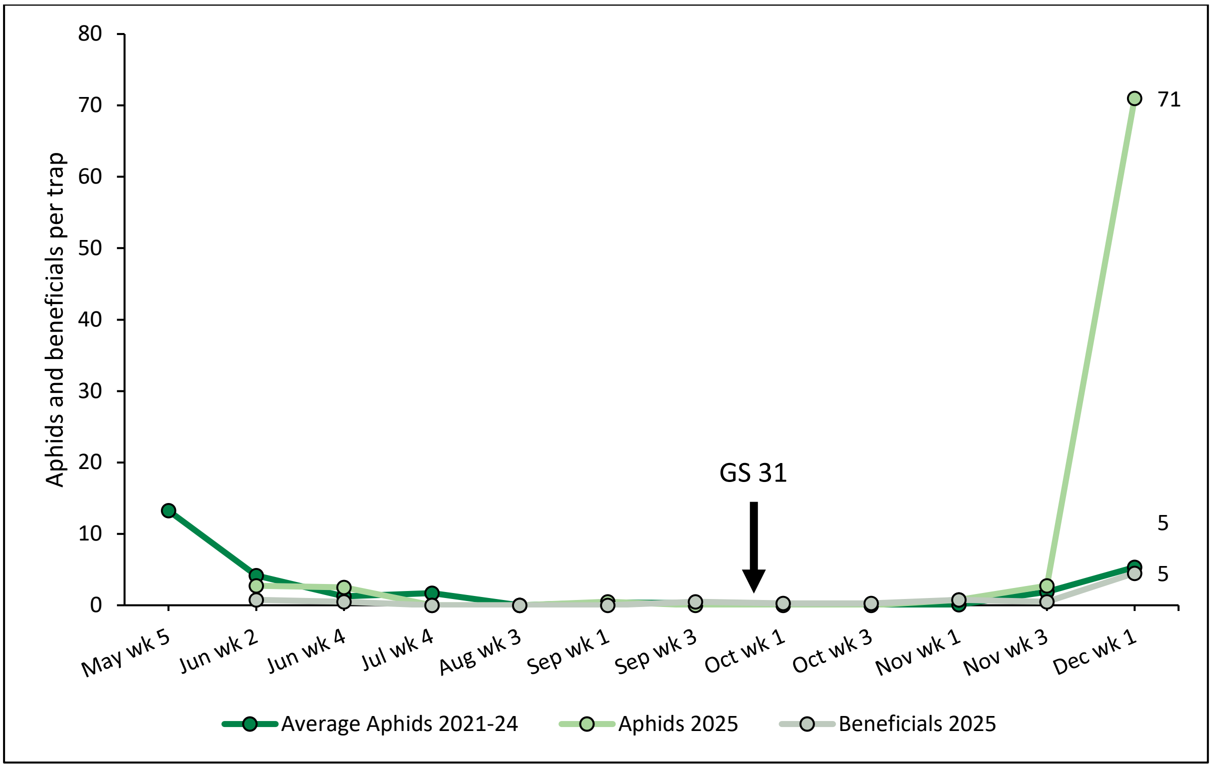

Figure 13. The average number of winged aphids per trap in 2021-24, 2025 and beneficial species in 2025 in autumn sown wheat at Timaru, South Canterbury.

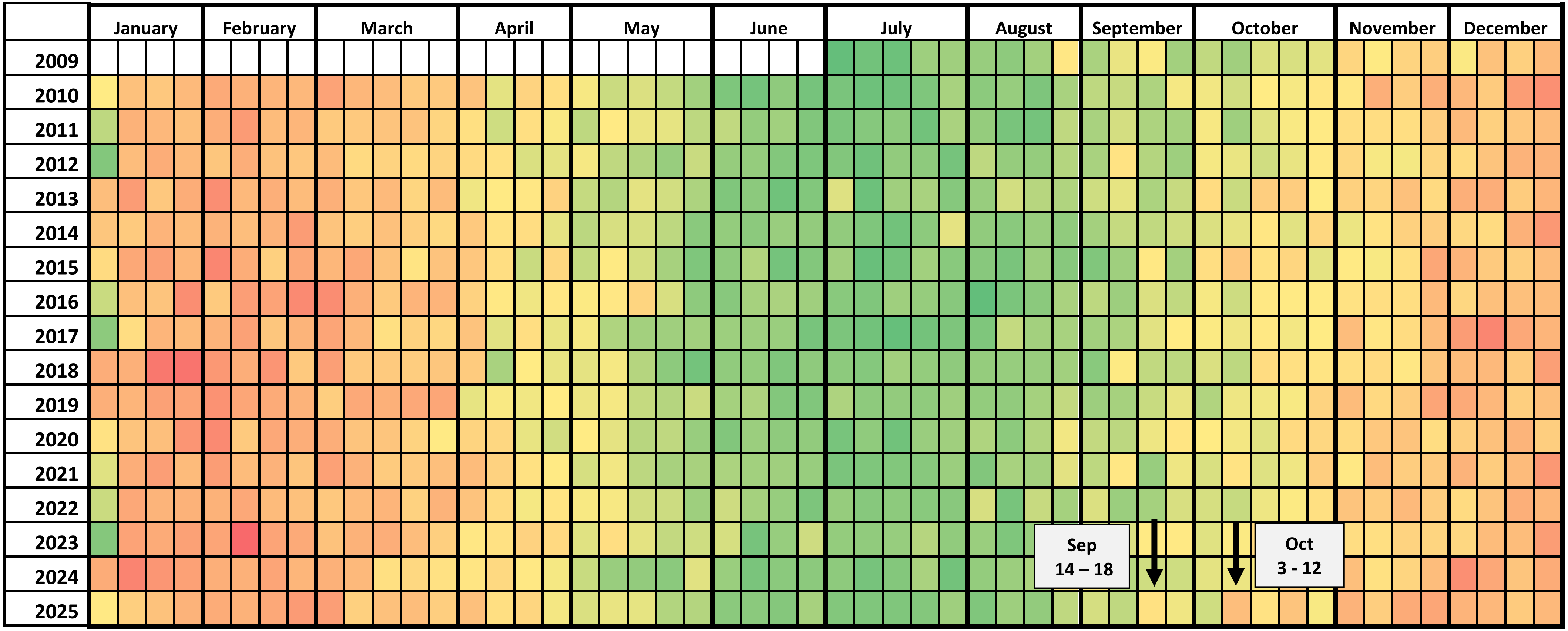

Figure 14. Degree weeks above 5.8°C (the minimum threshold for aphid development and reproduction) for Timaru, South Canterbury from 2009 – 2025. Green = low risk; Red = high risk.

Clinton/Gore

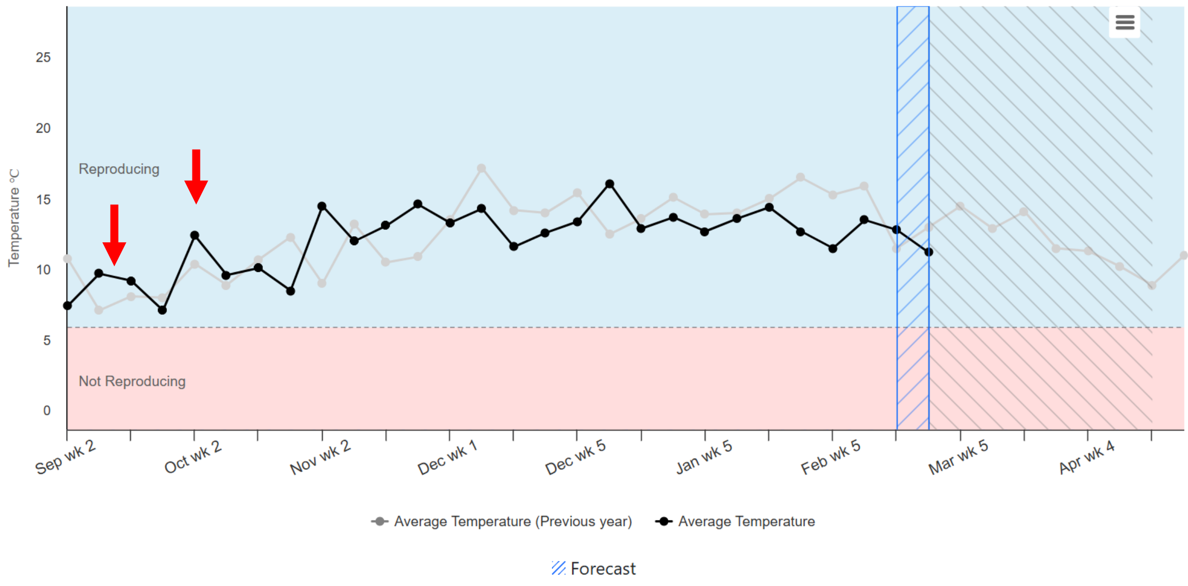

Figure 15. The weekly average temperature above 5.8°C (threshold for reproduction) for Gore, Southland in 2025-26. Source: FAR weather platform.

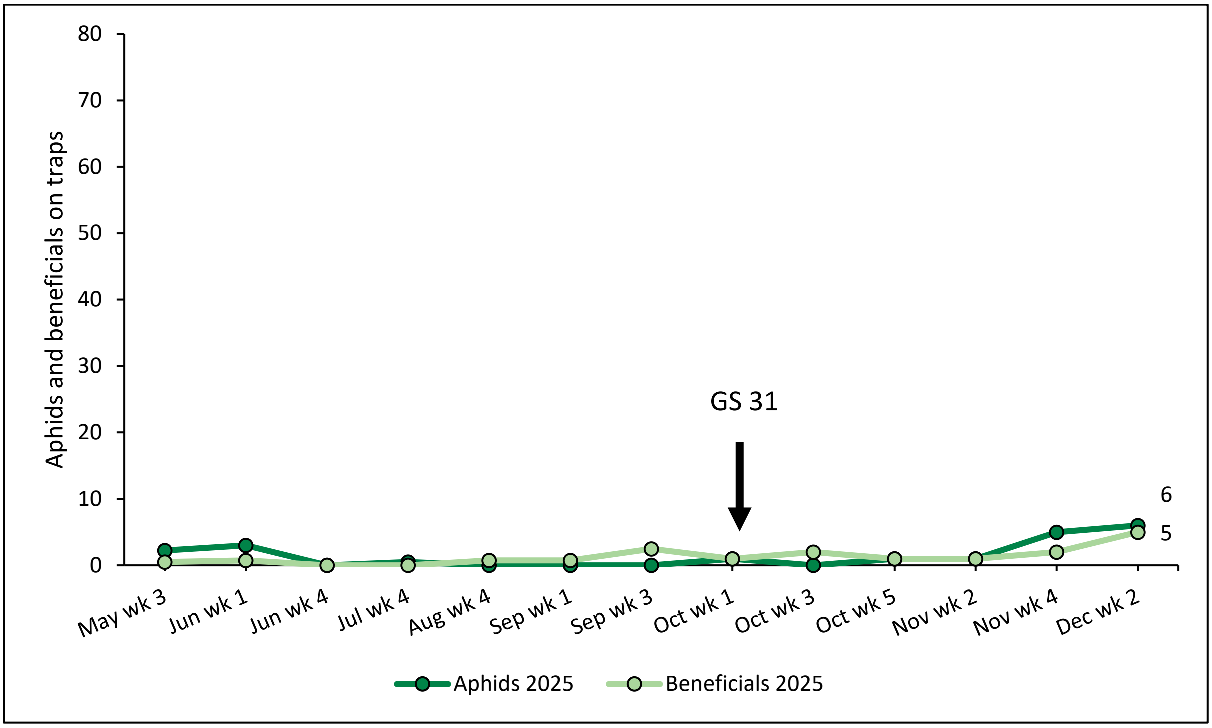

Figure 16. The average number of winged aphids per trap in 2021-24, 2025 and beneficial species in 2025 in autumn sown wheat at Clinton, South Otago.

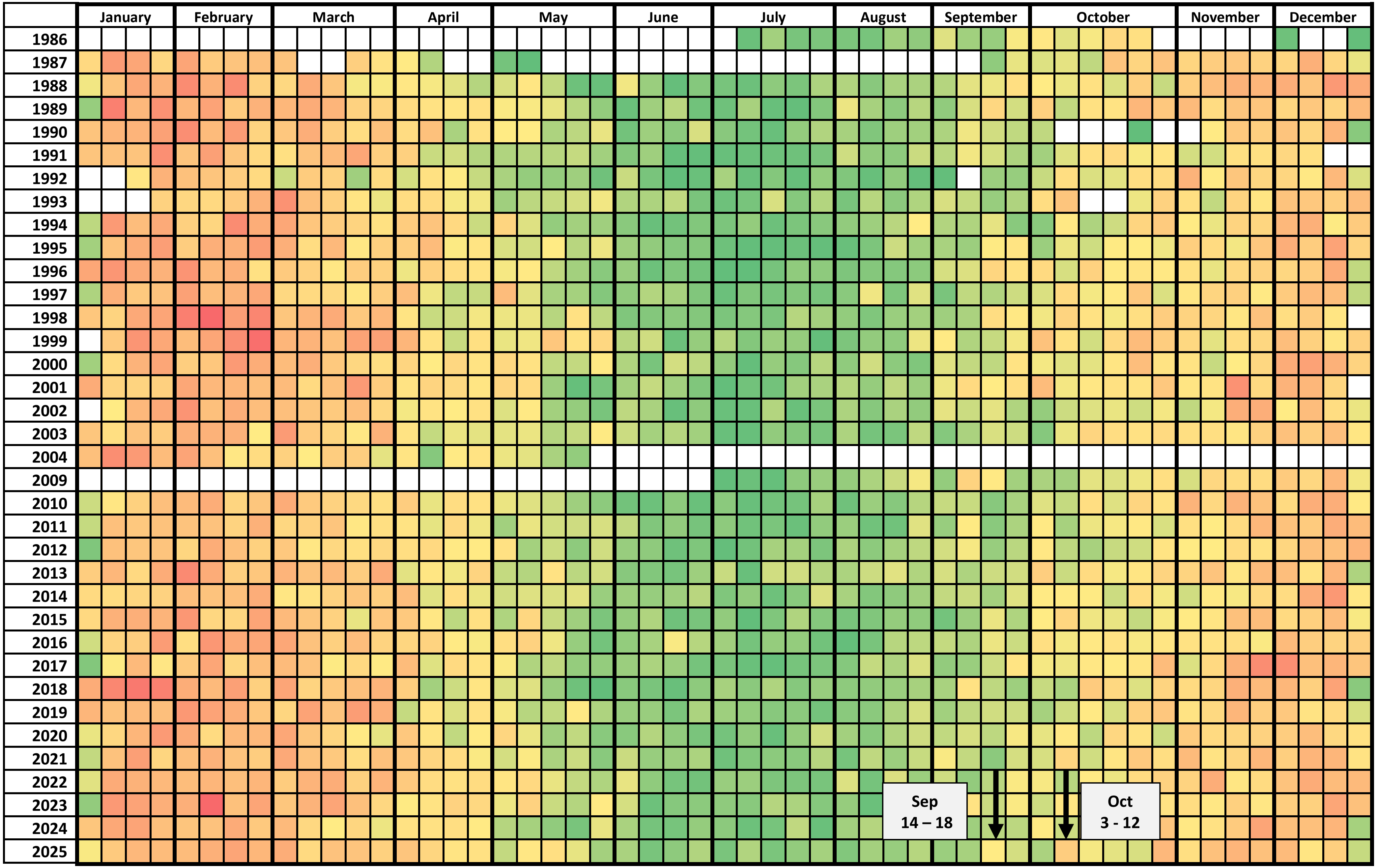

Figure 17. Degree weeks above 5.8°C (the minimum threshold for aphid development and reproduction) for Gore, Southland from 1986 – 2025. Green = low risk; Red = high risk

Notes:

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