

Edition 175 Friday 13 November 2020

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Editor's note

What a difference a fortnight can make. In the last Crop Action, drought conditions were dominating our thinking in a number of regions. Recent rains across much of the country have begun to address this issue and to raise more questions around disease management and nutrient decisions. The crop management tips below will hopefully help you consider your options.

Since the weather is front of mind for all growers, FAR is in the planning stages of an on-line weather platform. This will build on our [online weather map](#) by increasing the number of weather stations producing local data and incorporating forecasting data that will support decision support tools for disease prediction, spray management, irrigation scheduling and nutrient application to name a few. Below is a Crop Growth Tracker tool recently developed by HortPlus, which includes a simple GDD-based accumulator where you can specify the planting date, station and base temperature for any crop. We hope to develop an arable version of the growth tracker that could underpin the decision support tools mentioned above.

Lauren McCormick

Regional updates

Northern North Island

According to NIWA's National Climate Database Daily Climate Maps, as at 9 November, soil moisture deficits had decreased significantly from the previous week, due to good rainfall events across many of the maize growing regions. For the greater Waikato and Taranaki regions, soils are close to field capacity, and other areas are likely to come close to field capacity (further rain is falling as I write this). This is a significant improvement in soil moisture levels compared with the last several months and, when combined with temperatures that have been 2°C above the long term mean, maize crops are generally looking very good.

While the last of the maize crops are still to be planted, some of the most advanced maize is around the V5 growth stage and close to row cover. There has been little reported incidence of [cutworm](#) and [black beetle](#) damage to date, but regular field walks should take place to monitor for insect damage and weed presence.

Wairarapa/Hawkes Bay

Heavy rainfall is presenting challenging conditions for growers over the coming weeks, with some maize and spring barley crops still to go in the ground. For ryegrass seed crops that are approaching PGR timing, the increased soil moisture status combined with warm conditions forecast will increase daily growth rates. Increased growth will drive lodging, thus growers yet to apply PGRs should consider increasing application rates, while growers who have already made an application should consider a follow-up application if the crop has not reached head emergence. Soil mineral N results have been high for spring barley crops following pasture, with much of the N requirement met by soil N supply, but for crops where soil mineral N is lower, consider the [quick N test](#) to help with side dressing decisions.

For spring barley approaching T1 fungicide timing, remember that spring barley is less susceptible to disease than autumn sown barley, however, Ramularia leaf spot (RLS) is unpredictable.

Where dryland crops are sown later, particularly on the east coast of New Zealand (e.g. Hawkes Bay), fungicides produce relatively small gains in profitability and therefore fungicide cost needs to be tailored accordingly. For more information, check out our updated [Cereal Disease Management Strategy \(2020\)](#).

Southland

After wet conditions earlier in spring, soils have dried out and established crops are in good shape, with some spring barley still to be sown. Wet, windy weather meant some wheat growers applied straddle fungicide programmes, where the flag leaf did not receive a direct hit with fungicide so will be considering [T3 options](#).

North Otago/Mid Canterbury

20 – 60 mm of much needed rain has fallen across the region. If plant water use averages 3.5 mm/day then 50 mm of rainfall supplies 14 days' worth of water and thus growth. Wheat growers considering [T3 fungicide applications](#) will be considering the risk of disease developing further up the canopy following the wet weather earlier in the week.

The wet weather may also alter thinking around the need for nitrogen application in autumn sown crops. Spring milling wheat growers will be thinking about what splits to apply.

Crop management

General

Nitrogen management

Growers are still considering their nitrogen fertiliser applications. Efficient use of nitrogen has three big benefits: reduced costs, reduced leaching losses and reduced greenhouse gas emissions.

FAR has a number of tools and publications that can help with estimating appropriate nitrogen rates for a range of crops. These include:

- [FAR Cropping Strategy Issue 4 - Nitrogen Application in Wheat and Barley](#)
- [FAR Cropping Strategy Issue 5 - Nitrogen in Perennial Ryegrass Seed Crops](#)
- [The Nitrate Quick Test Mass Balance Tool and User Guide](#)
- [AmaizeLite – N calculator for maize](#)
- [Maize Update 79 - Effect of timing and placement of nitrogen fertiliser on maize yield](#)
- [Maize Update 80 - Maximising profit from nitrogen fertiliser](#)

Best management practices before filling your silo

Harvest is getting closer by the day and silos are almost empty, ready to be filled with this season's grain. To prevent a potential infestation, silos should be thoroughly cleaned. Clean silos and surrounding areas of old seed/grain/dust. This can be done by:

- Sweeping the base of the silo.
- High-pressure wash of all surfaces inside the silo with water.
- Spray herbicide around the base of the silo, to remove any long grass so that pests do not have anywhere to hide.
- Ensure offal from the silo is dumped well away from the silo, or bury/burn it.
- Spraying with insecticide should be the last defence mechanism to prevent an infestation. However, spraying the silo pre-filling can be beneficial to remove any insects that are hiding in cracks or hard to reach places in the silo.
- Maintain clean storage premises with occasional residual spraying of critical areas (around the door and the base of the silo).

For further information see [understanding stored grain pests](#).

Maize

Crop status and side dressing

During the early maize growth phase, the nodal (or permanent) root system is developing quickly, and these roots rapidly grow deeper into the soil profile where nutrients and water are extracted. This is a critical growth stage as it sets the plant up for the big workload that occurs around flowering. If soil is compacted, root development will be hindered, which in turn limits the amount of soil nutrients and water available to the plant.

By the V4 growth stage, a staggering 23.4km of roots per ha have developed.

At the V5 growth stage, the potential diameter of the cob is set, which is determined by both the hybrid genetics and growing conditions.

Up until the V5 growth stage, a very small amount of nutrients has been taken up by the plant, with only 0.8kg N, 0.14kg P, and 0.86kg K per ha removed. However, nutrient uptake increases quickly once the plant reaches the V8 to V9 growth stage (also known as 'the grand period of growth'). Any stress on the maize plant after V5 will impact on final yield, albeit modest at this growth stage.

As discussed in the previous maize report, undertaking a deep N test prior to side dressing is a pragmatic agronomic practice, which can, in some circumstances, lower nitrogen input costs and reduce excess nitrogen losses. For more detail on undertaking a deep N test visit the FAR website by clicking the following link [FAR Amaize N lite resources](#), or by contacting your fertiliser representative, seed merchant, or [David Densley at FAR](#).

Ryegrass

Plant Growth Regulator and nitrogen applications

For dryland growers, the rainfall of the past week will have provided up to 14 days of water for growth (assuming paddocks were at a permanent wilting point). If leaf has been lost to drought, it is unlikely that the addition of further nitrogen or PGR will be useful. However, if crops had maintained green leaf area, then lodging may become a limiting factor, and a small top-up of PGR could be warranted – particularly in areas likely to capture further rainfall.

Stem rust and updated disease predictions

The increased leaf wetness associated with last weekend's rainfall may drive an increase in stem rust risk in turf type ryegrasses. Predictions from the stem rust model, for expected visible pustules, remain low. But for the first time this season, predictions are now showing higher risk for North Canterbury than South Canterbury, a reversal of the previous six weeks.

A multi-cultivar trial near Lincoln, consisting of forage and turf varieties over a range of heading dates, is showing a very low incidence of leaf rust, but no stem rust. We will continue to monitor for stem rust in these trials and keep you updated.

Overseas studies indicate that the main drivers for stem infection are leaf wetness and warmth in the two-hour period after dawn. Under such conditions, any stem rust infections will multiply, even if they are not visible. Please, do not use these results as the sole basis of decision making for fungicide application. This work is recent and we have not finished developing the model or verifying its outputs. Currently, the model does not differentiate between plant genetic background. It was developed on American turf type cultivars, which are more susceptible to stem rust than most New Zealand bred perennial ryegrasses.

Leaf rust

Leaf rust, common to some cereals, is being observed in many ryegrass seed crops, particularly turf types. This is difficult to identify visually - the main difference from stem rust is colour. Both species have the leaf epidermis present around the pustules (Photos 1, A and B), but this is usually more pronounced in stem rust. Control options are similar and should be based around a triazole fungicide applied at PGR timing.

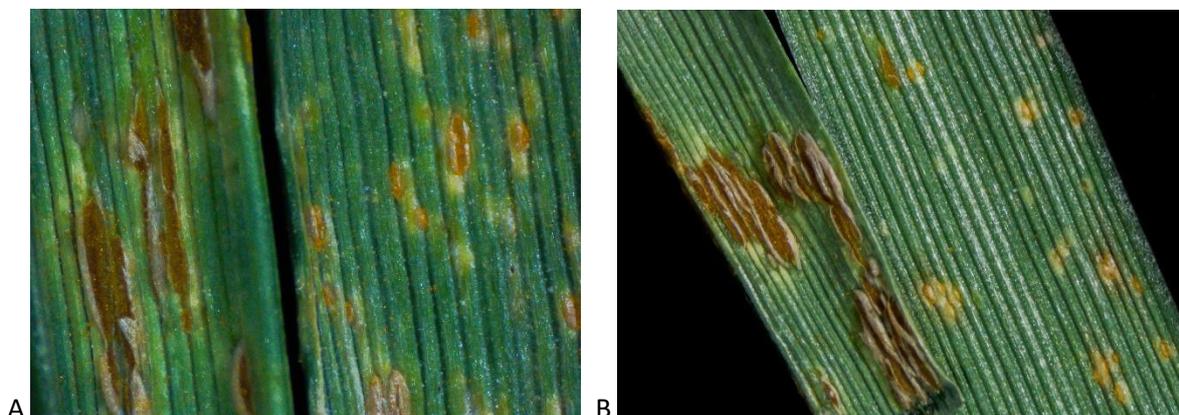


Figure 1. Stem rust pustules on the left leaf blade, leaf rust on the right leaf blade in both photos A and B, on perennial ryegrass, cultivar 'Allsport II' grown at Chertsey, Canterbury in the 2019-20 season.

Cereals

Spring nitrogen decisions in cereals

The use of the [Quick N Test strip](#) and the [Mass Balance Tool](#) can inform spring nitrogen decisions. It's best to conduct this test when the soil isn't dry (<20% soil water content) and get a sample from an area that isn't compacted as these conditions can limit the conversion of fertiliser through to nitrate. If in doubt that conditions might not be right for a quick N test, a full mineral-N (immediately plant-available N) test through a lab will provide all the detail required.

Late season cereal disease management

Recent rain has been a welcome, but it may have implications for late season disease management, especially if it coincided with relative humidity over 85% for more than 20 hours. Based on current conditions, the latent period of *Zymoseptoria tritici* (formally *Septoria tritici*, causal agent of Septoria tritici blotch (STB)) is 15-22 days (Table 1), so we could expect to see symptoms from the most recent 'risk period' in late-November in the Manawatu, early-December in Canterbury and mid-December in Southland.

Table 1. Latent period of *Zymoseptoria tritici* (formally *Septoria tritici*) in November 2020.

Location	<i>Zymoseptoria tritici</i> latent period in days
Palmerston North	15
Chertsey	16
Methven	17
Timaru	18
Gore	22

Some growers may have applied straddle programmes, where the flag leaf doesn't receive a direct hit with fungicide. This can be due to wet/windy conditions at T1 and T2 timings, as in South Otago and Southland, or rapid crop development brought on by warm dry weather, as in South and Mid Canterbury. With this in mind, what are the options for T3 fungicides?

The most important thing is to check your crop and identify your target disease...rust or is it STB? If it's STB, consider your cultivar and how much disease is in the base of the crop; the more resistant the cultivar, the slower disease progression (Figure 2). To date, disease pressure in Southland/South Otago has been moderate, with low disease pressure conditions in parts of Canterbury, especially dryland South Canterbury. Despite recent rain, disease pressure conditions are likely to remain low-moderate across the South Island, but keep an eye on weather conditions in the lead up to GS 59.

If you are thinking about a T3 fungicide for more advanced crops, make sure you consider growth stages and withholding periods. Post-flowering applications at GS 69-71 (T4), have been shown to have little yield or economic benefit unless under very high disease pressure conditions using highly susceptible cultivars.

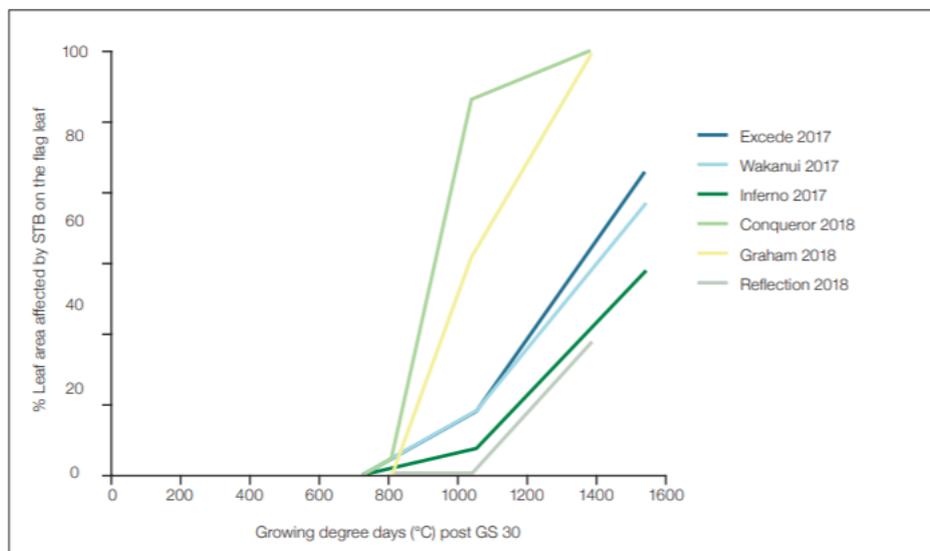


Figure 2. Septoria tritici blotch (STB) progression on the flag leaf of ‘Excede’ (mostly susceptible – MSS), ‘Wakanui’ (moderately resistant to moderately susceptible – MRMS) and ‘Inferno’ (moderately resistant – MR) from the start of stem extension (GS 30) in irrigated wheat cultivar x fungicide trials at Chertsey in 2017-18 and in ‘Conqueror’ (moderately susceptible – MS), ‘Graham’ (moderately resistant – MR) and ‘Reflection’ (moderately resistant – MR) at Lauriston in 2018-19.

FAR has just released its 2020 edition of the Cereal Disease Management Strategy, providing an updated overview of disease management strategies for wheat and barley in New Zealand. It builds on previous editions of the Cropping Strategy by discussing FAR research conducted between 2018 and 2020 on the emergence of fungicide resistance in key cereal pathogens, cultivar disease resistance, and appropriate fungicide programmes in the context of resistance, cultivar and the economic returns they afford.

[View the 2020 Cereal Disease Management Strategy.](#)

Aphid monitoring

FAR aphid monitoring programme in autumn and spring sown wheat crops around Canterbury and Southland shows that aphid numbers are still relatively low across the regions and that beneficial insects are present. The numbers of cereal aphids and beneficial insects counted in direct searches this season are shown below (Table 2 and Figures 3 and 4).

Farmers who wish to monitor their own paddocks will need a hand lens or a magnifying glass to identify what insects are present. If you are having trouble identifying the aphids or beneficial insects we can help you out. Email a clear photo to either [Jo Drummond](#) or [Abie Horrocks](#), or, send your sticky traps to 185 Kirk Road, Templeton, Christchurch 7678. Further aphid suction trap data is available on the [Corteva website](#).

Click below for more information on:

- [Monitoring, identifying and managing aphids in your crop.](#)
- [Monitoring and identifying beneficial insects in your crop.](#)
- [IPM in wheat – Ute guide](#)
- [Watch the video: Late autumn aphid management for BYDV](#)

Table 2. Number of cereal aphids and beneficial insects in direct searches 15 November 2020.

Site	Number of aphids	Number of beneficial insects
Methven	4	9
Somerton	5	6
Waimate 1	-	-
Waimate 2	-	-
Pleasant Point	14	14
Ellesmere	7	12
Sheffield	3	2
Gore	7	8

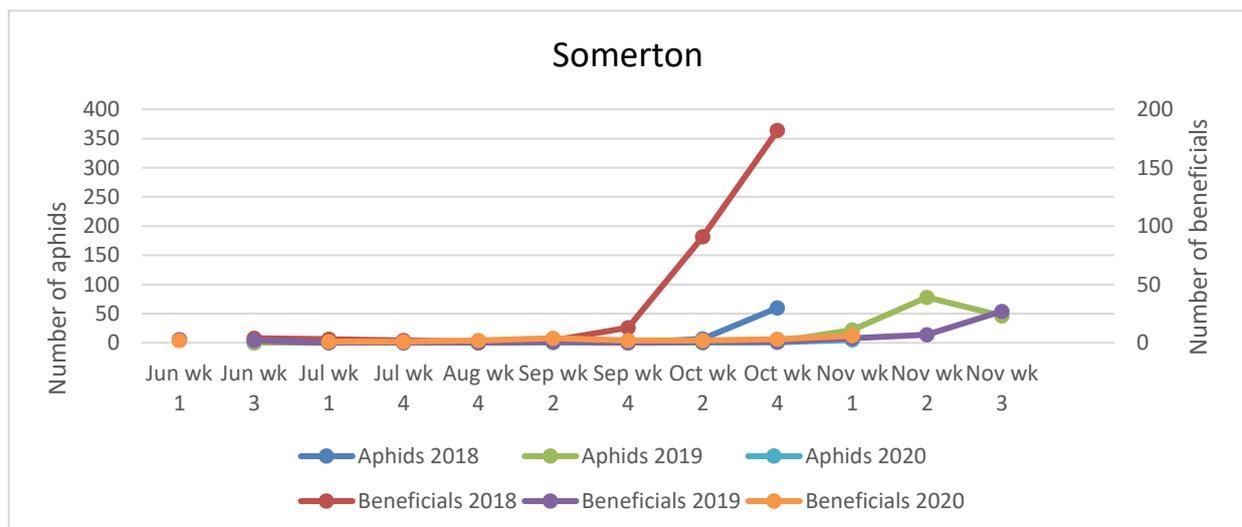
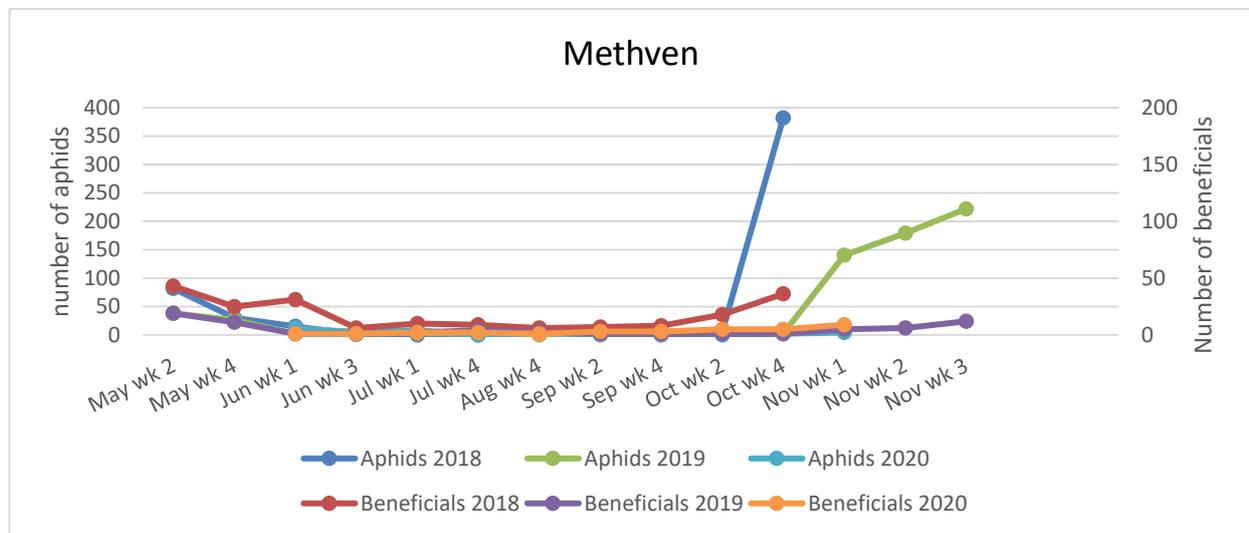
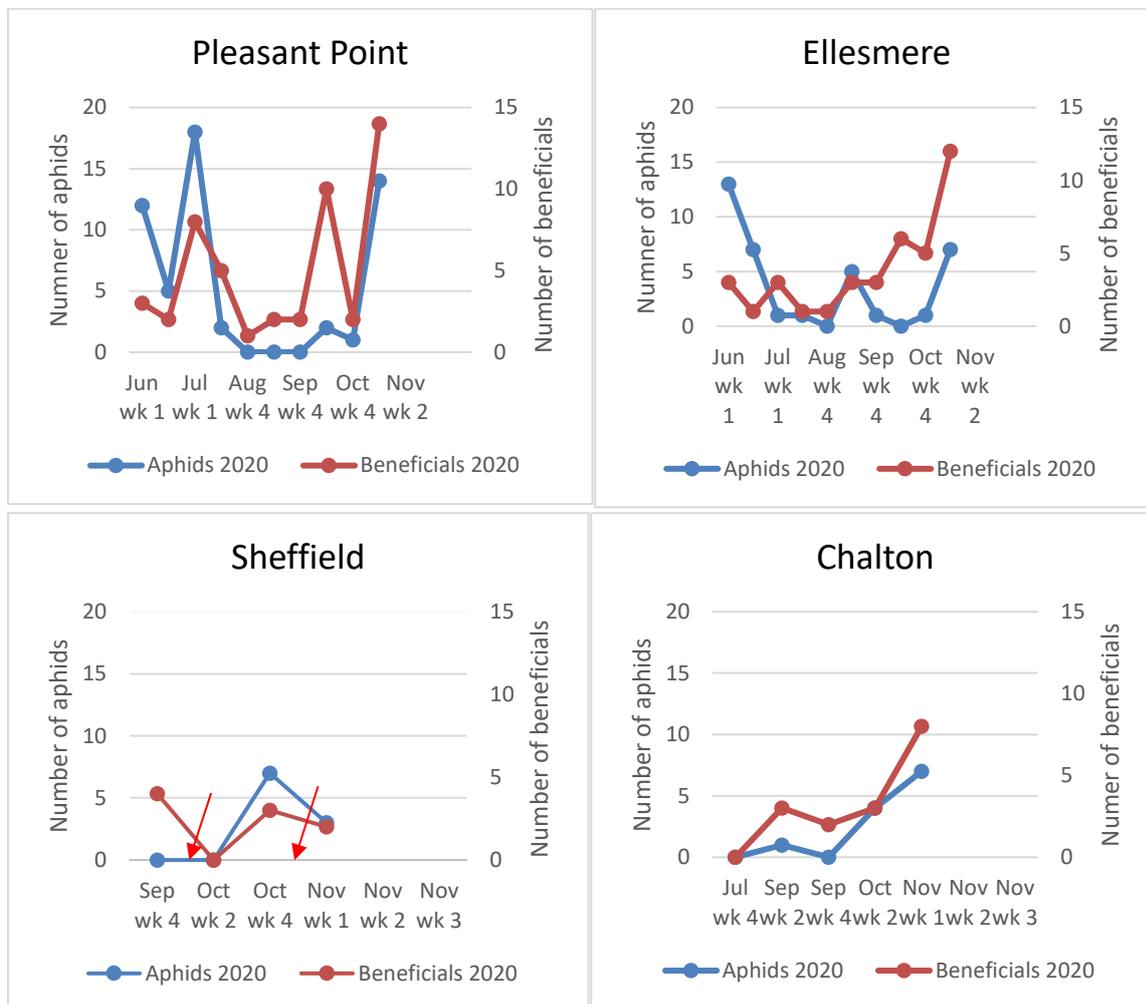


Figure 3. Aphid and beneficial numbers from direct searches at Methven and Somerton 2018 – 2020.



Note: ↓ indicates when insecticide was applied.

Figure 4. Aphid and beneficial numbers from direct searches at five sites in Canterbury, 2020.

Aphid flight graphs

Aphid flights can also be predicted by monitoring degree weeks in your area. The aphid flight graphs below (Figure 5) work by accumulating average hourly temperature over the baseline temperature for aphid development for the course of a week. The higher the number, the greater the risk of aphid flights.

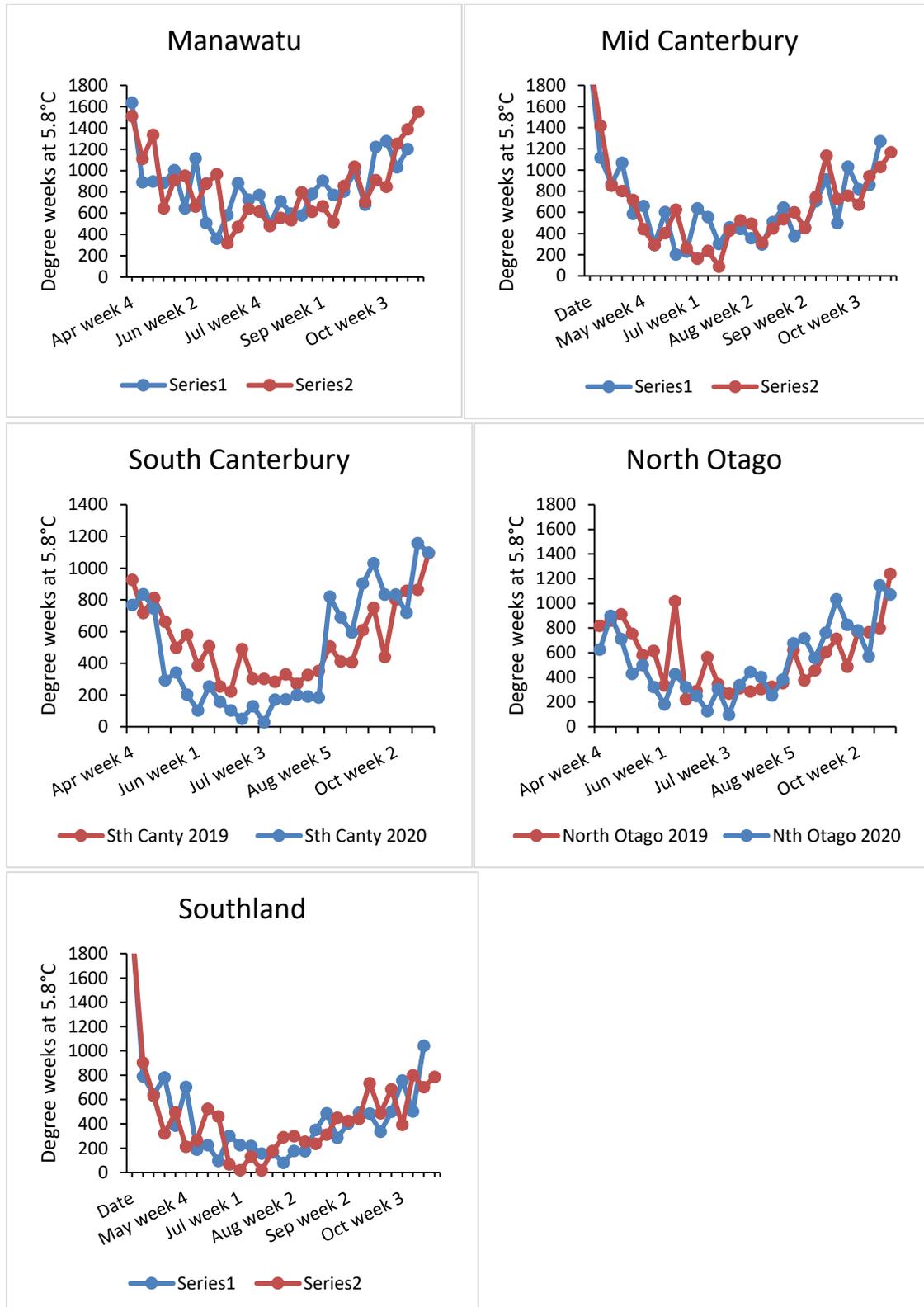


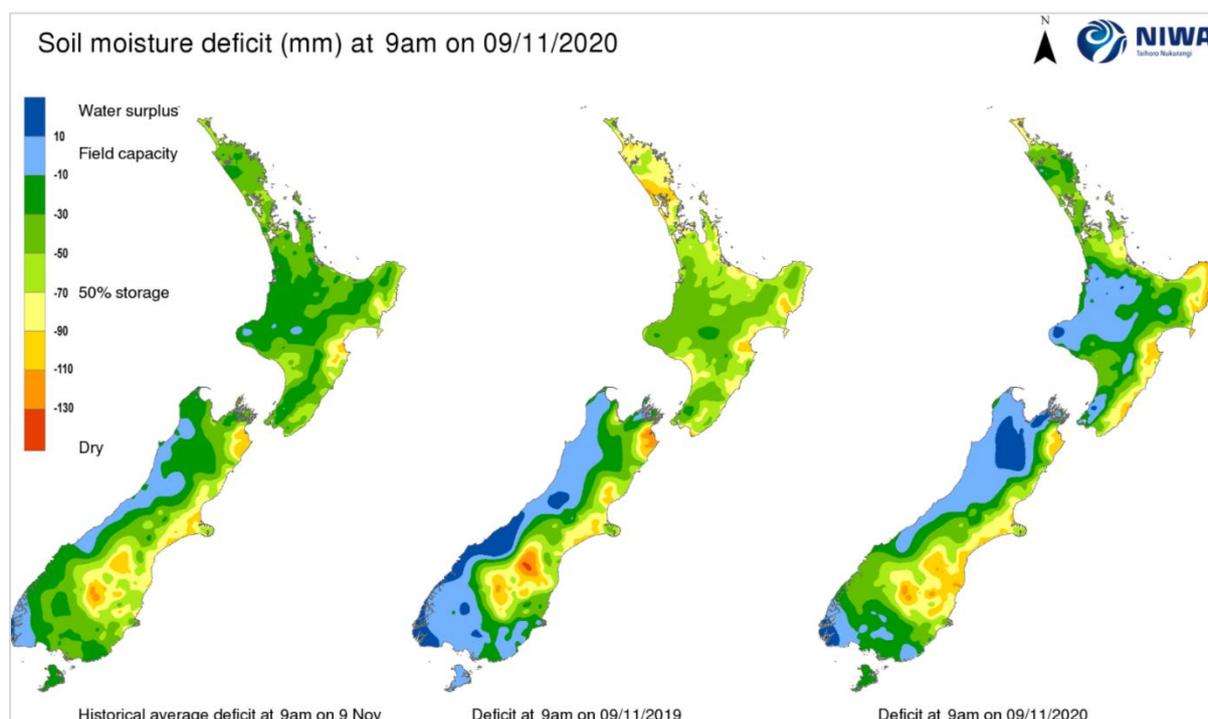
Figure 5. Predicted aphid flights for the week ending 15 November 2020.

Aphid management – do you need an insecticide?

When aphid numbers are low, think carefully before applying a foliar insecticide. If an insecticide is required, be aware of the impact it can have on beneficial predators and parasitoids. Not all broad-spectrum chemicals kill beneficial species directly. Secondary poisoning of beneficial species occurs when they consume the pest which has come into contact with or ingested the insecticide. Therefore, make sure you use selective insecticides. Products like Pirimor® and Transform™ will have a knockdown effect on aphids and are less harmful on beneficial insects than products such as Mavrik® or Karate®, Zeon. For more information on insecticides and their residual activity see [Arable Update 214: Foliar aphicide persistence on spring barley](#).

Weather

Soil moisture data



NIWA data

NIWA predictions for November 2020 – January 2021:

- Air temperatures are very likely to be above average right across New Zealand. There is an elevated chance of high temperature extremes, particularly on nor' west days.
- Rainfall is most likely to be near normal in the north of the North Island and about equally likely to be near normal or below normal for all remaining regions. The chance for sub-tropical or tropical disturbances will increase during December-January.
- Soil moisture levels and river flows are most likely to be below normal in the north of the North Island and the east of the South Island. For all other regions, soil moisture levels and river flows are about equally likely to be near normal or below normal.

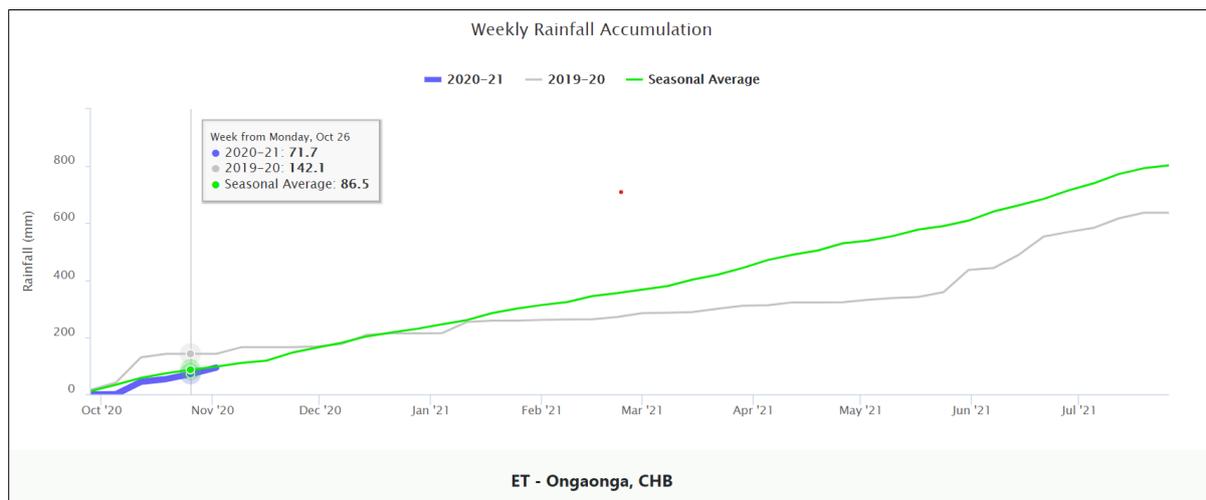
[View the NIWA seasonal climate outlook.](#)

FAR weather tool

If you want to keep an eye of the amount of rain your area has had recently, have a look at the FAR weather tool. [Click on this link](#) and select the region you're interested in from the drop-down box at the top right of the screen.

Please contact us if you have any queries about the tool, or suggestions on to how to make it better.

Below: Weekly rainfall accumulation from Ongaonga weather station, near Otane.



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