Crop Action

Issue 21 Sunday December 17 2023

In this issue of Crop Action:

Editor's note

Welcome to the final issue of Crop Action for 2023. Everyone at FAR would like to wish you and your loved ones a happy Christmas and a great 2024. We also want to thank all those people outside of the organisation who have contributed to Crop Action over the last year.

Despite Christmas being around the corner, there is plenty going on around the country leading into the second half of the season. In the North Island, maize planting remains behind, especially in seed production areas, due to repeated rain events. The first fall armyworm (FAW) generation has also been detected across Northland from which we would expect it to spread to other regions during the remainder of the season (see below for the latest findings and details on monitoring).

In the South Island, things have been drying out in the southern areas and rain is needed. Growers should be walking paddocks to identify disease challenges. Understanding seasonal disease pressure helps select the most appropriate late season fungicide programmes, which could 1) save you money and 2) help steward your chemistry. For more information on cereal disease management see below.

A hail storm fired through parts of Methven and Central Canterbury earlier this week, hitting several crops including our CPT milling wheat trials and wheat cultivar mixtures trial. If your crops were affected consult with your insurance company, if you are covered, and consider pesticide programmes to protect damaged crops. For more advice on this, see below or consult with your advisor.

Regional Updates

Southland

Spring crops are slower-growing than previous years. Ground conditions are starting to dry out with the wind and lack of rain, so most crops will be looking for moisture soon. Late season frosts have have caused issues for some.

Garden peas are starting to flower, while perennial ryegrass has received full ear emergent fungicides and turf grasses are getting close. Spring seed brassica growth varies from early budding to flowering.

Winter wheat crops are getting T3 fungicides now if required. Spring barley crops are around T1 timing, and despite BYDV symptoms beginning to be noticed in some paddocks, YDV disease pressure is generally low and crops should no longer be particularly susceptible. For advice on managing your YDV risk if your crop hasn't quite reached GS 32 see below.

Canterbury

The weather across Canterbury has been quite variable, with some heavy rain and hail accompanied by thunderstorms experienced in the region this week. Overall, the lack of long fine periods has kept many crops a little behind where they would normally be. Cereal growers are hoping that the forecast warmer weather will be forthcoming to aid grain-fill.

Autumn-sown cereals are now past the T3 fungicide timing. For those considering a T4 fungicide check out disease pressure in your paddock and FAR's economic data here to help work out if you will get a return on investment from this spray.

Some tall fescue seed crops are nearing harvest, while ryegrass seed crops are receiving their third fungicide application around now.

Waikato

Waikato has had a fairly typical season to date. Maize is now planted across the region. At NCRS the maize is at fencepost height (see picture). Maize growth has been good, although rain would be welcome. Most side dress N and post-emerge herbicides have been applied. Soil mineral N levels have been average, to above average, reducing side dress N requirements.

Crop management tips

General

Combine set up

Harvest is (almost) here! Setting up your combine to reduce harvest losses is crucial. FAR recently released a podcast on this topic, so if you missed out on our recent field days and would like to learn more about this important topic, listen to our podcast here.

Fence line weed control

Herbicide resistance can develop in areas subjected to the same herbicide year after year. Consider the following options for weed control on fence lines or non-crop areas:

- Use alternatives to spraying such as removing fences, mowing, grazing or leaving desirable plants growing under the fence (see the linked resource below).
- Rotate herbicides through different modes of action and/or add another herbicide to the tank mix. This will improve efficacy as well as reduce the risk of a glyphosate-resistant population developing. Be aware of health and safety requirements however, as some alternative herbicides have important guidelines on personal protective equipment. Always read the label before using. Mode-of-Action information is available here.
- For further details, see this online resource.

Preparing your silos for harvest

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 habitats where insects could thrive.
- 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.

Post-harvest paddock management

It's time to start planning post-harvest management to ensure the best possible conditions for your following crop. If there will be a gap between harvest and your autumn sown crop you might consider a short-term cover crop? Trial results show that a 9-week oat cover crop improved soil quality and compensated for some of the carbon removed from baling crop residue. Short-term cover crops with legumes can also supply additional nitrogen to the subsequent crop. The booklet from last year's CROPS event has some useful information on this (Station 8, see pages 21-23).

If you are harvesting a ryegrass seed crop, the benefits of using the ryegrass re-growth as the basis for winter feed instead of terminating it could be maximized by over-drilling legumes. This can extend the value of the crop by providing high quality feed and reducing the N fertiliser spend for the next year. For many growers, N fertiliser costs account for more than 50% of farm expenses, so there are plenty of reasons to reduce inputs where possible. FAR's Abie Horrocks presented some great data on this topic at our recent ARIA event. If you missed it, or would like to take a deeper dive into this subject, the booklet from the event can be found here (see pages 15-19).

Cereals

Wheat disease management

Recent seasons have seen increased interest in the value of very late fungicide applications at GS 69-71 (T4). With most autumn sown wheat crops now at grain-fill, what conditions could be considered of sufficient risk to warrant such an application? For the majority of New Zealand, disease pressure across the country has been moderate, with STB mostly confined to the lower canopy. FAR trials have found an application of a post-flowering fungicide was, in most cases, no better than using a robust triazole (Group 3) + strobilurin (Group 11) fungicide mix at T3 (Table 1-2). A well balanced T3 application will cover you for both STB and leaf rust. It is worth remembering that the timing for control of Fusarium Head Blight is at early T3 (GS 59 – 61). The margin over fungicide costs for these data were calculated based on grain prices at harvest in 2023. You will need to consider impact of current grain prices when rationalising your fungicide programme. Be mindful of withholding periods with any late fungicide application. For further information see FAR's Cereal Disease Management Strategy, updated 2022.

Table 1. Yield (t/ha) and margin over fungicide cost (MoC) for autumn sown wheat, cultivar 'Graham', with irrigation at Methven, Mid Canterbury in 2022-23, following application of selected fungicide programmes. Wheat price $610/ha (Source NZ Grain & Feed Insight).

Growth stage (GS), application date and fungicide treatment (L/ha)						
28.9.22	**14.10.22**	**7.11.22**	**1.12.22**	**21.12.22**		
GS30-31	**GS32**	**GS39**	**GS65**	**GS69**	**Yield (t/ha)**	**MoC ($/ha)**
Untreated	-	-	-	-	6.52	*
-	Kestrel® (1.0)	Elatus™ Plus (0.75) + Opus® (0.75)	Prosaro® (1.0)	-	12.60	3399
-	Kestrel® (1.0)	Elatus™ Plus (0.75) + Opus® (0.75)	Prosaro® (1.0)	Opus® (0.25) + Amistar® (0.25)	12.84	3491
Opus® (1.0)	Kestrel® (1.0)	Elatus™ Plus (0.75) + Opus® (0.75)	Prosaro® (1.0)	-	13.01	3587
Opus® (1.0)	Kestrel® (1.0)	Elatus™ Plus (0.75) + Opus® (0.75)	Prosaro® (1.0)	Opus® (0.25) + Amistar® (0.25)	13.15	3672
				Trial Mean	12.4	3458
				P value	<0.001	<0.001
				LSD (P=0.05)	0.40	258
				CV (%)	2.21	-

Active ingredients: Amistar® (a.i. 250 g/L azoxystrobin, Group 11 fungicide); Elatus™ Plus (a.i. 100 g/L benzovindiflupyr – SOLATENOL™, Group 7 fungicide); Kestrel® (a.i. 160 g/L prothioconazole and 80 g/L tebuconazole, Group 3 fungicide); Opus® (a.i. 125 g/L epoxiconazole, Group 3 fungicide); Prosaro® (a.i. 125 g/L prothioconazole and 125 g/L tebuconazole, Group 3 fungicide)

Table 2. Yield (t/ha) and margin over fungicide cost (MoC) for autumn sown wheat, cultivar 'Graham', without irrigation at Hook, South Canterbury in 2022-23, following application of selected fungicide programmes. Wheat price $10/t (Source NZ Grain & Feed Insight).

Growth stage (GS), application date and fungicide treatment (L/ha)						
28.9.22	**14.10.22**	**7.11.22**	**1.12.22**	**21.12.22**		
GS30-31	**GS32**	**GS39**	**GS65**	**GS69**	**Yield (t/ha)**	**MoC ($/ha)**
Untreated	-	-	-	-	7.97	*
-	Kestrel® (1.0)	Elatus™ Plus (0.75) + Opus® (0.75)	Prosaro® (1.0)	-	11.20	1678
-	Kestrel® (1.0)	Elatus™ Plus (0.75) + Opus® (0.75)	Prosaro® (1.0)	Opus® (0.25) + Amistar® (0.25)	11.23	1634
Opus® (1.0)	Kestrel® (1.0)	Elatus™ Plus (0.75) + Opus® (0.75)	Prosaro® (1.0)	-	11.35	1691
Opus® (1.0)	Kestrel® (1.0)	Elatus™ Plus (0.75) + Opus® (0.75)	Prosaro® (1.0)	Opus® (0.25) + Amistar® (0.25)	11.37	1673
				Trial Mean	11.04	1639
				P value	<0.001	<0.001
				LSD (P=0.05)	0.43	249
				CV (%)	2.7	

Active ingredients: Amistar® (a.i. 250 g/L azoxystrobin, Group 11 fungicide); Elatus™ Plus (a.i. 100 g/L benzovindiflupyr – SOLATENOL™, Group 7 fungicide); Kestrel® (a.i. 160 g/L prothioconazole and 80 g/L tebuconazole, Group 3 fungicide); Opus® (a.i. 125 g/L epoxiconazole, Group 3 fungicide); Prosaro® (a.i. 125 g/L prothioconazole and 125 g/L tebuconazole, Group 3 fungicide)

For crops affected by hail damage, there may be some risk associated with bacterial disease. Please contact your rep for more specific information.

Aphid monitoring

Most cereal crops are now past GS 31 and less susceptible to YDV infection, so the sticky traps FAR was using to monitor aphid numbers around the South Island have been removed. Keep monitoring crops though, as there is also the possibility of direct feeding damage, especially if feeding occurs in the seed head. Australian data puts losses from this type of aphid damage up to 10%.

Direct feeding damage symptoms are not obvious. A good way to check is to walk in a "W" pattern across the crop, inspecting tillers every few steps. Australian data suggests that if 50% of tillers have 15 or more live aphids, an insecticide could be justified. However, when scouting paddocks in South Canterbury, we noted that large aphid populations are currently being well managed by beneficial insects (i.e. ladybirds, parasitic wasps, lacewings etc). Beneficial insect numbers build up when early season insecticide sprays are minimised. So, have a good look for beneficials in your crop and consider how much aphid control they are providing. Good indications of a healthy beneficial population include mummified aphids, or ladybirds visible on heads (see photos below).

If a product is deemed justified, note that products that contain the active ingredient pirimicarb (Group 1A Insecticide) are specifically targeted at aphid control, while others such as Karate® Zeon can be damaging to beneficial insects and other species.

Above: Signs of healthy beneficial insect numbers: Left: Ladybird reproduction indicates a thriving population. Right: An aphid "mummy." The aphid has been parasitised by a wasp laying eggs inside it. The wasp larvae then exit the dead aphid through the hole visible in the picture. More information on aphid direct feeding damage can be found here.

Whole cereal silage harvest timing

- The ideal harvest time is when the crop is 32-40% DM and grain has a cheesy-dough consistency.
- Harvesting too early will result in losses in yield and quality, while harvesting too late can create complications with stacking and ensiling, and grain losses with feeding out.
- Harvesting equipment and stack additives can help overcome some issues associated with harvesting outside the harvest window.
- Current NIRS testing of cereal silage using pasture standards do not provide accurate results for whole crop cereal silage and in general, underestimate ME (metabolizable energy) by an average of 1 MJ/kg DM.

It is common for whole crop silage to be harvested too early when the grain is still watery or milky. Harvesting earlier than 32% DM is not recommended, as the crop has not yet reached its yield potential and feed quality will be poor, with little to no starch due to incomplete grain fill. At this stage, there are also likely to be ensiling issues (due to high pH) which can lead to yield and quality losses in the stack.

Grain consistency is a good way of determining if the crop is ready to harvest. At the ideal harvest, the grain will have a cheesy-dough consistency and the crop will be near peak dry matter yield. Grain yield in silage generally plateaus when grain moisture reaches 40% DM, but the grain does not always dry down at the same rate as the rest of the plant, so it's important to know the DM content of the whole plant at harvest. At between 40 and 46% DM, there can be problems with fermentation, leading to the silage going off quickly when opened. This can be counteracted by fine chopping (to a maximum of 20 mm) and adding urea at a 3% ratio to DM to create an ammonia-preserved feed.

Harvesting too late (>46% DM) is also problematic, as the straw will be too springy to compact. At this moisture, content yield is maximised, but the grain tends to be too hard for animals to utilise and will pass through the gut without being digested. There is also a greater risk of grain drop during harvest and feeding out. As silage quality components come from the grain, late harvesting can result in poor quality feed.

Other points to note:

- Applying a full-rate strobilurin-based fungicide at full flag leaf/head emergence will have the biggest impact on quality.
- All fertiliser must be on by GS 39 to avoid problems with fermentation.
- If baling, avoid barley or awned wheats, the heads of which can cause animal health issues.

For more information see Arable Update 208.

Oilseed rape

Preparation for harvest

The indeterminate growth of oilseed rape can make it harvest a challenge. Timing is crucial to turning the potential yield into actual yield. There are three possible ways to harvest, and the choice of which to use will depend on a wide range of factors – consult a field rep to select the best option for your crop.

1. ***Windrowing***
   This allows the crop to even up so that the lower pods are able to be harvested with the upper ones. The seeds will usually reach a uniformity of moisture within 6-10 days of cutting. Losses from wind and hail are also reduced. Use when there is a large maturity variation in the crop.
2. ***Pushing***
   This gives similar yields to windrowing, and is useful in large paddocks. The plants remain attached to the roots, potentially improving grain fill and yield.
3. ***Desiccation***
   In areas where high winds are not a factor, desiccation is an option. Desiccate when 70-80% of seeds have changed colour in the middle pods (which is past optimal windrowing stage). Harvest 10-14 days after desiccation. This is a useful strategy on heavier soil types that keep the crop (or part of it) greener for longer.

Herbage

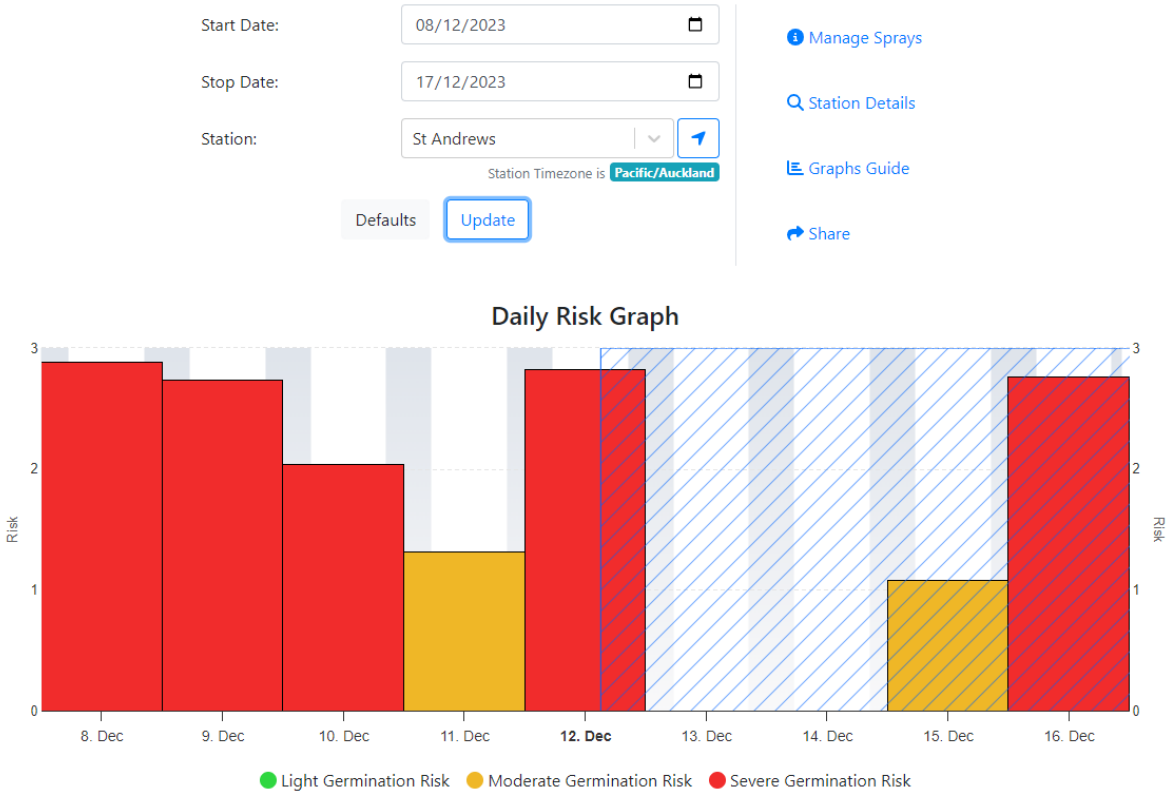
Management of multi-year grass seed crops

The Canterbury tall fescue seed harvest began last week, so now is the time to think about post-harvest management of multi-year seed crops. Next year's yield is influenced by how much light reaches the base of the plant as new tillers are emerging in summer, post-harvest, especially in tall fescue, but also in perennial ryegrass and cocksfoot. Removing crop residue and keeping the canopy low through autumn and early winter increased yield in FAR trials. See pages 10-12 of the 2023 ARIA booklet.

Stem rust management

Ryegrass seed crops are around the stage where they will be receiving a third fungicide treatment. Risk periods for stem rust in ryegrass crops are triggered by dewy mornings and prolonged leaf wetness.

A stem rust risk assessment tool, which is available on the FAR website as part of the weather platform (click on "Pests and Diseases" at the top of the page), is available to help identify risk in your crop. The image below shows an estimation of the risk of stem rust spore germination for the last nine days in South Canterbury. Growers should consider applying fungicides if crops are considered 'at risk' i.e. conditions have been dewy, the cultivar has susceptible genetics and is past GS 32.



Maize

Fall armyworm (FAW) update

There have now been 17 confirmed FAW reports this season, all from Northland. Growers are advised to keep scouting their crops and liaise with advisors for the best response should you find the pest in your crop. Early intervention is likely the best strategy. The insecticide Sparta® is on-label for FAW control on maize crops in New Zealand. Further information can be found here.

Maize Trading Protocol

The latest maize trading protocol (was revised 2022) which includes the use of John Deere's NIR for real-time dry matter assessment of the crop can be found here. Further work is currently being done to include similar technology from Claas into the industry protocol. We'll let you know when it's ready.

Current maize development stages and management decisions

Maize development is closely related to heat, so the amount of daily accumulated heat increases rapidly with warmer temperatures and increased daylength. Once row cover is achieved, all solar radiation is captured by the maize plant, whereas prior to row cover, any sunlight hitting the ground is considered to be 'wasted'.

Up until around growth stage V9, only about 5-7% of the total nitrogen and potassium requirements have been taken up by the plant. However, at around V9 (the grand period of growth) nitrogen and potassium demands increase rapidly. Above ground dry weight accumulation looks impressive at this time, but it is modest relative to the root development and root length. At V9 growth stage, maize root length can reach around 19,500 km/ha. By flowering, if soil compaction is not present, total root length can reach a staggering 159,000 km/ha. This root development is critical to meet the crop's nutrient and water demands during the energy-hungry grain fill period.

As side-dressing approaches, consider deepN testing to determine soil nitrogen levels. DeepN test results can confirm if it is possible to reduce nitrogen requirements. This is turn could reduce N fertiliser input costs and lower potential nitrogen losses. When selecting sample sites, avoid previous animal camp sites, gateways, and other factors that may provide a misleading soil N analysis.

For more detail on undertaking a DeepN test see information at FAR Amaize N lite resources, or contact your fertiliser representative, seed merchant, or David Densley at FAR (027 748 2327).

Weather Updates

Long-term seasonal outlook

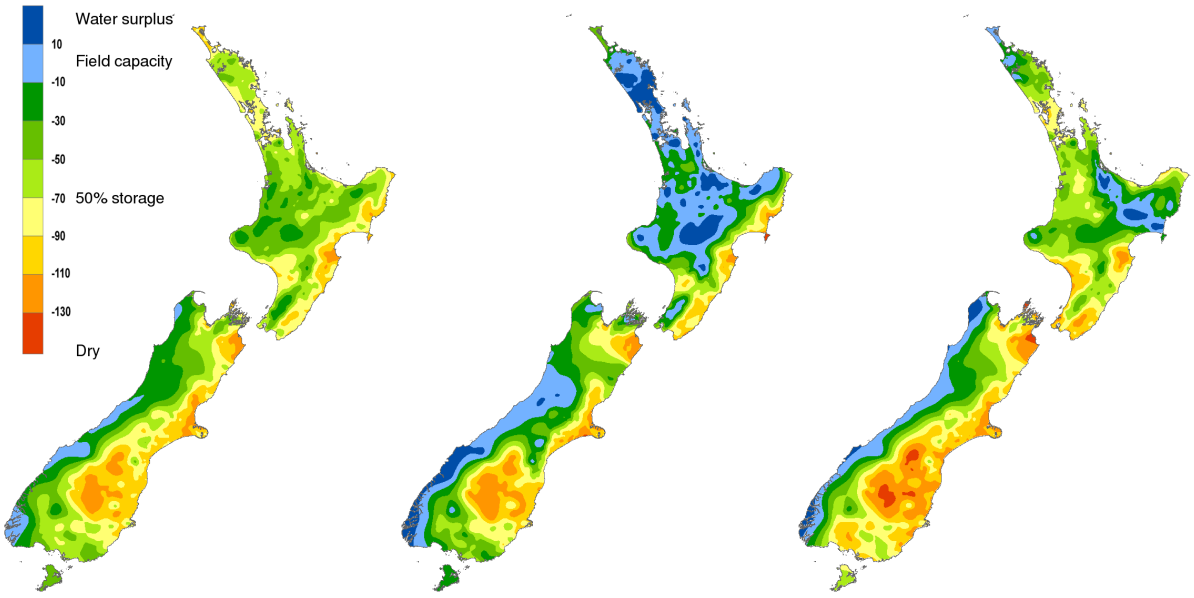
El Niño continues to dominate New Zealand's climate, although unusual ocean temperatures are also having an important influence. Northwest winds will be more common than usual across the country all summer long, but expect increased variability as well. The arable regions of New Zealand can expect rainfall levels either normal or below normal. Heavy rainfall events are likely from time to time, especially in Southland in the second half of December. Despite this, there is an increased risk of dry spells in other regions, which may contribute to water restrictions. Temperatures are most likely to be above average, with spells of hot, humid conditions forecast for December. Stronger winds than usual are also likely. Read more at the NIWA website here.

FAR weather tool

The FAR online weather tool is a great way to keep an eye on weather patterns and to compare the current season's conditions with those of previous years. You can check it out here. Click on the 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 how to how to make it better.

Soil moisture data - see more from NIWA here

Soil moisture deficit (mm) at 9am on 11/12/2023



Historical average deficit at 9am on 11 Dec | Deficit at 9am on 11/12/2022 | Deficit at 9am on 11/12/2023

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