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Editor's note

Canterbury has seen some timely, adequate rain in late spring and early summer, and is now experiencing the hot, dry weather necessary to finish off crops and begin harvest. There have been no surprises on the fungal diseases front, with fungicides generally doing their job well. Levels of yellow dwarf virus seemed to be slightly up on previous years following a mild winter, although this doesn't look like impacting yield too much in most cases.

In the Waikato, there has been some good weather for maize growth. Rain around Christmas followed a dry couple of weeks, and this has supported nice growing conditions. So far, the new year has been hot with decent amounts of sun; some of the drier areas of the research site are just starting to dry out and small areas of "pineapppling" are appearing. Rain is forecast early next week, which would be nice. Early-planted crops have moved through pollination and grain is starting to fill. Disease levels have been fairly low in the crops FAR monitors, and crops are generally looking good.

As always, January is busy for the arable industry. It's easy for things to slip through the cracks when there is so much going on, so make time to have a look through Crop Action, and ensure you have all the bases covered.

Crop management tips

General

Considerations at harvest

Harvest has begun for early crops on many farms around the country, although the bulk of the work is still ahead. 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 field days that ran towards the end of last year and would like to learn more about this important topic, listen to our podcast [here](#). You may also like to read an article (which can be found on page 10) from FAR's latest issue of [From the Ground Up](#).

If there are moisture probes in your paddock, make sure you either remove them prior to harvest, or clearly mark their positions, so they're not damaged by the harvest process. You can read more on this topic [here](#).

Post-harvest paddock management

It's time to start thinking about how manage paddock 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 at FAR show that a 9-week oat cover crop and compensated for some of the carbon removed from baling crop residue of prior crop and improved soil quality. Short-term cover crops with legumes can also supply additional nitrogen to the subsequent crop. The [2022 CROPS booklet](#) 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 maximised 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

Whole crop 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.
- 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](#).

Fungicide withholding periods for grain and forage in cereals

If you are using fungicides at this time of year it is essential to check that the withholding period for the product fits your intended harvest time (whether it is for a silage or grain crop). With standard crop management, there should be little risk of harvesting within the withholding periods listed for autumn sown crops. However, harvesting at the early end of the silage harvest window could put some crops at risk of not meeting the withholding periods from a GS 39-49 application of certain fungicides. Keep a record of application dates and calculate safe harvest times. Spring sown crops will generally have a shorter window from GS 39 to harvest, so extra care should be taken to ensure withholding periods are met. Withholding periods for common fungicide products used for cereal silage and grain production are listed below.

Table 1. Withholding periods for common fungicide products used for cereal silage and grain production.

Product	Active Ingredients	Withholding period for forage/silage	Withholding period for grain
Acanto®	Picoxystrobin	28 days	35 days
Adexar®	Fluxapyroxad + Epoxiconazole	28 days	42 days
Amistar®	Azoxystrobin	28 days	35 days
Aviator Xpro®	Bixafen + Prothioconazole	42 days	56 days
Caley® Iblon®	Isoflucpyram + Prothioconazole	42 days (Barley); 28 days (Wheat)	56 days (Barley); 42 days (Wheat)
Comet®	Pyraclostrobin	28 days	56 days
Delaro®	Trifloxystrobin + Prothioconazole	42 days	56 days
Elatus™ Plus	Benzovindiflupyr	28 days (Wheat only)	42 days (Wheat only)
Folicur® 430SC	Tebuconazole	28 days	49 days
Opus®	Epoxiconazole	42 days	42 days
Phoenix®	Folpet	28 days	None when used as directed
Proline®	Prothioconazole	42 days	56 days
Prosaro®	Prothioconazole + Tebuconazole	42 days	56 days
Protiva®	Trifloxystrobin	28 days	49 days
Revystar®	Mefenitrifluconazole + Fluxapyroxad	28 days	42 days
Questar™	fenpicoxamid	28 days	None when used as directed
Seguris Flexi®	Isopyrazam	28 days	42 days
Vimoy® Iblon®	Isoflucpyram	42 days (Barley); 28 days (Wheat)	56 days (Barley); 42 days (Wheat)

Herbage

Fungicide use in ryegrass seed crops and straw trading

The control of stem rust (*Puccinia graminis* subsp. *graminicola*) in ryegrass seed crops with fungicides comes with a number of considerations. Fungicide withholding periods are the most pertinent of these at present. This is of particular importance in crops where the residue (or seed/grain) for use as animal feed where a feed declaration form may be required.

As harvest approaches, carefully consider the options if fungicide treatment is required. Options are:

- Do not apply a fungicide that contravenes the specified withholding period (see Table 1). This may involve a yield loss if the disease is present.
- If a fungicide is applied that contravenes the withholding period, either burn or incorporate all crop straw and seed, ensuring livestock cannot ingest crop residues.
- Undertake a fungicide residue test, at the grower's cost, to ensure residues are at or below the maximum residue limit (MRL) for the product.

For all fungicide products, harvest is considered as cutting, not threshing.

Please check individual labels for generic formulations of common fungicide brands to make sure that the same label conditions apply. If in doubt, please contact your agrichemical supplier or the manufacturer directly.

Table 2: Fungicide withholding periods for products approved for use on ryegrass seed crops in New Zealand. Note that, for withholding periods, "seed" means that the seed crop should not be harvested within the period. "Grazing" means that stock cannot re-enter the paddock until after the period has ended, as long as straw has been removed. "Use in combination" means that it must be mixed with another, non-cross resistant fungicide recommended for control of the same disease.

Product	Active Ingredient	Resistance Management Group	Withholding period	Considerations
Opus®	Epoxiconazole	3	Seed – 21 days Grazing – 35 days	None
Proline®	Prothioconazole	3	Seed – 14 days Grazing – 35 days	None
Comet®	Pyraclostrobin	11	Grazing – 35 days	None
Amistar®	Azoxystrobin	11	Seed – 35 days Grazing – 28 days	None
Seguris Flexi®	Isopyrazam	7	14 days	Max. 2 applications of any Group 7 fungicide per season. Use in combination.
Elatus™ Plus	Benzovindiflupyr	7	Seed – 14 days Grazing – 28 days	Max. 2 applications of any Group 7 fungicide per season. Use in combination.
Vimoy® Iblon®	Isoflucypram	7	Grazing – 49 days Straw/stubble – 35 days	Max. 2 applications of any Group 7 fungicide per season. Use in combination. Apply up to GS61.

Determining seed moisture content in ryegrass seed crops

The determination of ryegrass seed moisture content (SMC) plays an important role in:

- Deciding if the seed is mature enough to harvest, and;
- Determining if seed is safe for storage.

FAR has produced a document on this topic for growers, outlining current best practice as well as some of the science involved. It can be found [here](#).

White clover seed crop desiccation

The time is approaching where growers will be considering their options for pre-harvest desiccation of white clover seed crops. A summary of recent FAR research on this topic can be found [here](#). The choice of desiccant can be affected by whether or not the crop will be used for stock grazing post-harvest.

Management of multi-year grass seed crops

Harvest for tall fescue seed crops began around Christmas in Canterbury, so you should already be thinking about how to manage the crop post-harvest if you are taking the crop through for another season. Yield in following years is influenced by how much light is allowed to reach 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. For more information, see pages 10-12 of the recent [ARIA booklet](#).

Maize

Fall armyworm (FAW) update

There have been further finds of FAW over the Christmas period, bringing the total to 31 this season, with the majority in Northland and 2 findings in Westland in the South Island this week. Second-generation moth flights may be observed soon, so check pheromone traps regularly as well as continuing to scout crops for signs of larval feeding. So far this season, populations of FAW appear to be small, localised, and within economic thresholds. There are also some encouraging signs of control being achieved with the *Cotesia* sp. Parasitic wasp. The insecticide Sparta® is also registered for control of FAW in maize. See the [latest FAW update](#) on the FAR website for more detailed information.

Maize flowering

Many maize crops are close to flowering (tasselling). The flowering period is known as the 'VT' (vegetative tassel) growth stage, where the maize plant transitions from the vegetative phase (the 'V' growth stages) to the reproductive phase (the 'R' growth stages). The time period from planting to flowering is mostly determined by ambient temperature, hybrid maturity, and planting date. Factors such as the type of establishment system (conventional cultivation, no-till or strip-till), previous crops, cover crop choice, planting depth, soil type, and soil conditions at and post-planting influence days from planting to emergence and early growth, thus also impacting on days from planting to flowering. Starter fertiliser type, placement, and application rate also have some influence on early growth and days to flowering.

Maize flowering duration is the most critical period within the entire growth period. While the potential kernels per row and length of row have already been set, the realisation of that yield potential is determined at this stage. The daily demand for nutrients, water, and sunlight peak at flowering, and any stress, particularly two weeks prior to and two weeks after flowering, will have a significant impact on final grain yield and silage quality. Table 1 highlights grain yield loss from four or more consecutive days of drought stress.

Table 3. Example maize grain yield loss estimates when stress occurs for four or more consecutive days. Adapted from Classen and Shaw, 1970; Rhoads and Bennet, 1990; and Shaw, 1988.

Maize Development Stage	Estimated Yield Loss per Day of Stress (%)
Early vegetative (VE - V12)	1 - 3
Late vegetative (V12 to VT)	2 - 5
Pollination to blister (R2)	3 - 9
Milk (R3)	3 - 6
Dough (R4)	3 - 5
Maize silage harvest (R5)	2 - 4
Maturity (R6)	0

Depending on the temperature and other factors over the flowering period, daily water demand peaks at around 4.5mm to 6.5mm/day, and remains at this rate for approximately 30 days. Nearly 70% of the total nitrogen requirements, 75% of the phosphorus, and 85% of the potassium have been taken up by the maize plant by the VT growth stage.

Root development is also completed at this stage, with a staggering 16,500km/ha or more of roots developed, provided soil compaction is not limiting root growth. Total stover yield (all the plant parts minus the cob) is set by VT which, depending on the hybrid maturity, is somewhere between 45% to 55% of the total maize silage yield on a dry matter basis.

In New Zealand, little to no additional agronomic practices are undertaken by maize growers at this late growth stage. With that said, the recent wet weather and overcast days could be conducive to leaf diseases occurring, and for fungicides to be effective they need to be applied prior to or at the early onset of the leaf disease. For further advice on leaf disease identification and control talk to your trusted maize advisor.

In summary, maize crops are currently at a key stage with regard to yield potential.

Weather Updates

Long-term seasonal outlook

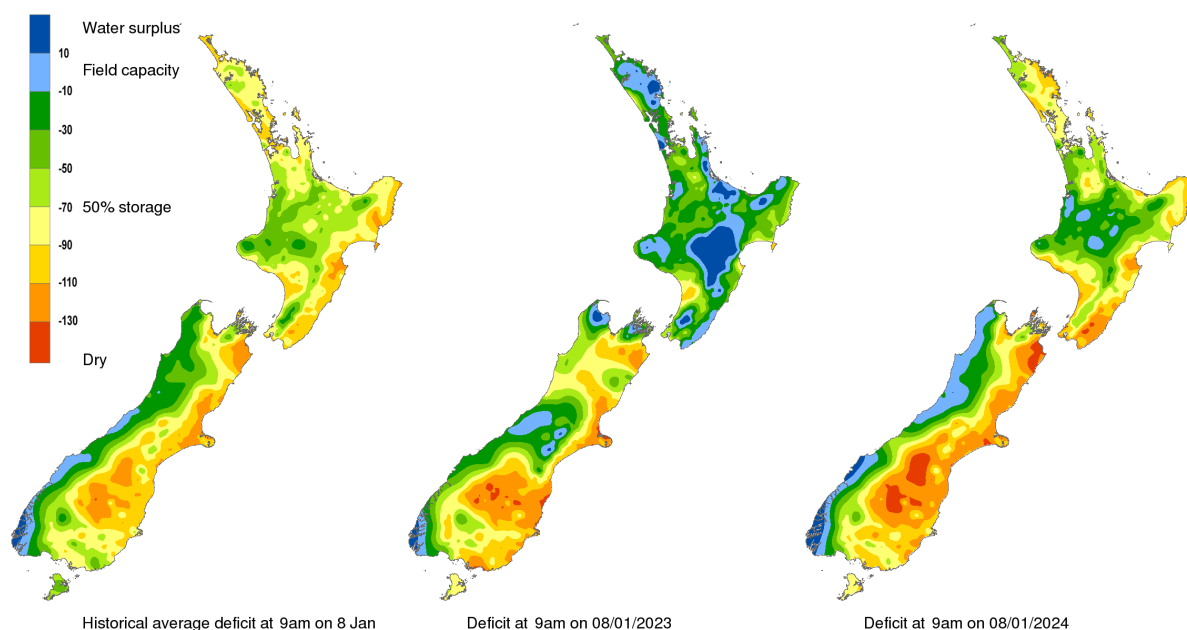
El Niño continues to dominate New Zealand's climate, and will continue to do so through to at least the end of March, although unusual ocean temperatures are also having an important influence. The upshot of this is that growers can expect more variable rainfall patterns than usual in an El Niño year, with heavy rain events possible in the second half of January, particularly in the North Island. Overall rainfall levels are mostly expected to be around normal for this time of year, except in Canterbury, Otago and Southland, where lower rainfall levels could be experienced. Some areas are experiencing unusual dryness already, and growers are encouraged to check out NIWA's [drought forecasting dashboard](#). All regions can expect above average temperatures and frequent north-westerly winds, some of which may be stronger than usual, especially in the South Island.

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 make it better.

Soil moisture data - see more from NIWA [here](#)

Soil moisture deficit (mm) at 9am on 08/01/2024



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