Crop Action

Edition 180 Friday 12 February 2021

In this edition of Crop Action:

Editor's note

With the exception of hard-hit cocksfoot crops in Methven, wind-damaged grass seed in Mid Canterbury and hail damaged areas in South Canterbury, cereal and seed harvests in the South Island are providing some pleasant surprises, with many farmers commenting that yields have been higher than they anticipated after the long, dry spring conditions in some areas. In FAR cereal and seed trials, some of our first yield data suggest the season may be close to longer-term averages, with average yields of 9.8 t/ha similar to the four-year mean of 10.0 t/ha in the dryland autumn sown barley cultivar performance trial at St Andrews, South Canterbury and 7.6 t/ha in the dryland crop at Gore, Southland; close to the four-year mean of 8.0 t/ha. For more detail on these and other trials refer to the first of our Harvest Snippets that are out now.

Further north, in some growing regions maize crops have started to show signs of stress from the dry conditions being experienced through the grain fill period. To see recent soil moisture and rainfall levels in these regions please see the link to our on-line weather map in the weather section below.

Crop management

Regional updates

South Island

Cereal and grass seed harvest is well underway. Weather conditions have been challenging for some, with good harvest days tempered by periods of rain and high humidity. These conditions have implications for white clover seed crops that may be carrying extra bulk, as they will need to be managed before harvest to maximize returns. See the Crop management section for information on pre-harvest management of white clover crops.

Grain or seed crops going into storage are likely to experience a temperature increase (sometimes as much as 10-15°C) when placed in a shed or silo. High temperatures mean the silos may need to be cooled or aerated to maintain seed quality as they increase the risk of mould development and insect infestation. Tips on keeping silos and surrounding areas aerated and clean can be found below too.

North Island

They say a week is a long time in show business. Well two weeks is a very long time for maize crops when above average temperatures, little to no rain, drying wind weather events, and low soil water levels, all align during the critical grain fill period. And this is exactly what has occurred for many areas throughout the upper North Island. As maize grain development continues at a rapid rate and maize crops progress towards maize silage maturity, and onto blacklayer for grain producers, stress of any type still has a significant impact on final yield and quality.

Reduced tillage can help to reduce the impacts of drought on appropriate soils. Recent FAR data from our long-term establishment trial provides information on the benefits or otherwise of reduced tillage on maize yields and economic returns on a light soil, prone to drought. If you are considering changing your approach to crop establishment to provide more resilience to drought, these data and results from on-farm trials in other regions of the North Island may be useful to consider.

Herbage

Desiccation strategies for white clover seed crops

Farmers are starting to desiccate white clover seed crops in preparation for harvest. Recent weather conditions could mean that some of these crops are quite bulky. Reglone® (active ingredient (a.i.) diquat) is the most common desiccant used, but remember that the effectiveness of diquat is limited when pre-harvest conditions are damp, so some untimely downpours could lead to regrowth, requiring follow-up treatments. Diquat has also been banned in Europe.

With these issues in mind, FAR has been conducting trials to identify alternative pre-harvest pre-desiccation and desiccation strategies for white clover seed crops. These trials have shown that when desiccating bulky white clover seed crops, applying a pre-desiccant treatment (e.g. MCPA) prior to the use of Reglone® increased seed yield. No differences in the dry matter (%DM) or seed yield were obtained when using different pre-desiccant treatments prior to Reglone®. Seed viability was not affected by any of the treatments. The use of GreenMan™ as a desiccant, instead of Reglone®, resulted in rapid re-growth and the crop had higher moisture content than diquat treatments and reduced seed yield if the product was applied more than 6 days before harvest. GreenMan™ could still provide an alternative should the use of Reglone® be restricted. Other alternatives such as Buster®, Granstar®, Roundup® and Versatill® may have uses in bulky crops or in wetter than average conditions, but post-harvest re-growth for grazing is also compromised. More information.

Maize

Managing for drought – the role of crop establishment practice

Regular occurrences of mild to extreme weather events continue to be part of the new norm for many regions of New Zealand, and reinforce the importance of good agronomic practices while applying maize production systems principles that contribute to healthy soils.

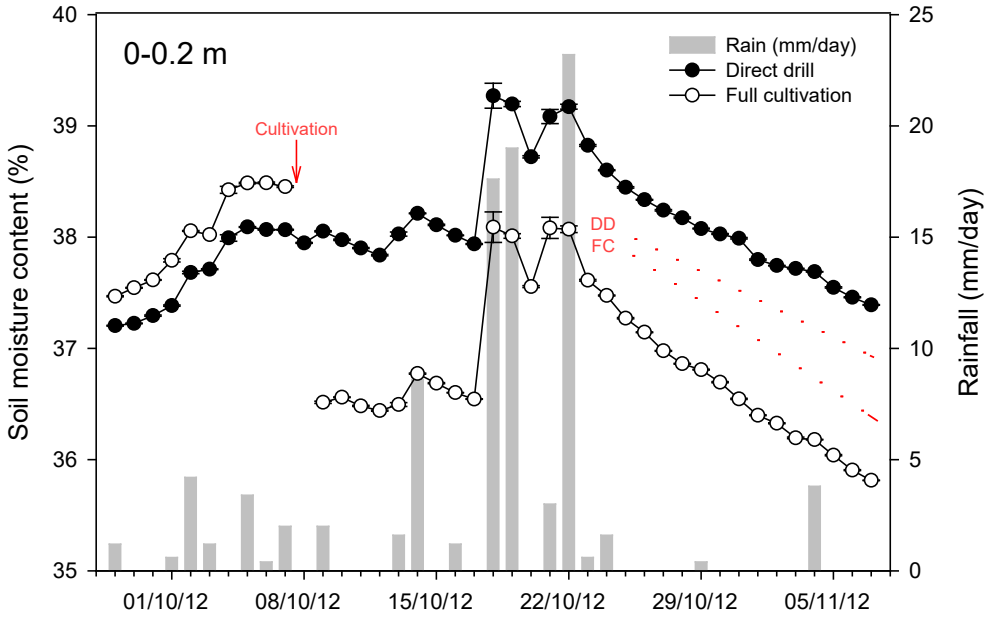
FAR has been running a long term replicated establishment trial since 2007 at the Tamahere Research Site in the Waikato. The establishment trial has followed the effect of full cultivation, strip tillage and direct drill establishment on crop development, yield and soil quality. In the trial, there has been no significant effect of establishment practice on maize grain yield at this site, the exception being in 2007-08 when maize grain yield in direct drill treatment was 3.6 t/ha greater than fully cultivated treatment.

The 2007-08 season was dry (growing season rainfall was half (260 mm) the long-term average (500mm).

In 2012-13, we began monitoring soil moisture in direct drill and fully cultivated plots to 1.2 m using TDR sensors and neutron probe to understand why there was an advantage of direct drill in dry years. The data collected during this year showed a very clear effect of cultivation, with an immediate evaporation of more than 2% (or 4 mm in the top 0.2 m) (Figure 1). On average the soil moisture content in the direct drilled plots remained 2-3% higher (i.e. had 24-36 mm more moisture in top 1.2 m) for the duration of the season (data not provided) indicating that cultivation resulted in an immediate loss of water and that this was never recovered.

This data and the potential for reduced tillage to enhance soil moisture retention will be discussed at our upcoming field events in the Waikato.

Figure 1. Effect of disturbance on surface soil moisture in the first 4 weeks after cultivation (2012/13) - note: no crop was planted in these areas



Cereals

Glyphosate and cereals

Glyphosate has an important role in arable systems, especially around crop establishment. However, any use during the lead up to harvest can result in grain being rejected due to residues and increase the risk of herbicide resistance.

FAR has carried out trials looking at the influence of glyphosate use, within three weeks of harvest, on residue levels on autumn sown wheat and barley, and on oats. FAR has also surveyed commercial autumn sown wheat and barley crops in the Mid Canterbury region. In all instances, the use of glyphosate within three weeks of harvest resulted in residues above the Default Maximum Residue Limit, which is 0.1 mg/kg (or parts per million - ppm) in New Zealand. Residues in autumn sown barley were found at significantly higher levels than in the other crops. FAR is currently investigating alternatives to glyphosate for late management of cereal crops.
Click here for information around Good Management Practices for Glyphosate.

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 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	Latest application growth stage	Withholding period for forage/silage	Withholding period for grain
Acanto®	Picoxystrobin	69	28 days	35 days
Adexar®	Fluxapyroxad + Epoxiconazole	69	28 days	42 days
Amistar®	Azoxystrobin	69	28 days	35 days
Aviator Xpro®	Bixafen + Prothioconazole	Not specified on label	42 days	Wheat - 56 days, Barley - Do not apply after late boot stage
Bolide®	Epoxiconazole + prochloraz	69		42 days
Caley® Iblon®	Isoflucpyram + Prothioconazole	69 (wheat), 61 (barley)	42 days (Barley); 28 days (Wheat)	56 days (Barley); 42 days (Wheat)
Comet®	Pyraclostrobin	59	28 days	56 days
Delaro®	Trifloxystrobin + Prothioconazole	Not specified on label	42 days	56 days
Elatus™ Plus	Benzovindiflupyr	69	28 days (Wheat only)	42 days (Wheat only)
Folicur® 430SC	Tebuconazole	Not specified on label	28 days	49 days
Kestrel®	Prothioconazole + Tebuconazole	Not specified on label	42 days	56 days
Opus®	Epoxiconazole	69	28 days	42 days
Phoenix®	Folpet	39 (wheat), 59 (barley)	28 days	None when used as directed
Proline®	Prothioconazole	Not specified on label	42 days	56 days
Prosaro®	Prothioconazole + Tebuconazole	Not specified on label	42 days	56 days
Provita®	Trifloxystrobin	Not specified on label	28 days	49 days
Revystar®	Mefenitrifluconazole + Fluxapyroxad	69	28 days	42 days
Questar™	fenpicoxamid	69 (wheat only)	28 days	None when used as directed
Seguris Flexi®	Isopyrazam	69 (wheat), 59 (barley)	28 days	42 days
Vimoy® Iblon®	Isoflucpyram	69 (wheat), 61 (barley)	42 days (Barley); 28 days (Wheat)	56 days (Barley); 42 days (Wheat)

Crop residues – burn, bale or incorporate?

Do you have a clear idea of the nutrient value of crop residue? An easy to use tool on the FAR website allows you to calculate the economic cost of straw nutrient losses from your farm. The figures for bale weight and fertiliser prices (written in red text) can be altered to provide tailored results. Calculate the nutrient value of your straw. Calculate the nutrient value of your straw.

Whole crop cereal silage harvest timing

Key points:

- 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.
- The ideal harvest time is when the crop is 30-46% DM and grain has a cheesy-dough consistency.
- Harvesting equipment and additives to the stack can help overcome some issues associated with harvesting outside of the harvest window.
- NIRS testing of cereal silage which is based on pasture standards does not provide accurate results for whole crop cereal silage and in general, underestimates ME by an average of 1 unit of MJ/kg DM.

For more information see Arable Update 208 or Cereal silage crop management: current state of knowledge.

Grain storage

Keep checking that silos and surrounding areas are thoroughly clean.

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:

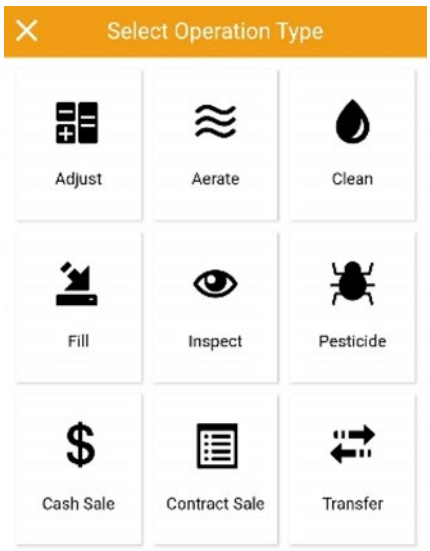
- Sweeping the base of the silo.
- High-pressure wash of all surfaces inside the silo with water.
- Spray herbicide around the base of the silo, to remove any long grass so that pests do not have anywhere to hide.
- Ensure offal from the silo is dumped well away from the silo, or bury/burn it.
- Spraying 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).

Table 2. Products, active ingredients and rates that can be used to treat a silo after emptying and before filling.

Product	Active Ingredient	Rate
Smoke treatments		
Grainmaster® Supersmoke®	100 g/kg pirimiphos-methyl 50 g/kg of deltamethrin	1/333 m^2
Silo® Smoke	135 g/kg permethrin	1/70 t silo
Dust treatments		
Actellic® Dust	20 g/kg pirimiphos-methyl	Liberal application
Silo® Dust	20 g/kg pirimiphos-methyl	Liberal application
Silo® Eco	90% inert diatomaceous earth	10 g/m^2
Liquid treatments		
Actellic® 50EC	500 g/L pirimiphos-methyl	100 mL/10 L water
Fyfanon® 440EW	440 g/L maldison	570 mL/10 L water
Silo® EC	500 g/L pirimiphos-methyl	100 mL/10 L water

For more information see Cereal Arable Updates:
No. 210 Understanding stored grain pests
No. 211 Regular monitoring protects grain quality

Grain recording in ProductionWise®



Keeping track of grain on farm and beyond is important for financial and quality assurance purposes. It's a job that can be made easier by using the Grain module of ProductionWise®, FAR's integrated online farm management system for New Zealand cropping farmers.

ProductionWise® Grain allows you to record silo-cleaning regimes, pesticides applied to grain, contracts, and the sale of grain. Any insecticides used for the cleaning of silos can be recorded, along with monitoring records from throughout the storage period. ProductionWise® provides a comprehensive record from paddock through to sale, resulting in a high level of traceability of the crop and grain/seed. The Reports module has the ability to generate an industry approved vendor declaration/traceability form covering treatments and actions from the paddock through to storage.

Above: Options on the ProductionWise® Grain Storage App.

Aeration of stored grain

Producing a high-quality crop is one thing, maintaining the viability and quality of the grain during storage is another. Aeration in silos can help cool the grain, by manipulating grain temperature and moisture. The main purposes of aeration are to prevent mould formation, prevent insect development, maintain seed viability and control grain moisture levels.

Cooling aeration

Continual aeration: As soon as grain has entered storage it should be continually aerated for 2-3 days to achieve maximum airflow. However, be cautious of over aerating at high relative humidity (85% and above) as moisture content can increase.

Rapid mode aeration: This method aims to reduce grain temperature quickly by running fans for the coolest 9-12 hours of the day for 3-5 days.

Maintenance aeration: Run fans for the coolest periods, averaging 100 hours/month. This is made easier with a controller to monitor ambient conditions.

Drying aeration: A slow process that requires a specifically designed system. Aim to have a high volume of air passing through the grain to reduce moisture content.

Four components of drying

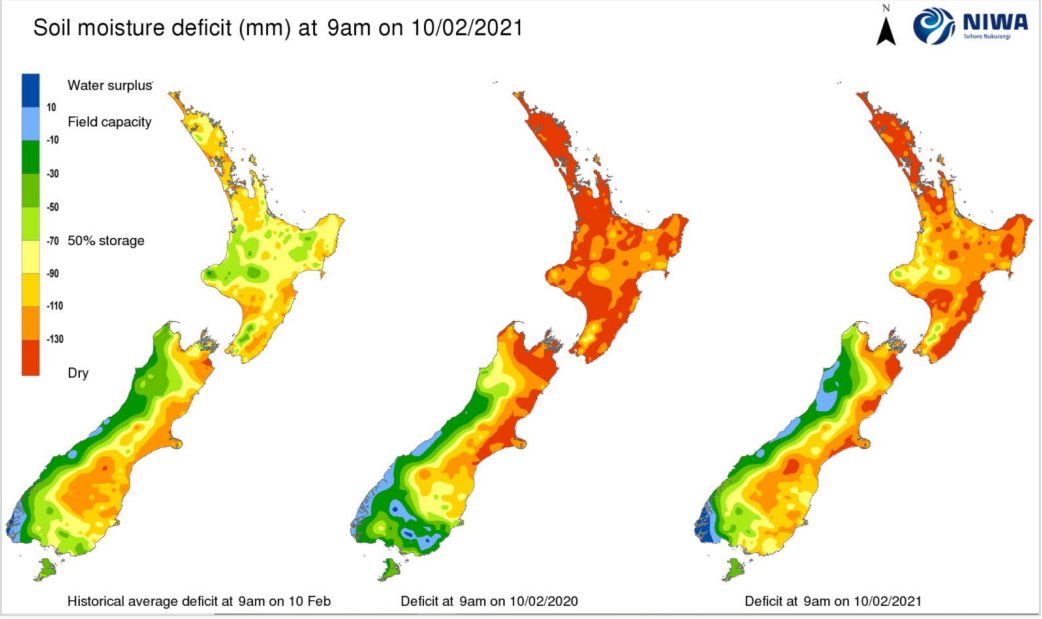
The speed and effectiveness of drying will be improved by high volume airflow, even airflow created by well-designed ducting, silo roof exhaust vents and dry/warm weather conditions. The drying process consists of two phases:

- **Phase 1:** Run for 5-7 days as soon as ducting is covered to push dry air through the grain.
- **Phase 2:** Monitor temperature and relative humidity and be selective with running times to match relative humidity. For example, wheat at 15°C and 14% moisture has an equilibrium point of 66% RH. To dry the grain below this, the fans would need to turn on when the RH drops below 66%.

Remember that as grain dries, there will be an associated loss in grain weight. Use AHDB's handy Grain Moisture Calculator to calculate the weight loss associated with drying a tonne of cereals.

Weather

Soil moisture data



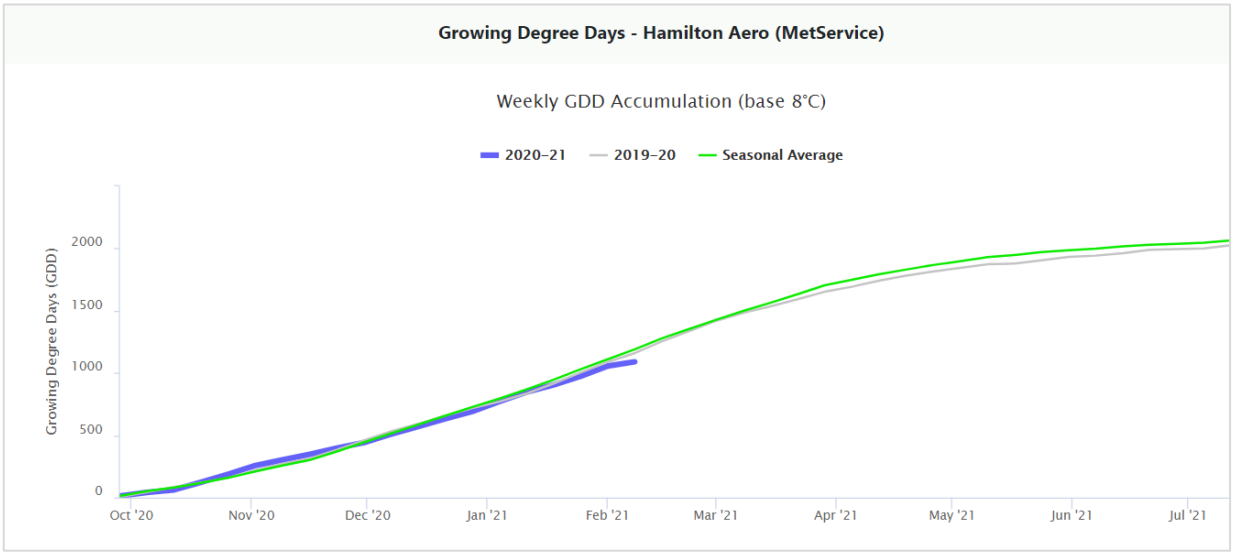
See more information on the Soil Moisture Deficit Map.

NIWA prediction

NIWA predictions for February-April 2021: Temperatures are most likely to be above average in the north of the North Island and about equally likely to be near average or above average in all other regions. Air pressure is forecast to be higher than normal in the New Zealand region and lower than normal to the north of the country. This is expected to be associated with mixed easterly and south-westerly quarter air flow anomalies. Rainfall is about equally likely to be near normal or below normal in the north and east of the North Island and west of the South Island. Near normal rainfall is expected in all other regions.

FAR weather tool

If you want to keep an eye of the growing degree days in your area, 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 making it better.



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