Crop Action

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Editor's note

We are now into the final month of winter, and there are some warmer days here and there as the number of daylight hours increases. Crops that were in the ground from autumn are putting on some biomass now and soon we will be needing to think about disease and pest control, as well as spring weed management strategies. Many growers will also be thinking about what their spring plantings will be looking like; if you are planning on planting spring cereals this season, FAR's latest issue of the CPT booklet for spring-sown wheat and barley cultivars was recently released.

FAR is continuing to release videos on its YouTube channel; we are currently working through releasing recordings from FAR's recently-held winter conference. If you missed out this time, these videos are high quality and well worth watching. Don't forget to like and subscribe!

Crop management

General

Wild oat management

Many growers are becoming increasingly aware of the issue of herbicide resistance, particularly in Canterbury. While ryegrass species remain the number one concern in terms of frequency of cases across New Zealand, wild oats (*Avena fatua*) are not far behind, and can become a big headache if they get out of control due to the loss of herbicide effectiveness. In herbage seed crops, wild oats are not allowed in the field at crop inspection (tetraploid ryegrass and brome species) or in seed samples at seed testing.

Management of wild oats starts in early spring, but planning for it should begin now. Cool, moist conditions promote maximum emergence. The key to managing wild oats is an integrated approach; start by walking your crops in early spring. If plants are identified, rogueing is an effective way of reducing wild oat pressure.

Wild oat control is often managed using herbicides, with the most effective options generally being those containing Group 1 Mode of Action active ingredients such as pinoxaden (Twinax® XTRA) and fenoxaprop (Puma® S and others). While these products remain effective if used correctly in most cases, herbicide resistance to Group 1 chemistry in wild oats has been detected at multiple locations across many regions of New Zealand in random surveys. Anecdotal evidence suggests it is widespread, particularly in Canterbury, and growers need to have a plan for how to deal with escapes.

Post-emergence options for wild oat control in ryegrass seed crops are particularly limited. Fenoxaprop (Mode of Action Group 1) has been the main go-to for growers, but if resistance is known or suspected, few alternatives exist. Products containing the Group 0 active flamprop (Crusader™, Stratos®) are registered for wild oat control in ryegrass, but there are reports of reduced effectiveness in this situation, which may or may not be due to evolved resistance, as this has never been tested.

Remember that your best weapon against herbicide resistance is a robust rotation that allows the use of other herbicide modes of action. In the case of wild oats, trifluralin and propyzamide are effective, so crops like oilseed rape or peas can help control a wild oat resistance issue.

Click here to see a list of herbicides registered for use on wild oats in cereals, pulses and ryegrass.

Soil testing

Soil quality is an important component of growing profitable crops. A test that is useful and appropriate to carry out at this time of year is the **MiniVSA** (Mini Visual Soil Assessment) that FAR has developed specifically for arable farmers. This is a 30-minute DIY soil quality test that can be carried out by anyone with only a few simple pieces of equipment that every farmer should have on hand already. The method can be found here.

For more on getting the most out of what's in your soil, check out this video from FAR's Dirk Wallace.

Grass grub management

The big news recently for grass grub control has been the withdrawal of EPA approval for chlorpyrifos, the active ingredient in suSCon Green®. There is an 18-month phase out period for this product. Alternative products are few and far between when it comes to grass grub control, with biological control likely to be the only realistic option.

Grass grub may also be continuing to feed through winter – you can check by digging up a few spade squares in affected areas and seeing what the grubs look like. Larvae that are close to finishing, or have finished feeding, have fat yellowish bodies that make it difficult to see any soil in their gut. Once they finish feeding, they will move deeper into the soil profile and prepare to pupate. If larvae have finished feeding, control is not required (and is also very difficult). Here are some things to consider when managing grass grub as spring approaches:

When will feeding stop? Generally, during the one-year life cycle, larvae stop feeding and travel downward in the soil profile in July and August. Periods of limited food supply (living roots) will extend the duration of feeding into spring.

When will plant growth resume? From Canterbury south, soil temperatures are still below the 6°C required for growth of many arable crops. Growth will resume as soil temperatures increase in spring, this growth allows seedlings to tolerate a low level of attack, but when roots completely disappear plants will die.

How to promote plant growth? Where damage has occurred, consider applying nitrogen and sulphur as soil temperatures warm to promote tillering and growth. Remember that in cereals, tillering stops at the beginning of stem extension and subsequent compensation is through tiller survival and grain head size.

Map areas of damage for next year. Mapping 'hot spots' in paddocks now will allow for targeted control in late summer and autumn in preparation for the next growing season. Adults lay the majority of eggs close to their emergence location.

Further resources:

- Guidelines for the use of biopesticides
- Arable Extra – Chemical control of grass grub
- FAR Annual Research Results 2022-2023 (Cereals) see reports on p94 and 106

Cereals

Planning for spring sowing

The latest edition of FAR's Cultivar Performance Trial (CPT) booklet is out now – containing results for spring-sown cultivars. You can read it here, if you haven't already. When it comes time to plant, it is important to get the best out of establishment. Some common establishment issues management tips are listed below.

- **Seed bed:** A trashy seedbed may reduce seed/soil contact, thereby reducing germination, while a compacted seedbed may restrict emergence. A seedbed with large clods may also force emerging seedlings to become deformed (and therefore weakened) in their attempt to emerge.
- **Sowing depth:** Sown too shallow, seed may be subject to bird damage and susceptible to drying out. If sown too deep, young plants will struggle to emerge and may be weak and therefore prone to disease or may become deformed. Check that your drill is placing seed at its optimum depth.
- **Nutrition and moisture:** Plant roots follow the easiest path for growth, so nutrition should be placed near the roots. Some fertilisers, however, will "burn" seedlings, so they must be placed out of direct contact with the seed. Moisture is essential for seed germination. Once germinated, the young seedling is also very fragile and may dry out rapidly if there is insufficient moisture in the root zone. Too much moisture (waterlogging) will mean oxygen starvation, which will lead to germination failure or seedling death.
- **Weeds, diseases and pests:** Weeds will compete with the crop for light, moisture and nutrients. Weeds may potentially be more of a problem in thinly sown (or poorly established) crops. The main disease problem for emerging seedlings is fungi affecting the new roots, and these are more likely to occur in a cool, damp environment when seedlings are less vigorous and therefore more prone to attack. Seed treatment with fungicides may be beneficial if seed-borne diseases are a concern, but these treatments may also delay crop emergence. A wide range of pests can cause problems - slugs, weevils, grass grubs, etc. If these are present, control options need to be evaluated.
- **Time of sowing:** Sowing crops in early autumn or late spring, when soils are warm and moisture is (hopefully) ideal, should speed up germination and increase seedling emergence rates.

Silo maintenance

FAR has received some reports of growers concerned about insect infestations in silos. Grain does seem to be hanging around in storage longer than usual in recent seasons, so this is a good time to check on your stored grain so that you know if there is an issue now, rather than having the problem discovered on delivery!

If you do find insects, to get rid of them and prevent future infestations, you will need to combine good hygiene, monitoring and targeted treatment.

One option is to fumigate, which requires using a licensed fumigator. Fumigants will provide knockdown, and perform best in airtight units, which aren't as common in New Zealand as they are in Australia.

Another option is to move grain to a clean grain store or silo. Movement can help with air circulation, which helps bring down the grain temperature if it has crept up over the winter. You may wish to consider surface treating the empty grain store or silo first. Remember to check all the surfaces, including any augers and equipment, as some insect species are able to survive for long periods in small pockets of spilt or residual grain, and they can often travel from one grain store to another. You may also wish to re-treat grain as it is augered into the new silo. Aeration cooling can also help, and while it may not eliminate the need for chemical insect control, it will slow insect development and help maintain grain quality. The longer grain is in storage, the higher the risk, so make sure to monitor.

You can find out how to identify and monitor for grain storage pests here.

Options for treating stored grain can be found here.

Cereal grazing

FAR has received a few comments and inquiries about grazing of wheat crops being grown for grain. While this is not common practice in New Zealand, anecdotal evidence suggests more growers are deciding to give it a try. Wheat can provide a valuable source of high-quality forage during winter when other options are limited. FAR has conducted little research on this topic, but if you'd like to give it a go, there are some things to keep in mind:

- Grazing should be before GS31 (stem extension). When this guideline is followed, some overseas research has shown that grain yields may even be improved.
- Other possible benefits include improved weed control and a reduction in the incidence of some diseases. Soil quality may be improved in some situations.
- Some cultivars may be more suited to grazing than others. Talk to your agronomist or seed company representative if you are unsure.

Further resources that may interest you:

- Grazing of the wheat grain crop
- British article on grazing wheat to keep down brassica volunteers

Aphid monitoring

There have been a few warmer days lately, but aphid populations on FAR's monitoring sites remain at or close to zero. Early in the season there were some indications that this could have been a higher risk season, but weather events quickly turned that around. Monitoring will continue monthly for now, and when the weather warms up in spring this will change to more frequent reporting. You can keep up with the latest information at Aphid Chat. Indications are currently that this will be a lower aphid pressure season, but we don't have enough full seasons' worth of data to say for sure, so keeping an eye on aphid pressure in your region will be advisable as the weather begins to warm up.

Herbage

Nitrogen on grass seed crops

Soil testing is a key activity that should be happening now in ryegrass seed crops. A ryegrass seed crop needs a total of about 172 kg N/ha (applied N plus soil mineral N), but this can be reduced by 20-30 kg/ha if there is adequate potentially mineralisable N in the soil. Avoid applying large amounts of N fertiliser to ryegrass seed crops too early, as this can lead to lodging.

- Nitrogen: The confidence to cut back, FAR Focus 14
- Nitrogen use on ryegrass seed crops
- Video – getting your nitrogen right

Sow thistle management

Now is the time to be thinking about sow thistle management in white clover crops. The key timings for chemical control utilising 2,4-D ester (Group 4 Mode of Action) are during July and August before temperatures warm up. The sub-species of sow thistle present in your crop may influence levels of control.

FAR trials in the 2020/21 season identified some additional herbicide options for sow thistle control. Products containing MCPA (Group 4) such as Agritone® and Tropotox® were effective, but suppressed yield when applied in July. Better results were obtained when application was made in August and September. For more information see:

- Identifying sow thistle
- Annual Research Results 2020/21 (pages 57-59)
- Annual Research Results 2019/20 (pages 48-52)

Oilseed Rape

Crops may be nearing early spring fertiliser applications. Oilseed rape has a higher requirement for sulphur than most other crops, so sulphate of ammonia (SoA) is usually the product of choice. Sulphate is available to the plant more quickly than elemental sulphur, which needs to be converted to sulphate by soil bacteria, which can take 6-12 months. Another advantage over urea is that ammonium is less prone to volatilisation and leaching. The amount and timing will depend on canopy size, soil N, and soil moisture. Your agronomist can assist with this, but some good points to note are:

- Boost the fertiliser rate if the crop is looking poor, up to 250 kg/ha, or mix urea with the SoA. An earlier application may also be appropriate.
- If soil N is high and the crop is healthy, consider delaying and/or splitting the application.
- Potassium (K) will also be needed by the crop in early spring – know your soil levels and add extra K as needed. Consult your agronomist for further information.

For some extra info and presentations from FAR staff and others, you may be interested in this video from an oilseed rape grower conference held in Timaru this time last year.

Maize

Hybrid selection

Maize growers in the planning stages for next season may be weighing up the relative benefits of the various hybrids that are available. The ongoing increase in maize yield potential from modern maize hybrid genetics is testimony to maize breeders, and provides maize producers plenty of opportunity to increase yield beyond what is currently being achieved.

A list of the critical considerations for maize hybrid selection includes:

1. *Defining the number of days available for maize production.* Typically, this starts by identifying your targeted harvest date, the likely planting date period, and then from the start and end point determining the number of growing days available for maize production. This will then determine whether you require a short, medium or long maturity hybrid.
2. *Timing of flowering.* Maximum yields are achieved when flowering occurs close to the longest day as this allows the maximum amount of solar energy to be captured. The added benefit of flowering close to the longest day is that soil moisture levels are often higher than later in the season. Maximum water usage and maximum dry matter accumulation both occur around flowering time, so soil moisture content at flowering is a critical point to consider. Choosing a hybrid and planting time that meet these criteria should be part of the decision-making process - in addition to point 1.
3. *End use*. Obviously for grain production grain yield is critical, but it's also a very important trait for maize silage producers as it helps to drive milk or meat production. For silage producers, plant "stay green" (the ability of a plant to have a slow plant dry down) is an attractive hybrid trait as it widens the harvest window.
4. *Hybrid traits*. This includes early vigour, stalk and root strength, leaf and grain disease resistance, drought tolerance, plant digestibility, grain type etc. Depending on your growing region, some traits are more desirable than others, for example if you experience strong winds during the growing season then root and stalk strength are important hybrid traits. Conversely, those farmers using no-till planting early in the growing season, or farmers in the southern regions of Canterbury require hybrids with good early growth characteristics.
5. *Seed treatments*. Advances in on-seed fungicide, insect control and biostimulants provide plenty of options to ensure seedlings are protected from soil-borne diseases and insects, while providing an early season growth boost in certain circumstances. Don't be afraid to ask to see replicated trial results for any new products.
6. *Seed quality*. While this is not a function of hybrid genetics, it is essential for your seed company to provide high quality seed to ensure maximum germination and early season vigour.

Maize seed companies within New Zealand provide significant expertise in the hybrid selection process; use their knowledge, along with that of your agricultural retailer and local contractor, should be utilised to fine tune hybrid selection specific to your environment and end use.

Lime application

The optimum soil pH for maize production is around 6.0. If you missed the autumn window for lime (calcium carbonate) application, it's not too late to get it on the ground and still see the benefits this season.

For soils with high clay content and where pH is currently at or around the optimum pH, consider applying gypsum (calcium sulphate). Along with supplying plant available sulphur, the calcium in gypsum can also help improve soil structure, soil aeration and water percolation through the soil profile. Seek advice from your fertiliser company or rural professional adviser for more detail.

For additional information on uniformly applying lime see the following paper:

- Important considerations for uniform application of lime (or gypsum) Reducing variability in lime application by ground spreaders

Weather Updates

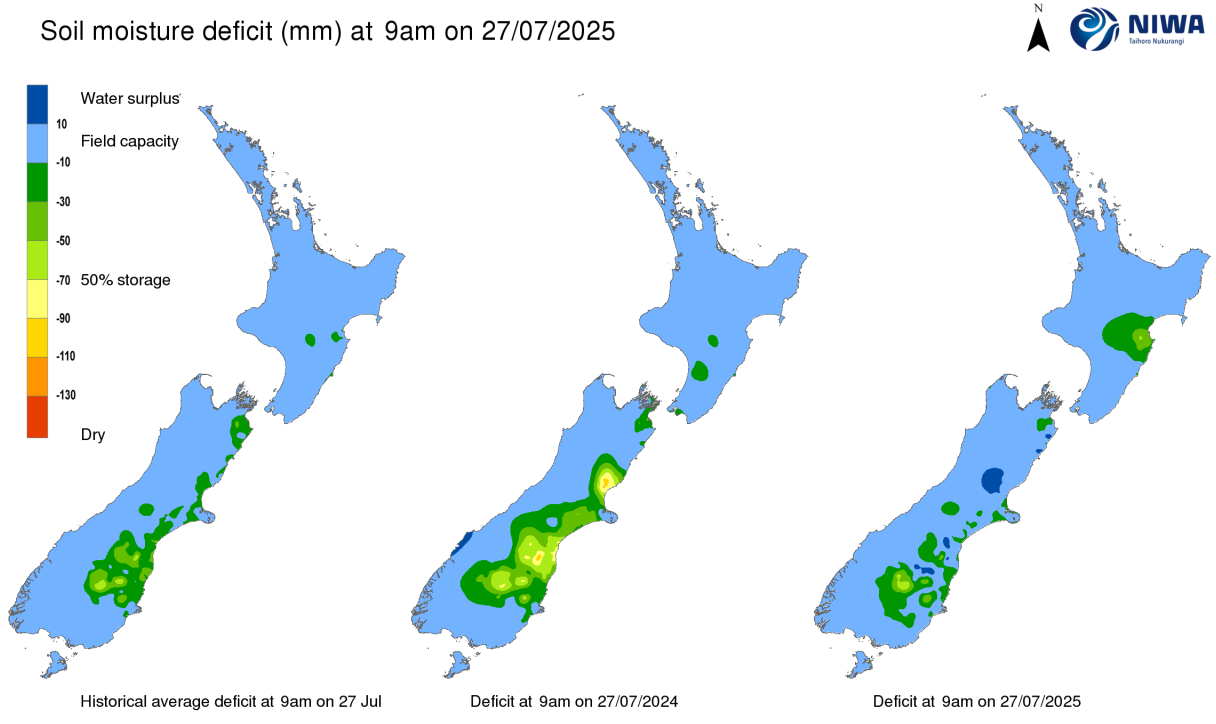
Long-term climate outlook

The seasonal climate outlook for July-September from Earth Sciences NZ (formerly NIWA) shows a fairly stable system, with the chances for La Niña conditions to develop by the end of the year diminishing to around 30%. However, tropical and sub-tropical influences on New Zealand's weather could be significant, leading to an increased risk of heavy rainfall events throughout the three-month period. Cold snaps and frosts are expected to be less frequent than the average, with air temperatures across the board likely to be above what is normal for the time of year.

FAR weather tool

The FAR online weather tool is a great way to track 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 weather station closest to you 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.



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