# From the Ground Up™

ISSUE 80 | Summer 2015

ADDING VALUE TO THE BUSINESS OF ARABLE FARMING™

FAR®

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## This Issue






# Welcome to 2015

In January we ran eight events which were attended by around 300 people – a great start to the year.

This year FAR turns 20, and will be celebrating with a conference in Ashburton. See page 11 for more information on this event and pencil the dates in your diary now: 23-23 July. CROPs 2014 was a great success – see the photos on page 25 and we are now starting to discuss topics for ARIA which will be held at Chertsey on 2 December. We are also considering a major field event at WARS later this year or early next. We will let you know more details as they come to hand.

As a levy funded organisation, FAR works with, and for, arable farmers. We are fortunate to have access to a growers' farms in all seven of our regions for trial work – their generosity provides information for all growers. One current project which relies very much on growers is Forages for Reduced Nitrate Leaching (FRNL). This six year, MBIE funded, collaborative project, and the arable farmers involved with it, is outlined on pages 8 and 9.

Another way we work with growers is on our various consultative committees. Arable Research Groups (see page 23) form a key part of grower communication network, providing feedback on current research and raising awareness on impending issues.

The current near-drought conditions have put the spotlight back on water. FAR does not work in the policy space, so is not actively involved in water and nutrient politics, however, we are involved in a six year MBIE-funded research programme aimed increasing water and nutrient use efficiency. For more information about this collaborative project, see pages 15-17.

The above issues are just some of the things FAR will be working on in 2015. If you have any other ideas for research projects, please contact a member of your local ARG (listed on the FAR website), or contact FAR directly.

Anna Heslop

# How important is yield?

New Zealand farmers are achieving world leading yields (tonnes per hectare) for many crops. We can pride ourselves in using the best technologies and farming skills to achieve these yields – but are we asking the right question?

Is the land we farm giving the best dollar return on our investment within the broad constraints in which we operate? For years we have generally used yield as a surrogate for productivity, and generally, choices for land use revolve around the total yield potential of individual crops. Some crops are included in the system as break crops to improve the long term productivity of the land, and often their profitability is discounted due to the overall contribution to the cropping programme and land use.

When discussing yield gain in the livestock industry, average daily weight gains are a fundamental component. Is this an approach that would work for the cropping industry? What is the productivity of cropping land, based on day by day gains, but measured over a long time frame with different crop options or the same crop planted at different times?

To answer this question, FAR has used values (input costs, average yields) from farmers' crops entered in ProductionWise® and crop prices from Profarmer to determine Gross Margin in dollars per day that a crop is in the ground. This exercise has shown that crops that were in the ground for a shorter period through summer generally accumulated value at a greater dollar rate per day than those which were in the ground for longer. However, it is important to match these short season summer crops with winter productive ones.

Cereal silage usually increased in value more rapidly than the equivalent cereal for grain, due partially to the earlier harvest date and fewer days in the ground. For example, barley sown for cereal silage, in either autumn or spring, accumulated gross margin at approximately $3.00 more per day than when the equivalent crop was grown for grain. Although later sowing usually results in lower yields, barley sown for grain in May accumulated value at only $10.80/ha per day, whereas September sown barley accumulated value at $12.96/ha per day and mid-October sown barley accumulated value at $13.13/ha per day. Other crops are very yield sensitive in relation to gross margin in dollars per day, with a 4.4t/ha crop of seed peas accumulating value at $18.61/ha per day whereas the same crop yielding 3.4t/ha only accumulated gross value at $11.68/ha per day.

Paddock recording systems such as ProductionWise® will help provide information so this analysis can be done for all crops and can be used to help decide which crops should be used in the rotation – assuming there is a choice of crops available. It also assumes that you can fit these crops together into a profitable rotation and that any downtime between crops is minimal.

So the question is…what are the crops, the sowing windows and end uses that, when combined in a rotation will accumulate the greatest rate of gross value over a two or three year period? Often this will be determined by which crops are available to grow through the winter. For example, if the spring sown crop is barley for silage, at 128 days in the ground ($16.54/ha per day), what crop will complement this and increase value for the rest of the year? If the other crop was autumn sown oats for grazing, which is in the ground for 165 days and accumulates gross value at $6.36/ha per day, the combined days of crop is 293 with the combined gross value accumulating at $10.81/ha per day. For comparison, an autumn sown wheat crop, in the ground for 293 days, accumulates gross value at approximately $9.90/ha per day.

The future for cropping will increasingly demand that farmers fully understand the potential gross margin for a range of crops, the major impacts on gross margin for these crops and how best to fit the crops together in the rotation. FAR has been developing ProductionWise® as a recording system to help you have this sort of information at your fingertips when you are making important crop selection decisions.

Nick Pyke

# A word from the Chairman

As we move through the harvest season we look back at the growing season, and see that climatic conditions have had a major effect on crops in some areas. We have seen it very dry in the east with little significant rain since July and a very wet spring in the south.

Some of these extremes can be overcome through rotations and planting dates, but even these tools were unavailable to many due to an extremely wet autumn causing ground conditions that made planting impossible. As a result, a lot of autumn crops were planted in the spring, resulting in reduced yields and increased vulnerability to the low spring rainfall.

These dry conditions have demonstrated the importance of well designed and operated irrigation systems on arable farms. Our crops have critical growth stages during which moisture stress is detrimental to yield, so we need to ensure access to reliable water supplies. This is particularly important for crops which need water during the end of seed fill, as the timing of this often coincides with water restrictions or reduced supply of water.

As we saw with the Black Grass incursion in Mid Canterbury in 2013, one small error could have significant and permanent effects on our industry. This year FAR will be working with the Ministry for Primary Industries/NZGSTA/Federated Farmers on a GIA (Government Industry Agreement) on biosecurity for our industry. Our situation in relation to biosecurity is a complicated one, due to the large number of crops in our systems and the corresponding number of pathways through which weeds, pests or disease could enter the country. Despite this complexity, we need to ensure we get as broad a level of protection as other sectors, which may be based around single crops and have fewer potential incursion pathways.

Lower milk solids payments are placing pressure on crop prices delivered into the dairy industry so it important that we understand the value of our products compared with alternatives. Factors to consider when comparing with imported grains include quality and the fact that we can guarantee traceability of our product. This is increasingly important, with the dairy industry requiring declaration forms for feed supplies. We should also be clear about the actual cost of local and imported products delivered onto the dairy farm, as imported grains require additional processing under MPI regulations before delivery.

Knowing the value of straw will allow you to set a sale price that will cover the replacement costs of nutrients being removed. The value of straw can be worked out by using FAR's straw value calculator (search Economic Cost of Straw Nutrient Losses on the FAR website).

FAR Australia continues to evolve as it successfully gains long term research contracts with links to research and systems here in New Zealand. Benefits back to the New Zealand grower have been both direct (disease identification) and indirect (access to personnel and plant genetics) and will allow faster and more effective research outcomes for you.

The Board has reluctantly accepted the resignation of Professor Tim Reeves from the board. Tim was one of our appointed directors who was instrumental in setting up FAR Australia and has contributed immensely to FAR with his global knowledge of agriculture. Tim will stay on as the Chairman of FAR Australia in the interim. Replacing Tim on the board will be Tony Gregson from Victoria, Australia. Tony is an arable farmer who has vast governance experience with a number of organisations and will be a valuable addition to FAR.

Let's hope we have a good run of weather for the harvest season and some welcome autumn rain so that FAR can keep on helping you to add value to you farming business.

David Birkett

Photo: CROPS 2014

# World Cup Cricket – opening match 2015

14 February 2015 saw two historic firsts at Hagley Park in Christchurch. One, the opening game of the Cricket World Cup, the first ever World Cup game to be held in Christchurch, and two, of much more interest to the New Zealand seed industry, the first ever World Cup Cricket match to be played on an Avanex® grass oval. This milestone was over 20 years in the making, and the experience was repeated as the teams took to the field at other New Zealand venues in the 2015 World Cup.

FAR, working with Grasslanz Technology Ltd, PGG Wrightson and AgResearch, is proud to have played a small, but important, role in the Avanex story.

New Zealand is a world leader in endophyte technology and particularly the development of safe endophyte grasses for the pastoral industry. This expertise has now resulted in a further world first – the use of Avanex grasses in sports stadiums and at airports, an approach that required a completely different take on endophyte technology, making use of endophytes that deter not only insects but also birds from feeding on the grass.

Fifteen years ago Chris Pennell from AgResearch approached FAR for a small level of funding to further investigate the possibility of introducing high toxin producing endophytes into amenity grasses to deter birds at airports and ultimately to reduce bird strikes.

From small beginnings, with proof of concept using controlled feeding trials with geese and single plants in high bird pressure areas, the project has grown. Avanex technology is now on the market in two turf-type grasses: Jackal tall fescue and Colosseum perennial ryegrass.

More recent trials and trial plantings at airports (Christchurch, Wellington, Hamilton and Auckland) have shown a clear trend of reduced insects, reduced bird feeding and reduced bird strikes. Internationally, interest in these grasses is increasing and there are now small plantings at Melbourne and Hobart Airports, and trial plantings in North America and China.

Benefits are also becoming apparent at a wide range of amenity sites within New Zealand, including the Hagley Oval, Forsyth Barr Stadium, Clearwater Golf Course and the Basin Reserve.

Currently demand has not resulted in large areas of Avanex being grown for these markets, but a steady increase in interest and plantings will provide opportunities for some growers to produce Avanex grass seed.

Applied science: researchers and marketers check out the turf at the Hagley Oval.

# Grey day draws potato crowd

FAR's first field extension event, a tour of three trial sites, was held in Canterbury in mid-January, attracting over 50 growers and industry reps. The afternoon started with a pest and disease management focus, looking at a tomato potato psyllid (TPP) management trial at Andrew Bailey's farm in Southbridge. The trial has been set up to compare different strategies for the control of TPP. The use of growing degree days and weekly traps to start the spray programme is being tested against a farmer's 'normal' spray programme, and the results of using of mesh to cover plots and exclude pests and are being compared with uncovered plots. A lot of discussion was generated around the use of mesh both in terms of economic viability and effectiveness. This will give us some good data and answers for region specific TPP spray programmes, as the same work is also being carried out in Manawatu and Pukekohe.

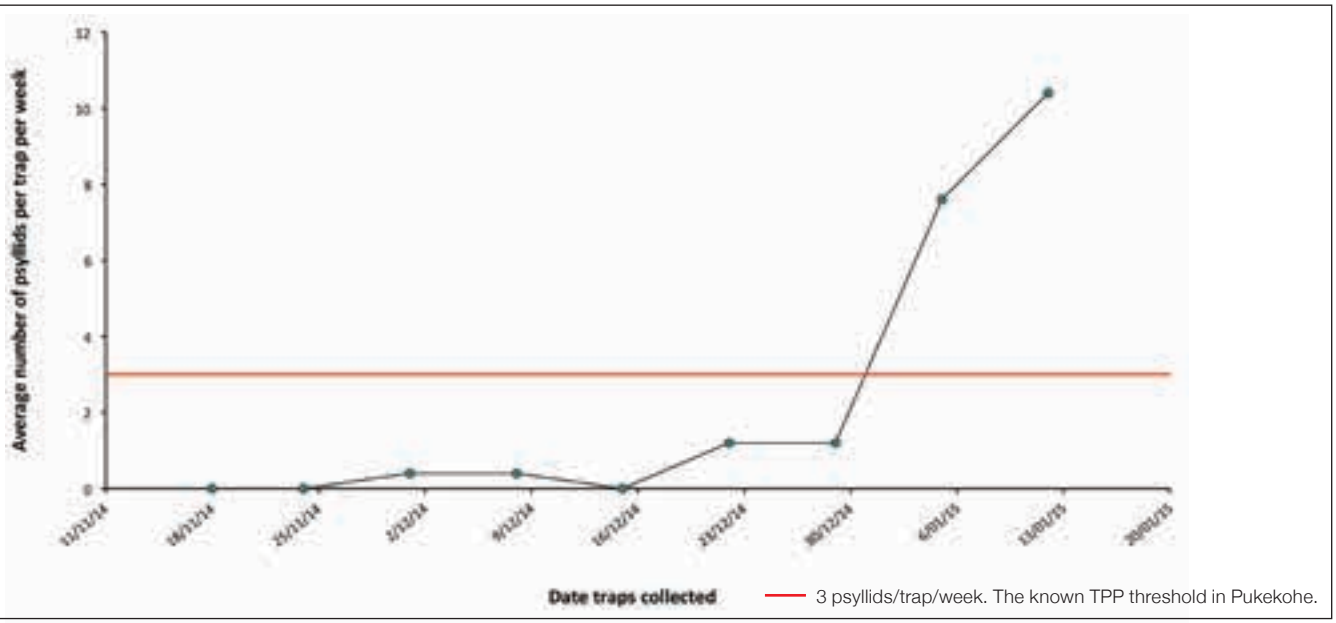
From Southbridge the group moved on to Geoff Maw's at Dorie to view an irrigation trial which has been set up to identify the water stress points in potato crops and their soil moisture needs. Seven treatments are being evaluated ranging from the control (only rain water) to 100% replacement of soil moisture content weekly. This trial is very visual and allowed growers to debate the topic of when and how much potatoes should be watered. It also allowed growers to see from the TDR moisture sensors just how much water we are losing on a weekly basis in this dry Canterbury summer.

The afternoon finished off at Dean Pye's with a discussion around reducing the potato yield gap and how precision agriculture can help us better understand paddocks and soil structure. The group was intrigued by the idea of using photos taken from a UAV (unmanned aerial vehicle or drone) to identify different zones within a paddock which might require variable rates of water, fertiliser or other inputs. This new work has been initiated by the McCains grower group and is being run by Plant & Food Research. We look forward to seeing how the aerial views produced by the UAV align with actual paddock yields.

The pest and disease and irrigation projects are collaborative projects between FAR and Plant & Food Research. Trials around the country look great and we look forward to presenting interesting results after the completion of harvest.

Jen Linton, Research Manager Potatoes

**Southbridge Tomato Potato Psyllid trap data**



# Forages for Reduced Nitrate Leaching

The six-year programme 'Forages for Reduced Nitrate Leaching', or FRNL, aims to reduce nitrate leaching losses by 20 percent by delivering proven, adoptable and profitable pasture and forage crop options. Dairy, arable and sheep and beef farms are involved in this cross-sector project which is focusing on three areas – alternative pasture species, crops and farm systems.

## Alternative pasture species

Experimental research is underway on crop and pasture species now available to farmers and initial results can be expected within a year. Alternative pasture species with lower nitrogen (N) content, cool-season growth, or which are deeper rooting (including chicory, plantain, Italian ryegrass and lucerne) are being compared for yield, N uptake and plant characteristics, such as N content.

## Crop and pasture management

The effect of management on crop and pasture yield and quality, such as irrigation, grazing, fertiliser application, crop establishment, crop rotations and effluent management, is also being investigated. The research will look at how management can improve the plant N uptake from the soil and reduce surplus intake of N by grazing animals, ultimately reducing N excretion and nitrate leaching.

## Farm systems

Another focus involves co-developing farm systems that incorporate new mitigation options developed through the programme. Research results will be built into plant, animal and farm systems models (such as the DairyNZ whole farm model) to test scenarios, and new mitigation options will be demonstrated on-farm.

## Farmer participation

A network of monitor farms has been established in Canterbury, with farmers selected through regional field teams from industry bodies and other rural professionals. The group consists of farmers who are keen to adopt new ideas, have an interest in sustainability and a long-term commitment to their farm.

At present nine farms are in the Canterbury monitor farm network, spread across the region: four dairy farms, two arable (crop) farms, two sheep and beef farms, and one mixed arable and dairy farm. Monitor farmers will contribute to the direction of the research, influence priorities, share experiences and provide a practical check to research.

This first season of the project, the farmers are monitoring current practice to establish base data. Information being collected includes daily grazing and supplementary feed records, application levels of irrigation, effluent and fertiliser, as well as stock and feed movements on and off the property. After base data is collected, each farm will be modelled and nutrient loss estimated. Different scenarios from the research will be evaluated with the farmers, with one or more scenarios adopted on-farm.

The farmers will also play an important part in identifying risks, barriers to adoption and whether new skills or resources are required for implementation on-farm. Later, farm field days will be held so other farmers can see first-hand how the mitigation options work in practice. The geographic spread of the monitor farms and range of systems represented means every farmer in Canterbury should have a farm they can identify with.

### Research aims

- Reduce livestock urinary N excretion.
- Sustain high levels of feed and animal production.
- Hold more N in soil and reduce the amount of potentially leachable N.
- Maximise yield and N use efficiency in forage crops.
- Provide solutions that can be readily integrated into arable, beef/sheep, dairy or mixed-farming systems.

## Community groups

Around each monitor farm, a wider community group will be established, consisting of several local farmers and rural professionals. The community groups will provide practical advice when adopting new mitigation options and share results and information with their network of contacts.

## Cross-sector approach

The cross-sector approach is the first of its kind on this scale and is a commitment from the industry to work together to improve environmental and economic sustainability.

## Interested in participating?

To register your interest to be part of a community group (surrounding your local monitor farm) please email paul.edwards@dairynz.co.nz. Community groups will be established in 2015.

*Forages for Reduced Nitrate Leaching is a DairyNZ-led collaborative research programme across the primary sector delivering science for better farming and environmental outcomes. The aim is to reduce nitrate leaching through research into diverse pasture species and crops for dairy, arable and sheep and beef farms. The main funder is the Ministry of Business, Innovation and Employment, with co-funding from research partners DairyNZ, AgResearch, Plant & Food Research, Lincoln University, Foundation for Arable Research and Landcare Research.*

# Monitor farmers add value

**Brent and Maryn Austin**
Arable farmers - Mayfield, Canterbury

**Why did you decide to join the project?**
"The project looked interesting and very relevant to what is happening with current environmental issues."

**What do you hope to get out of the project?**
"To gain first-hand knowledge of what we are currently leaching (in terms of nitrogen) and how we can alter our operation to reduce our leaching through different cropping rotations and management."

**Why do you think it's important?**
"We all have to do our part to keep New Zealand's "clean green" image for future generations and I see this project as an important part to reduce nitrate leaching into our waters."

**How do you think farmers and the industry will benefit?**
"We should be able to farm with more confidence in the future by having more knowledge about nitrate leaching and how we can reduce or mitigate our leaching. Hopefully we should be able to improve our cropping rotations to produce more feed from the same inputs compared to what we are currently doing."

**Eric and Maxine Watson**
Arable farmers - Wakanui, Canterbury

**Why did you decide to join the project?**
"It seemed like a good idea to make a controlled study of what good operators do."

**What do you hope to get out of the project?**
"More of an insight into how nitrogen is being used by plants and what is left behind. Also, to discover whether what we believe to be true about nitrogen usage in plants we grow is actually so."

**Why do you think it's important?**
"It's very important environmentally to know what's happening nitrogen-wise. If we can't quantify nitrogen usage in plant growth without compromising yield we risk losing control of application rates."

**How do you think farmers and the industry will benefit?**
"If the project provides good scientific data about how and when plants use nitrogen in its various forms, voluntary adoption of the resulting recommendations by the wider farming community is more likely, thus making any future regulation match good practice."

**Nigel and Ross Rathgen**
Mixed dairy and arable farm - St Andrews, South Canterbury

**Why did you decide to join the project?**
"I thought it would be a good way to get some new ideas and network with some new people in the industry."

**What do you hope to get out of the project?**
"New ideas how to reduce N leaching and hopefully some new farming practices that can help our business."

**Why do you think it's important?**
"To keep ahead of new regulations and to farm as environmentally as possible."

**How do you think farmers and the industry will benefit?**
"Hopefully environmentally and economically."

# What's new at WARS?

FAR's Waikato Arable Research Site has now been in existence for eight years. Initially, it consisted of one, three hectare paddock adjoining State Highway 1 at Tamahere near Hamilton. Of this a hectare was designated a long term cultivation trial comparing replicates of 16 rows of maize grown under no-till, strip-till, and full cultivation (disc, rip and power harrow). Unfortunately after seven consecutive maize seasons 40 metres was taken from the trial for the new four lane state highway which effectively meant only 2 replicates remained, thus rendering the trial statistically invalid.

More recently, the entire property of 25.5 effective hectares became available for FAR to lease and currently we are utilising 10 hectares of this for arable research. While the before mentioned long term cultivation trial remains for a further season, we have also reproduced this trial but with four replicates this time.

For the 2014/15 season we have a number of trials underway. These include trials looking at reducing nitrogen inputs on maize through winter cropping annual clovers, crop rotation or crop sequence trials; hybrid trials, maize fungicide trials, population trials, herbicide trials for maize (both pre and post emergence), avoiding glyphosate resistance fence line trials, fodder beet herbicide trials, and pollination trials.

Legume trial comparing maize grown after five months of N fixing Balansa clover (R) compared with maize grown after non-N fixing ryegrass (L).

The WARS forage trial.

# Chinese award for Phil Rolston

Congratulations to AgResaerch's Phil Rolston who has been awarded the Chinese government's most prestigious science award, the International Science and Technology Co-operation Award of the People's Republic of China, for his contributions to agriculture in China.

The award ceremony in The Great Hall of the People was attended by more than 3,000 people, including President Xi Jinping, Vice Premier Li Keqiang, Minister of Science of Technology Wan Gang, and several other leading officials.

Phil's involvement in China began in 1983 in the southwest province of Guizhou where a group of New Zealanders were contracted by the Chinese government to establish a model farm at Dushan. Since then he has worked with Lanzhou University, the Guizhou Agriculture Commission and other organisations to improve soil fertility through plant selection, pasture establishment and management, and in doing so improved environmental and economic performance in the region.

Phil has assisted Lanzhou University and other institutions to develop forage seed science research and has trained significant numbers of Chinese technical staff, as well as supervising the establishment of the first grazing type dairy farm in Karst region which is still a successful model after more than 20 years of use.

# FUTURE VISIONS FOR THE ARABLE INDUSTRY

This year is FAR's 20th birthday and we will be celebrating with a conference. ***Future Visions for the Arable Industry***, will be held at the Ashburton Trust Event Centre on Wednesday 22 and Thursday 23 July.

After our very successful 2014 conference in Palmerston North, we are looking forward to hosting this event, which we know will be equally well supported. Planning is well underway for sessions on Cereals, Farm systems, Seeds and Potatoes. There will also be an afternoon of field visits and of course a Conference dinner.

We are very pleased to confirm three international speakers: Mike Carver, the former Director of NIAB TAG, who did a lot of work with FAR in our first 10 years; David Firman, a potato yield expert from NIAB TAG, and leading Australian herbicide resistance researcher Chris Preston.

The Cereals, Farm systems and Seed sessions will feature a speaker who was involved with FAR at its inception, and who will briefly outline achievements to date. The rest of the session will focus on current issues and research, looking at new ideas and technologies that will provide solutions for the arable industry moving forward.

**Session dates**

| | Wednesday 22 July 2015 | Thursday 23 July 2015 |
|---|---|---|
| Morning | Cereals | Farm systems |
| Afternoon | Field trips | Seeds (concurrent)<br>Potatoes (concurrent) |
| Evening | Conference dinner | |

One day registrations will be available. Potatoes NZ will run their one day conference in Ashburton the following day, allowing potato growers to stay on for this event.

# New to FAR

## New senior staff appointment

Ivan Lawrie joined FAR's senior management team, as Director of Business and Relationships, late last year. Based at Templeton, he will work on further developing FAR's relationships with public and private research organisations, companies and other sectors both nationally and internationally. The key goal of this work is to develop opportunities for arable farmers through research, to source support for that research and develop commercial opportunities for research outcomes.

Ivan came to FAR from Plant & Food Research, Lincoln, where he was Business Manager of their commercial plant breeding programmes for cereals, forage brassicas, peas and potatoes. He was also responsible for facilitating the coordination of wider arable research across the Institute. Ivan was raised on an arable farm in Argentina and managed commercial grain crops for over a decade before coming to New Zealand.

## New FAR Board member

We are pleased to welcome Dr Tony Gregson, to the FAR Board. Tony is a farmer from Warracknabeal in Victoria. He is the Chairman of Plant Health Australia and a previous board member of GRDC and CIMMYT. He has significant governance experience and excellent knowledge of both the Australian grains industry and international grains research.

Photo: Ivan Lawrie, FAR's Director of Business and Relationships.

# Why do I need a Farm Environment Plan?

New Zealand's wealth is in its climate, land and water resources, and our economy and environment depend on the successful management of our land-based industries. The role of Regional Councils is to manage these resources through the implementation of the Resource Management Act and the National Policy Statement for Fresh Water.

To achieve this, there is a legal requirement in many regional plans for farmers to develop and use farm environment plans to show that they are aware of and are managing the environmental impacts of their farm systems. In many regions there is no option, farmers must have an active Farm Environment Plan.

Going through the environment planning process is a positive activity for your farm business. It enables you to assess the risk of nutrient and sediment loss from the farm and to demonstrate what you are planning on changing.

Your FEP is your document to demonstrate that you are meeting your social responsibility to safeguard the environment. In effect it gives you the right to farm.

The key aims of a farm environment plans are to:

- Maintain the productive capacity of the soils on the farm.
- Support the responsible use of soil, water and nutrients.
- Minimise the loss of nitrate-nitrogen to soil drainage water.
- Minimise any loss of sediment, phosphorus or nitrogen to surface waters.
- Minimise the spread of weeds, diseases and insect pests between properties.

The development of a Farm Environment Plan leads you through the process of:

1. Risk Assessment - locating the likely sites on the farm or management practices that have environmental issues or risks.
2. Implementing change – responding to the identified risks with a management change.
3. Developing the action plan – ranking priorities, identifying cost and developing a time frame.
4. Collation of documents to support your plan and provide evidence that you are delivering on your plan objectives.

Farmers may employ a consultant to develop a farm plan but they may also develop their own. There are benefits of doing your own, as you are probably the person with the most knowledge about your land and your farm system. If you wish to develop your own plan, there are a number of templates available to guide you through the process, but it is important to remember that the plan will be audited regularly by an independent auditor. It will be a good idea to get your plan checked by an accredited farm planner before your first audit visit, as an independent eye may spot things that you have over-looked.

During a farm audit, the auditor will visit your farm and check that you have completed the risk assessment, identified the risks and made a considered effort to change management practices to reduce nutrient and sediment losses from the farm. The return time, (months or years), for the next audit will depend on how well the auditor feels that you are managing the environmental risks on your farm.

A plan that has been well thought through and considered will save time and money in long run.

## What is FAR doing to help?

FAR has developed an arable Farm Environment Plan template and accompanying guidelines, but before it can be used it must be approved by the regional councils. We are currently in the process of getting this important step completed. Once over this hurdle, we will introduce farmers to the planning process through a series of workshops.

The FAR Farm Environment Plan for an arable farm includes:

- An assessment of the risks associated with the soils on the farm.
- An irrigation management plan (if you irrigate).

- A nutrient management plan for nitrogen.
- A sediment and phosphorus management plan.
- A biosecurity plan.
- Documentation, including farm maps.

The complexity of the plan depends on how many environmental risks you have. Many are associated with the soil types on the farm, so there is a one-off effort during the plan development to identify these and to determine appropriate management practices.

Many arable farms have a low risk for nutrient losses so their environmental plans are short, uncomplicated and easy to develop.

Depending on your farm system, a comprehensive Farm Environment Plan may also include other plans for activities relating to the environmental management of your land. Examples include: an agrichemical plan, an effluent management plan, a biodiversity plan, and stock and grazing management plans.

For further information contact Diana Mathers, FAR mathersd@far.org.nz or 027 544 2236.

Using Google Earth Maps for Farm Environment Planning.

# Harvest Snippets

Harvest Snippets outline the results of FAR trials as they are harvested, and are sent out throughout the trial harvest season. Full results are communicated in Results Round-Up meetings in April, and in the case of cereal Cultivar Performance Trials, in the Cultivar Evaluation Book in late-April.

By now you should have received the first copy of FAR's 2015 Harvest Snippets in the mail and later editions by e-mail. Please ensure that we have your e-mail address, or you will not receive further Harvest Snippets this year. Harvest Snippets are also available on the FAR website www.far.org.nz.

For futher info contact admin@far.org.nz or call 03 345 5783


harvest snippets

Tuesday 3 February 2015 Issue No. 1

Harvest Snippets summary

1. Autumn sown oilseed rape cultivar trial

Location: Fairlie

# Growing seeds in Tasmania

In November last year, FAR's Seed Research Manager, Richard Chynoweth, attended the Tasmanian Pasture Seed Production Conference in Launceston, Tasmania. Here he outlines his impressions of the Tasmanian seed industry's strengths and weaknesses.

Tasmania lies 240 km south of mainland Australia between latitudes of 41 and 42oS, similar to Palmerston North and Masterton.

Major crops are poppies (*Papaver somniferum*), wheat, herbage seed and field peas sown on more than 20,000 hectares of land. Tasmanian poppies provide 40% of the US market's legal opiate supply in the form of codeine, thebaine (also known as paramorphine) and other variants.

Tasmania has had a small herbage seed industry for many years, and the production base is often associated with larger mixed sheep-cropping enterprises. The herbage seed industry consists predominantly of ryegrass and white clover seed crops but also includes other legumes and grasses. These herbage crops are seen by many growers as the poor cousin of poppies, and traditionally they receive less attention, inputs and irrigation, resulting in lower yields and/or quality. However, Tasmania does have some specialist herbage seed growers who consistently produce over 2000 kg/ha by using management techniques developed predominantly in Canterbury. These techniques have been picked up by a) numerous visits by Tasmanian growers to New Zealand and b) New Zealand seed companies supporting grower production in Tasmania. The growers have no locally generated trial or research data on which to base input and management decisions.

With ongoing investment in water storage delivering a 95% reliable irrigation resource, there is potential for developing the Tasmanian seed industry. The island is well suited to supplying the Australian domestic market, especially as their crops mature earlier than those in New Zealand, making them available for the early autumn planting season on mainland Australia. However there are limitations to growing the industry size including (but not limited to) understanding weed control and seed contamination, harvesting and processing equipment, shipping costs and availability etc.

The Tasmanian Pasture Seed Production Conference was organised by the Tasmanian Institute of Agriculture (TIA), a joint venture between the University of Tasmania and the Tasmanian government and was attended by more than 100 people including growers and seed company representatives. The programme included presentations by Tom Chastain (Oregon State University), Richard Chynoweth (FAR-NZ), Murray Kelly (PGGW Seeds, NZ) and Warwick Green (Seedforce Ltd). The programme had a strong focus on what it takes to have a strong seed industry as opposed to how to grow individual crops which was covered only briefly.

Italian ryegrass seed crop at G.S. 32/33 near Cressy, Tasmaina, 11 November 2014.

White clover seed crop at early flowering near Westbury, Tasmania, 13 November 2014.

MAXIMISING THE VALUE OF IRRIGATION

# Maximising the value of irrigation

Researchers in a six year MBIE-funded research programme are working closely with industry to help integrate the next generation of irrigation management tools for cropping, horticultural, and pastoral farms. Over the next ten years, water and nutrient management on irrigated lands will need greater precision of management and monitoring to farm within catchment limits, and drive productivity gains. Farmers will be accountable for their drainage and nutrient losses, and will need to continue to increase water and nutrient use efficiency. Research from this programme aims to provide the practical tools to achieve these goals.

The Programme is researching advanced scheduling and control systems to help ensure water is applied where, when, and in the amount, needed. The team are working with industry to develop best options for new or upgraded irrigation hardware based on economic and environmental trade-offs; and to develop effective audited self-management systems that provide accurate estimates of drainage and nitrogen leaching under irrigation. Research findings will also be delivered through recommendations and demonstrations of soil, crop and irrigation management to improve retention of soil water for plant use.

Seven focus farms have been established this season, and we are gathering data to assess relationships between management practice and water use efficiency, focussing on the financial and environmental benefits of precision management. A webpage and cell phone app have been developed to provide real-time information about sub-paddock zone soil moisture direct to the farmer for two of these farms. This participatory research ensures that research outputs meet industry needs with direct lines of communication with the end users. It challenges the research to provide tools relevant to commercial operations, with all its operational constraints and complex day-to-day decision-making based on financial and environmental outcomes.

A variable rate centre pivot has been installed at the Massey University farms, in collaboration with Precision Irrigation NZ (Lindsay NZ, from 14 December 2014) which is being used for our research trials. At this pivot, and at our Otane focus farm, our Australian colleagues from the National Centre for Engineering in Agriculture, have installed cameras onto the pivots which collect images of the crop, so that crop health can be monitored remotely.

A major new lysimeter facility has been established at Plant & Food Research, Lincoln, to investigate the impact of different stone contents on crop water uptake, drainage and leaching. This is currently a knowledge gap and highly relevant to large areas of New Zealand where shallow, stony soils are currently irrigated, and still being converted from dryland to irrigated. This work is outlined over the page.

Our trial data is being used to develop the farm systems model APSIM together with our Australian collaborators. This model will provide estimates of water use, drainage, and crop production at sub paddock scales, enabling effective testing of different variability and management scenarios for improving water use efficiency, and reducing environmental impact.

The Programme is also researching the effects of different soil management activities, such as tillage, residue and irrigation practise on the soil water storage properties of cropping soils, including the extent of water repellency which has previously been identified as a widespread issue in pastoral soils. A PhD student has commenced a study on the potential of different organic and synthetic amendments to improve infiltration and soil water storage capacity of arable soils.

It is estimated that improvements in irrigation practices that result in 10% increased production and 20% water savings, would add more than $1 billion per annum to exports across New Zealand's arable, horticultural, and pastoral sectors by 2029. The programme aims to assist these sectors to maintain a competitive advantage whilst operating within environmental limits.

The Programme combines expertise from Landcare Research, Plant & Food Research, the Foundation for Arable Research, Lincoln AgriTech and Massey University. We are internationally collaborating with the Mechatronics and Irrigation Engineering Group, at the Australian National Centre for Engineering in Agriculture, based at the University of Southern Queensland; and the APSIM Initiative Team, based at CSIRO, the University of Queensland and Queensland Department of Primary Industries.

The Programme is guided by an Industry Advisory Group, chaired by Nick Poole (Foundation for Arable Research) with representation from Horticulture New Zealand's Vegetable Research and Innovation Board, DairyNZ, Irrigation New Zealand, Hawkes Bay Regional Council, Environment Canterbury and the Ministry for Primary Industries.

# The effect of stones on crop water uptake

New Zealand is somewhat unique in the extent of irrigation development that has occurred and is still occurring on stony soils. As such there is little research internationally on the effects of stones on crop water uptake. Efficient irrigation requires the replacement of the amount of water that the crop uses between each irrigation. On deep, stone free soils this is generally determined by weather conditions and can be calculated as a potential evapotranspiration (PET). As the soil dries the roots become less able to extract water and at some point water use will become less than PET. The presence of stones in the soil will influences both the volume of soil that roots are able to inhabit and the distribution of roots with in this soil. However it is not know what effect these stones have on the ability of the crop to extract water and meet PET. As such it is also not well understood when irrigation applications should be less than that required to replace PET for soils of different stone content. In an attempt to fill this knowledge gap a facility has been established at Plant & Food Research, Lincoln, to investigate the effects of stones on crop water extraction rates.

The facility consists of a set of lysimeters with soil moisture sensors installed at different depths throughout (Figure 1). Six treatments were established with gravels at 30 or 60 cm depth and then 0, 30 or 50% stones in the layers above the gravels. The soils in these lysimeters were carefully constructed from defined mixtures of large, medium, and small rocks to reflect the size distribution and were packed to a density seen in common stony soil types. Although these 'synthetic' soils have had a somewhat unnatural treatment, this was necessary to control the stone contents in each treatment and to enable the placement of soil moisture sensors (Figure 2) at precise depths. The facility contains four replicates of each 'soil type'.

The lysimeters were then placed in a purpose constructed pit and plumbed into drainage collectors so the amount of drainage and leaching can be measured directly. Each lysimeter is 50 cm across by 70 cm deep and is placed in a 1.2 x 1.2 m cell and these cells were in-filled with the same soils as that within the lysimeters (Photo page 17). The first crop (forage rape) was planted in January and this will be followed by an autumn wheat and then a vegetable crop. All lysimeters will have the same crop rotation, irrigation and fertiliser applied to them in order to observe the effects of soil type on water uptake, drainage and leaching. The soil moisture sensors will be recorded at 15 minute intervals enabling clear determination of infiltration and crop water uptake patterns. In addition these sensors also measure soil temperature and will provide data on the effects of stone content on seasonal patterns of temperature.

While this facility was developed with the intention of measuring soil water extraction, it was clear that the lysimeters would provide useful data on drainage and leaching as well, so additional effort was put into capturing this information. Plant & Food Research and Landcare Research anticipate that the data this facility provides will be useful for a wide range of purposes including providing recommendations for improved water and nutrient management on stony soils and improving models that are used in developing and implementing regional nutrient management policies.


**Figure 1.** Schematic representation of stone content treatments and soil moisture sensor distributions in the new stony soil lysimeter facility.

**Figure 2.** Placement of soil moisture sensor (Campbell CS650) within a gravel layer in a lysimeter.

# Integrated management of slugs

FAR is leading a MPI Sustainable Farming Fund project investigating options for the *Integrated management of slug pests*. The project focuses on maize grown for silage and forage brassicas, and is currently measuring the effects of slug numbers on crops and on the efficacy of various slug baits. Work is also underway that may enable the use of a parasitic nematode *Phasmarhabditis hermaphrodita* as a biological control.

## Slug biocontrol

This nematode is available as the biological molluscide Nemaslug® in Europe, but not in New Zealand where it is considered to be a 'new organism'. However, recent work by Dr Mike Wilson of AgResearch has found that the nematode is already established in the Central North Island, and a submission is being prepared to apply to HSNO to have it removed from the new organisms list. Assuming permission is granted, this will allow an implementation pathway for slug biocontrol in New Zealand.

## Measuring slug numbers and damage

In order to gain a clear picture of how slug numbers affect crops, bin trials were set up to see how much damage varying numbers of slugs would do to maize plants sown on the surface or at 5 cm deep. Up to 120 slugs were introduced to each bin, with preliminary results showing, not surprisingly, that as slug numbers increased, plant numbers decreased. The results also showed that surface sown seed was much more vulnerable to slug attack. The trials also showed that slugs were also feeding on weeds, as weed numbers also declined as slugs numbers increased.

Similar work is now being undertaken with Barkant turnip which will be sown at a shallow depth. It is expected that slug damage will occur rapidly, and we will then be able to carry out another sowing of maize and turnip before winter 2015.

## Bait efficacy

The bait efficacy work will assess three active ingredients: Iron EDTA, methiocarb and metaldehyde. We will use application rates that give the same rate of active ingredient per hectare. As well as assessing efficacy at killing slugs, we will assess other characteristics which are critical for slug bait performance in the field. These include pellet integrity in wet conditions, pellet size vs. the cultivation technique that is present on the paddock, attractiveness to slugs, and mould.

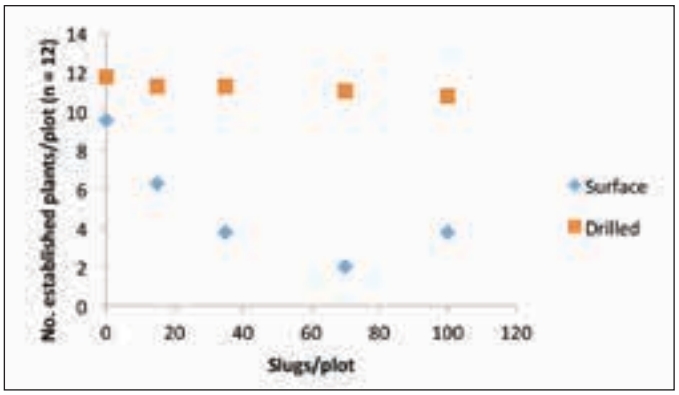
By the end of the project we will have developed a set of best practice guidelines for integrated slug management based on:

- Knowledge of how tillage and residue management regimes affect slug numbers and damage.
- A method for monitoring slug activity, and determining whether slug bait needs to be applied.
- An understanding of best practice for application of slug bait for arable/dairy farmers growing maize or forage brassicas.
- Knowledge of the distribution of slug parasitic nematodes in New Zealand.

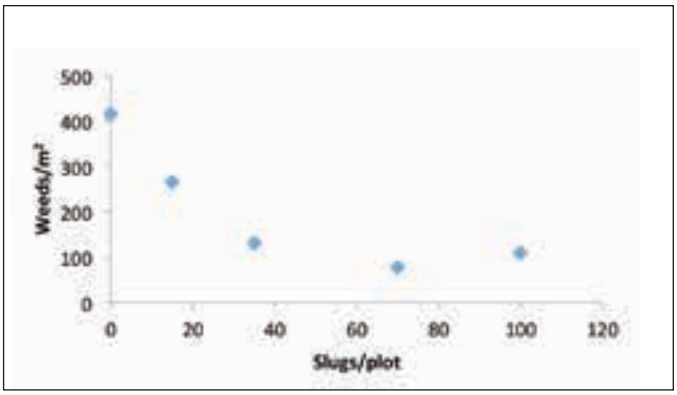
### Key points

- Invasive European slugs are found right across New Zealand, damaging a wide range of arable, pastoral and horticultural crops.
- At present New Zealand has no slug biocontrol options and farmers lack standardised methods to assess whether slug control is necessary.
- Many slug baits are available, but no independent trial data is available on their relative efficacy or how best to use them.

**Maize Bin Experiment**




**Plants Established**



# Practical uses for Precision Agriculture

"The areas where you are spending the most money on your farm, are likely to be the same areas where the use of precision agriculture tools will save you the most money."

That's the message from Scottish farmer and precision agriculture expert Jim Wilson who spoke at two FAR run breakfast meetings in Methven and Bulls early in February.

Mr Wilson, a former Nuffield Scholar and Director of Soilessentials, said from his experience in Scotland, pH monitoring and autosteering were the most likely to provide an immediate return by way of reduced input costs, as a result of more targeted or variable rate applications. He also suggested that yield mapping should go alongside pH monitoring, but was quick to add that there was no point investing in monitoring unless you were prepared to take action based on the results.

Photo: Jim Wilson outlined practical applications for precision agriculture tools at FAR run events in Methven and Bulls.

# Cereal research 2014/15

The first trials at the FAR Chertsey Arable site have been harvested with pleasing yields. For the first time a winter barley cultivar trial was established at Chertsey - sown in mid-April. The barley crop on the dryland column made the most of the soil moisture before the drought started to bite, yielding an average 8.3 t/ha. The irrigated crop averaged 12.2 t/ha. FAR also have fungicide and PGR trials in winter barley in South Canterbury reflecting the increasing area being planted in this crop.

Controlling Septoria tritici blotch (STB) has been a significant focus of trial work this season with trials established from the southern North Island to Southland. Three types of trials have been set up, fungicide dose rate work, fungicide programmes and a trial testing alternating and mixing triazoles. Of course it turns out that the season has not been conducive to STB in many of the trials. Data from these trials will be analysed over autumn/winter to help with disease management decisions next season.

Another important area of work is understanding how various cereal diseases are mutating over time and the implications this has on fungicide performance. FAR has organised the collection of leaves infected by STB, Ramularia and rusts. Together with industry FAR is funding Plant & Food Research to benchmark the efficacy of the SDHI fungicides including Seguris Flexi®, Aviator Xpro® and Adexar® against STB. This monitoring will continue for at least the next three years so that we know if there are any worrying changes in the performance of the SDHIs. It is very important that this group of fungicides is protected from resistance developing by limiting applications to two per season and mixing them with an effective rate of triazole. The same process is planned for testing Ramularia on barley. Rusts of barley and wheat are also being collected to determine changes in strains that may affect cultivars that are presently resistant to rust disease. It is proving difficult to get these samples – maybe more robust fungicide programmes are keeping the rusts at bay.

Rob Craigie, Research Manager Cereals

# Kellogg Rural Leadership Programme

## Develop your leadership potential – plan your leadership pathway

If you have ever considered doing a Kellogg Rural Leadership Programme, now is the time for action! Applications for their mid-year intake, a six month programme running from late-June to late-November 2015, are open now.

The Kellogg Programme is highly respected, with a large alumni of people across all primary industries and including many sector leaders. The six month course is designed to be undertaken while in employment, but does include three residential blocks of study: one of nine days and two of four days. The programme is comprised of four phases, each with a different focus, and is delivered in conjunction with leadership and industry experts and leaders. It includes presentations, workshops, field trips, syndicate work and self-paced learning. The fun element is not forgotten either, with a ropes course, networking functions and dinners and group activities.

**Phase 1** focuses on:
- Leadership skills and tools.
- Developing a greater knowledge of the wider primary industry sector in New Zealand.
- Understanding different primary sector national and international and strategies.

**Phase 2** involves working on a research project that will enhance your industry or business knowledge.

**Phase 3** is a residential block to learn how Wellington works and looks at:
- Political, economic and environmental decision making structures and processes.
- How to influence decision making and policy, and how to work Wellington.
- Meeting and networking with influential industry leaders (Board chairs & CEO's, Ministers etc).

**Phase 4** is a bringing together of individual research, leadership and presentation skills:
- Presentation to group and industry.
- Research report submission.
- Case study analysis.

Many Kellogg alumni go on to become leaders in their communities, farming organisations, industry or agribusiness. Of course the leadership pathway does not have to stop there. A number of Kelloggers also go on to do a Nuffield Scholarship. More about Nuffield in the next newsletter.

KELLOGG
Rural Leadership
PROGRAMME

Become a "Kellogger" - check out more information at **www.kellogg.org.nz**.
Applications closes on 23 March 2015 for this intake.

# Argentine Stem Weevil

Argentine stem weevil (ASW) is the most destructive pest of ryegrass and young cereal crops in New Zealand. Weevil larvae kill tillers by feeding on the inside, and adult feeding destroys seedlings. In the early 1990s, prior to the discovery of plant resistance (via endophytes) and parasitoid biocontrol, damage estimates ranged from $70-$250 million p.a. Endophytes reduce impacts on ryegrass, but they do not protect all forage grasses, nor any cereals.

The introduction to New Zealand of a parasitoid, *Microctonus hyperodae*, in 1991 provided an effective additional tool for reducing weevil populations and their damage. This parasitoid lays an egg in the adult weevil, immediately sterilising it. Overwintering parasitism levels over the first 10 years after release ranged from around 70% to 90% and corresponding with these high parasitism levels was a noticeable reduction in larval damage. This parasitoid, together with endophyte, brought this major pest under control.

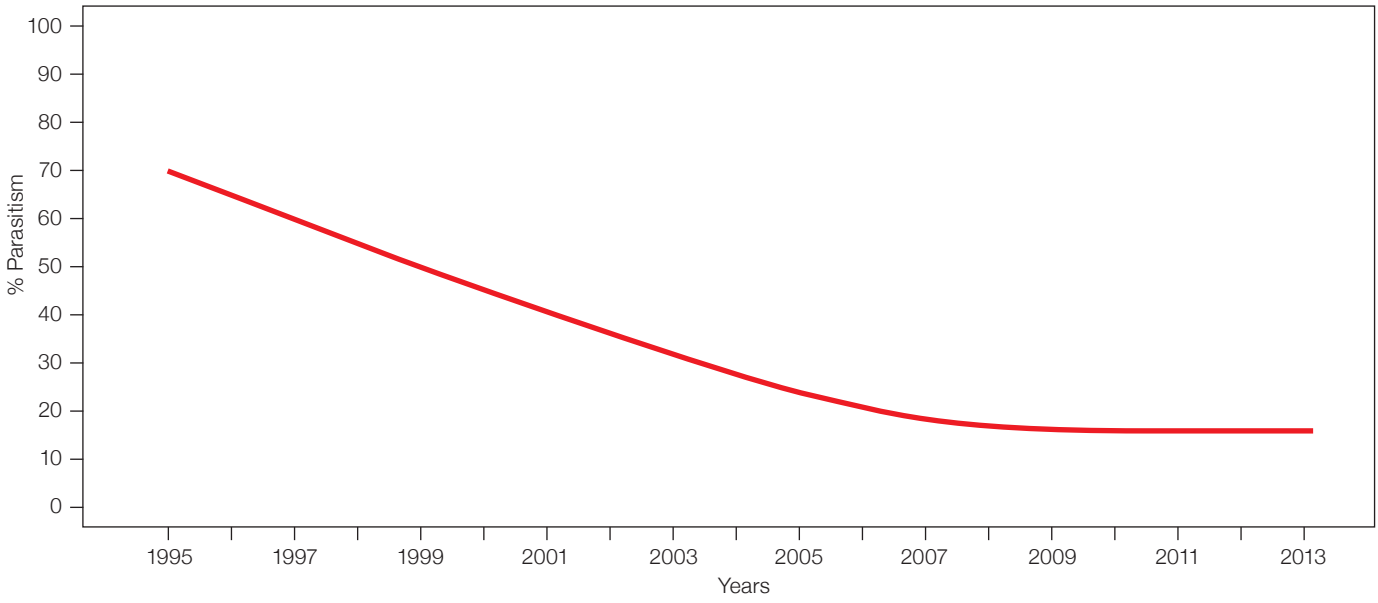
In the early 2000s, there was little monitoring of either parasitism or ASW damage, but from 2006, cases of severe ASW damage to susceptible pastures began to emerge. Concern arose that the parasitoid was no longer suppressing weevil populations. 2013 data from around the country showed parasitism levels averaged 18% (see graph) well below the level required to have any effect on weevil populations. The loss of this biocontrol is estimated at around $50-80 million p.a. in lost production and pasture replacement.

New endophytes have effectively controlled the larval stage of ASW in diploid perennial ryegrass. However, endophytes with other useful properties, which were developed when weevil populations appeared to be under control, are now used, and these new endophytes provide less control of ASW than the older AR1 and AR37 varieties. Furthermore, use of tetraploid perennial, Italian, hybrid and annual ryegrass is now widespread. These ryegrasses are particularly susceptible to ASW, and commercial varieties may not contain any endophyte at all. Additionally, all grasses and cereals, regardless of endophyte status are susceptible to damage by adult weevils at establishment. If seed treatment is not used, new sowings can be wiped out. Further, international concern in relation to the effects of some seed treatments on pollinating insects and use of these products is threatening their use in some countries, including, potentially, New Zealand.

Reduced parasitism of ASW places the pastoral and arable sectors at greater risk of damage by this pest. AgResearch, with support from MPI SFF, FAR, Dairy NZ and Beef + Lamb, have commenced a three year project investigating the change in parasitism and its impact on farmers.

Once this is fully understood, the group will develop new strategies for best management of ASW in the face of reduced parasitism.

**Decline in parasitism levels**



PRODUCTION Wise®
ONLINE CROP MANAGEMENT

FAR has formed a ProductionWise® Working Group to help guide on-going development of the programme. The group, consisting of industry and grower representatives, has been tasked with discussing future development ideas to ensure they benefit farmers.

Their first meeting, held in January, was attended by Drew Christian from Grain Growers Ltd, Australia, who developed ProductionWise. Drew was in New Zealand to see first hand how the changes implemented specifically for ProductionWise here were viewed by users and to discuss future needs for the programme – offering advice from the technical development side.

As well as the working group he met other farmers and held meetings with industry to clarify that the system will be able to meet their mapping, reporting and traceability needs. He also joined FAR's Melanie Bates to brief the NZGSTA Board on what sort of information ProductionWise can capture and its reporting capabilities. He says it was great to meet the end users and get a clear idea of their needs.

"I have been very impressed with the New Zealand arable farmers' cropping systems and the wide range of crops grown, and I can see how ProductionWise can be developed to be a very valuable tool for paddock recording and reporting."

## What's new with ProductionWise?

The ProductionWise App is due out very shortly, and will allow users to record paddock operations using a smartphone or tablet whilst on-line in the field. The second release will include an 'off-line' version option suitable for areas with poor reception.

An Advisor Log-in is being streamlined for New Zealand to enable advisors and reps to enter observations and recommendations directly to individual growers' paddock diaries. When they do this, the grower will receive an instant message alert of the new entry.

ProductionWise, Version 2.2 was released in December 2014 with a number of improvements.

## My Paddocks

We have removed the Year and Season selectors from My Paddocks and replaced them with a Growing Window selector. The Growing Window selector automatically groups operations in the diary by using the sowing and harvest operations. There are many benefits to this change including;

- Crops and pastures can persist across multiple years.
- Multiple sowing operations can be entered in one calendar year.
- Paddock planning has been improved and has no future year limit.
- Failed sowing operations are now supported.
- Paddocks can be harvested multiple times.
- View paddock rotation history at a glance in the new growing season selector.

My Paddocks are now grouped by crop growing windows.

## Gross Margins

The new Growing Window selector has also been added to the Gross Margin page. This allows Gross Margins to be created with improved accuracy and adds support for planned seasons. Providing accurate Gross Margins enables FAR to produce benchmarking and cost of production reports both regionally and nationally.

### ProductionWise reports include:

- Exportable Traceability report to meet the QA Grains Scheme requirements; the system automatically exports management practices and inputs from the Paddock Diary and grain details from the Grain Storage section.
- Nutrient reporting.
- Seasonal Gross Margin reports for grower farm management.
- My Grain Summary inventory.
- Mapping for Farm Environment Plans.

Should any grower require assistance to get started please contact the FAR office on 03 345 5783.

# Arable Research Groups

Arable Research Groups, or ARGs, are a key component of FAR. Each of FAR's seven regions has an ARG, and the Chair of each ARG represents that region on the FAR Board. Aside from this role, the farmers and industry personnel involved in the ARGs are the eyes and ears of their regions, keeping us informed of emerging issues and passing on ideas for research and extension.

Each year the leadership of either two or three ARG committees comes up for review. For 2014 the regions were Mid Canterbury (MC) and South Canterbury/North Otago (SCNO). In each of these regions there has been no change of Chairman or Incorporated Society representation, with Dave Grant (MC) and Peter Mitchell (SCNO) being elected to stay on in their current roles. The other Incorporated Society members for these regions are: Rob McIraith and Colin Hurst (SCNO), and Brian Leadley and Eric Watson (MC).

## Eastern North Island ARG

The Eastern North Island (ENI) ARG is Chaired by Hugh Richie, who is also a member of FAR's Incorporated Society (IS). Other members of the ARG are: Simon Campbell, Richard Dakins, Mark Guscott, Paul Oliver, Patrick Nicolle, Ewan Powdrell, Ed White, Simon White (IS), Michael Williams (IS) and Nathan Williams.

## Member profile: Nathan Williams

Nathan Williams farms Otahuao Farm seven kilometres east of Masterton. It's a family farm which was previously owned by his father Jim, and more recently farmed in partnership with his brother Michael. Nathan also leases 100 ha from his parents and another 100 ha is run in a sharecropping arrangement. Otahuao Farm grows malting, feed and seed barley, ryegrass, seed peas and red clover. The property also finishes lambs and beef heifers.

Nathan enjoys being a member of the ENI ARG as it gives him a chance to meet more people involved in the industry and to ensure growers in his region have a say in research and extension.

"I think that as an industry we are lucky to have FAR to do the research, provide up to date information on improving crop yields and also, through various events, networking opportunities. I am also lucky to be part of a local group of cropping guys who, with the help of Nick Pyke at FAR, have set up their own small discussion group. This is going really well, and our last trip was to FAR's CROPS event in December."

Photo: Nathan and Kate Williams with Toby, Sophie, Monty and Hugo.

# FAR Australia
# Spring rainfall at harvest!

"How's harvest gone in Australia", is never an easy question to answer. Why? Because the cropping landscape in Australia stretches from sub-tropical Queensland in the north to Tasmania in the south, which has a climate and latitude similar to New Zealand. The western grain belt presents similar extremes, though in the main it has a Mediterranean climate (wet winter and hot dry summers). In short there are a multitude of agro ecological zones in Australia that can vary enormously from one to the next. The state of Victoria is a case in point this last season.

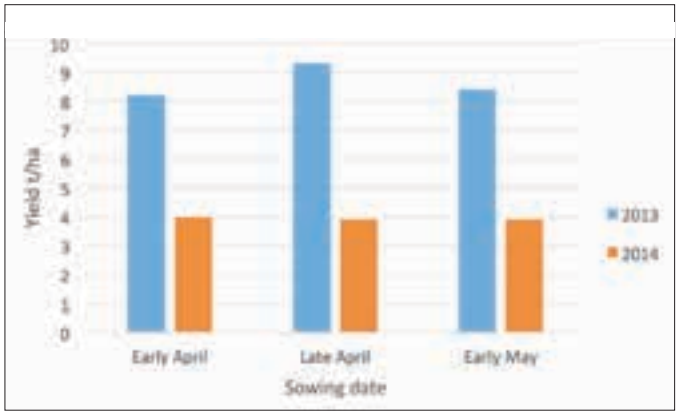
In Victoria, where FAR conducts a number of research projects, harvest yields have been a mixed bag. In the longer season HRZ (high rainfall zone) of southern Victoria, harvest yields have been way back this season. Higher spring temperatures and lower spring rainfall have reduced yields by over 50% compared to last year's record breaking crops (Graph 1).

The highest rainfall in southern Victoria for the second half of the season reserved itself for harvest! Nearly double the rainfall (73 mm) fell in the first half of January compared to the important spring growing months of September and October put together (41 mm), as the example from Winchelsea weather station shows. Note that the mean for these months is traditionally over 50 mm.

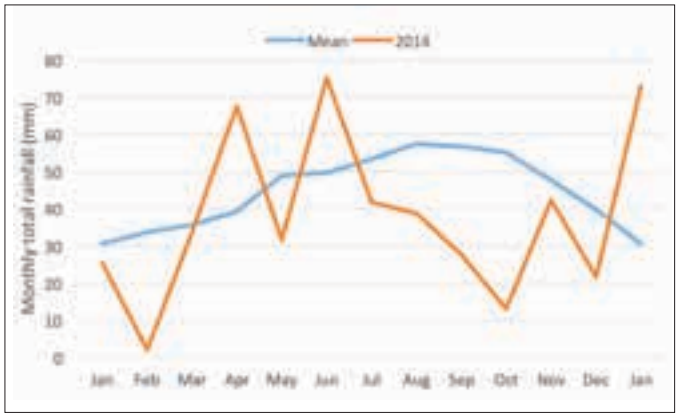
In parts of central Victoria (parts of southern Mallee and northern Wimmera) crops were so drought affected that there was little or nothing to harvest. In these regions the influence of stored soil moisture from sporadic storms in March and April 2014 had dramatic effects on wheat yields. Crops little more than a few kilometres apart ranged from a respectable 2 t/ha grown on sub soil moisture, to nothing where storms had missed before sowing. In the north east of the state and over the border into New South Wales there was a reasonable harvest, despite fears of damage from frost in July and August.

FAR Australia finished harvest of its research projects on January 20 with research on longer season feed wheat crops being the last trials to be harvested. At present staff have their heads down analysing the screeds of data collected during the course of the season.

Nick Poole




**Graph 1.** Red grain feed wheat yields (t/ha) at the Inverleigh research site in 2013 and 2014 – CSIRO/FAR/SFS




**Graph 2.** Rainfall (mm) recorded at the Winchelsea weather station in southern Victoria in 2014-15 compared to the mean rainfall pattern for the region. (Australian Bureau of Metrology (BOM) data).

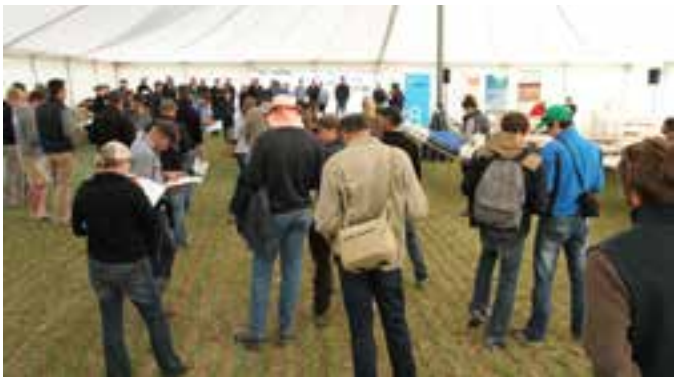
crops expo 2014

CROPS 2014 at Chertsey surpassed all previous events. Over 600 people attended to hear presentations from national and international cereal and seed researchers, and to view demonstrations around new cultivars, agrichemicals, machinery and fertiliser products.

FAR CEO Nick Pyke says the day was a huge success, and that comments from attendees suggested that the range of agronomy, technology and environmental presentations was spot on.

"We're very pleased with the feedback to date as we worked pretty hard to get the programme mix right. Guest speakers Patrick Stephenson from the UK's NIAB TAG and John Kirkegaard from Australia's CSIRO drew big crowds for their talks on cereal yields and break crops. Our growers always appreciate an international perspective on the crops that they grow and Patrick and John's ideas were received with a lot of interest."

This year FAR will again run its ARIA event at Chertsey. ARIA will focus only on FAR research, with no externally sponsored sites or demonstrations. The date will be Wednesday 2 December 2015.




## Irrigation stabilisation system draws crowds

Amongst the New Zealand research on show was a newly designed irrigator stabilisation system, which can be retrofitted to centre pivot or linear irrigators to stop them blowing over in high winds. The system, designed by Canterbury University mechanical engineering students with funding from FAR, deploys self-filling water bags, which drop and anchor the irrigators. The design has been patented and FAR is currently investigating commercialisation options with an interested company.

# FAR Researcher of the Year

Plant disease expert Dr Ian Harvey was named the FAR's 2014 Researcher of the Year at CROPS 2014.

Ian has worked with FAR for more than a decade as the 'go-to' guy for diagnosing plant diseases, and for advice on fungal disease management. He worked for MAF Tech and AgResearch for many years before setting up his own company, PLANTWise Services, in 1997 to provide independent diagnostic, plant health advice and consultancy services. As well as arable crops, he has worked on olives and grapes, and ornamental and nursery crops. He is has written and edited books on plant diseases, and enjoys illustrating them himself. He sold the diagnostic branch of PLANTWise earlier this year, but is still providing consultancy services to industry, as well as teaching at Lincoln University where he is an Honorary Research Associate in Plant Pathology.

FAR CEO Nick Pyke says FAR staff and growers have all benefited from Ian's vast knowledge and enthusiasm in the area of plant pathology, especially his ability to explain the complex life cycles of many common fungal diseases.

Photo: FAR 2014 Researcher of the Year Dr Ian Harvey with FAR CEO Nick Pyke (L) and FAR Board Chair David Birkett (R).

# Compulsory Annual Trading Return Declaration form

By now all growers will have received a Compulsory Annual Trading Return Declaration form which was sent in mid-January. Companies will have also received a Wholesalers' Compulsory Annual Trading Return Declaration form.

This form is a legal requirement and must be filled out and returned to FAR by Friday 13 March 2015. Failure to return the form may result in legal action.

The purpose of the form is to remind growers of arable crops and wholesalers of their obligation to pay or forward the levy by declaring all sales of grain and/or seed for the year of 1 January – 31 December 2014. This ensures that the levy system is fair and equitable.

# FAR Statement of Comprehensive Income

## Year Ended 30 June 2014

| | $ |
|---|---|
| Levy Revenue | 4,942,819 |
| Grants Revenue | 747,804 |
| R&E Contracted Expenditure | -2,947,309 |
| R&E Expenditure | -1,386,293 |
| Gross Profit | 1,357,021 |
| Other Income | 240,500 |
| **Less: Expenses** | |
| Audit Fees | 14,179 |
| Administration Expenses | 776,858 |
| Legal Expenses | 13,075 |
| Standing Charges | 53,075 |
| Depreciation & Amortisation | 78,616 |
| Impairment of Intangible Asset | 93,169 |
| **Total Expenses** | 1,028,972 |
| Finance Income | 282,293 |
| Depreciation Recovered | 1,742 |
| Finance Costs | -59 |
| | 283,976 |
| **Total Operating Profit/(Loss)** | 852,525 |
| Total Comprehensive Income | 852,525 |

# Members of the FAR Board

DAVID BIRKETT (Chairman)
Northern South Island
03 324 4499

STEVE WILKINS
South Otago/Southland
027 437 5209

ALAN HENDERSON
Northern North Island
07 871 9934

Dr MIKE DUNBIER
Appointed Member
03 358 6479

RUSSELL FLEMING
South Western North Island
06 324 8641

HUGH RITCHIE
Eastern North Island
06 856 8279

DAVID GRANT
Mid Canterbury
03 302 8580

RICHARD GREEN
Appointed Member
027 497 3692

PETER MITCHELL
South Canterbury/North Otago
03 434 9244

DR TONY GREGSON
Appointed Member
Australia

To get all the latest arable information and updates visit

**www.far.org.nz**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