

# SCF

STIRLINGS TO COAST FARMERS

# Focus

SUMMER 2019 NEWSLETTER

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STIRLINGS TO COAST  
  
FARMERS



## Jottings from the Chair

KEN DRUMMOND, SCF CHAIR

Hello SCF Members,

Wow! What an incredibly early harvest!

There will be no excuses for not coming good with the Xmas presents this year. Maybe we should be offering some counselling on how to handle the build up to the festivities.

As you know we have had a change of leadership. I would like to thank Dr Christine Kershaw for

leading our group for the last four years. She has elevated us to an enviable position of relevance, credibility and sustainability. As most of you know Christine and I have developed a fantastic working relationship which will carry on to the WA Producers Co-Op. She has mentored Nathan Dovey over the last 12 months and given him the confidence to step into his current role as our new CEO, with an ongoing commitment to helping him and the staff in this transition period. We have been so fortunate to have had benefit of Christine's experience and drive. Rarely do you find someone with the passion and commitment to work on our behalf. We owe CK an incredible debt, she has always over delivered, under budget and has dragged us into the modern world. I'm confident our members will join me sending a heart felt thanks to Christine and wish her well in the future.

Welcome Nathan Dovey as our new CEO, what a perfect transition its been, thank you for taking the group on. We are very fortunate to have a home-grown talent at the helm. Please get behind Nathan and support him were you can.

We have some exciting projects ahead please get involved. Since our last newsletter the Livestock Committee has been formed, thanks to Clare Webster and Andrew Slade for taking the lead to make it happen.

Our spring field day was very successful. Nathan, Christine and the team put a lot of work into making the day relevant. We also had our AGM at the field day, big thank you to Mal Thompson who is stepping off the Board. Mal has been there from day one, his contribution will be missed. His respect in our community is well known and I have always admired the way he relates to young people. Thanks also to Darren Moir who has stepped off SCF board onto the WA Producers' Co-op board. Darren is Chair of our Commodities Committee which has had an influence in your day to day farming. His commitment to our group is highly valued, busy with a young family, expanding business and extra klms. Also our first board member outside of our catchment, he has been the right person for the job.

As you can see, we need a couple of new board members! Please think about the value of SCF to your Business and how you can contribute.

Happy Christmas

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## So long, and thanks for all the Noodles!

CHRISTINE KERSHAW, CEO

Well I can't help a little reflection as I part SCF as your CEO - often when we start out its with high hopes for a happy ending - but are never certain what the future holds. I started working with SCF in 2016, in a little office at the Ag Dept. with Heather and John working part time and little did I know then what a rewarding, challenging and inspiring job I would have.

I have often been overwhelmed by YOU, our members, and the SCF team whose generosity and hard work have helped deliver many projects and new initiatives. As I reflect on the past four years working with SCF, I consider it a real blessing to have worked alongside such a dedicated team of staff, board directors, members and sponsors. Without them, SCF wouldn't have developed into such a vibrant and innovative group that is driven by always wanting the best for our member base. SCF is now a well respected and vibrant organisation!

Today I can say that SCF is an organisation that I am very proud of.

I am a strong believer in 'pushing the envelope' to seek out new opportunities, and because of this, I have probably pushed SCF membership in ways that were not anticipated but I feel will bring benefits to members for many years to come. I feel it is the right time for me to step aside now so that SCF can consolidate its position and refocus itself back on its core business of RD&E, whilst hopefully still enjoying the benefits of its now wider focus on livestock, technology, the schools program, bigger and better events and yes, the co-op. I have complete faith that Nathan will do an excellent job of continuing to build our credibility as an effective RD&E organisation as the new CEO. Congrats Nathan on your appointment in a very competitive field of applicants!

As I move onto my new role as CEO of the newly formed WA Producers' Co-op (WAPC), I will miss the team and members but I am not going far and hope to see many of you as new members of the co-op in the years' to come. While I will miss the inspiration, I have received from my SCF role, I am confident our staff, sponsors, partners and the new CEO will continue building benefits for our members and improving SCF as an organisation.

I can see a stable and exciting future for the group and wish you all a great seasons' finish to this years' harvest. A welcome early reprieve for most this year. I personally thank you all for your support and encouragement during my time with SCF. It has been honestly humbling to see this community pull together in difficult times and to treat each other with such respect and compassion in the good and bad times I have seen you go through in the past 4 years. I particularly want to thank SCF Chairman Ken Drummond and the rest of the board for 'having a crack' and I am looking forward to continued friendships and the occasional tittle with many of you in the future.

Thank you for allowing me to be part of this special community.

Seasons greetings to you and your families

With kindest regards,

Christine



## Follow SCF online!

Search

Stirlings to Coast on these platforms and visit us @ [scfarmers.org.au](http://scfarmers.org.au):



YouTube



## Introducing new staff member - Samantha Jeffries

I'm Sam, and I am excited to be joining the SCF team as a Marketing Officer. In my job, I will be looking after all of the current sponsors, as well as looking out for any new partners that would like to join us along our journey. I will also be helping the communications team out with events, to ensure all of our publications continue to look sharp & snazzy!

A little bit about me.... I grew up in Adelaide where I studied and practised both graphic design and marketing over the past few years. I recently moved to Albany with my partner in late August and look forward to becoming a part of this great town. I truly love working in an area where I not only can be creative in the designs we produce, but also hear some of the many wonderful stories as I begin to reach out to the community.

I look forward to getting to know you all and seeing where this next year takes us! Have a wonderful Christmas!

“

There is no power for change greater than a community discovering what it cares about.

MARGARET J. WHEATLEY

”



# EVENTS NOTICEBOARD



## GREAT SOUTHERN livestock'20

**It's on again!**

**The second biennial Livestock Event hosted by Stirlings to Coast Farmers and WA Producers Co-operative.**

This year, the Stirlings to Coast Farmers group will partner with the WA Producers' Co-operative to bring you a truly unique program that gives attendees multiple opportunities to hear directly from other producers about what is happening on farm and in the R&D space in relation to advancements in livestock production systems.

This years events will be split over two days. Day 1 will consist of a 1/2 day Field day that is filled with live demonstrations at our new SCF Smart farm, including the new control centre, machinery + the latest info on the WAPC feeding trials including the SCF Smart Farm and lamb feeding trials.

Day 2 will be host to an excellent line up of speakers that will present on the latest research outcomes, marketing and technology opportunities at the Livestock 20 Producers forum to be held at the Albany Entertainment Centre.



## SAVE THE DATE! SCF CROP UPDATES AND TRIALS REVIEW DAY 2020

Tuesday February 18 2020

Venue to be confirmed

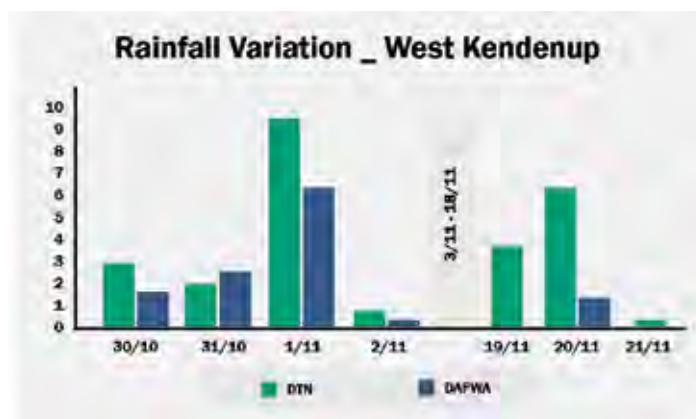
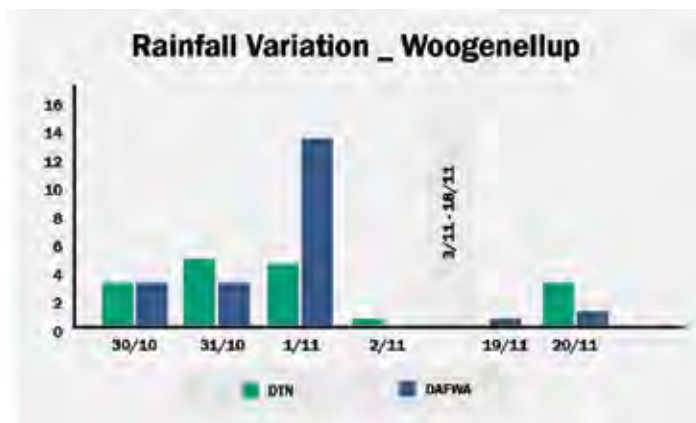


## Smart Farms Initiative Update and Livestock & Technology Committee Formed

PHILIP HONEY, SMART FARMS COORDINATOR

Progress has been ticking along nicely across the Smart Farms Initiative as we've started collating & analysing some of the sensor data coming off the two newly installed DTN Hyper-local weather stations and have held our first-ever Stirlings to Coast Livestock & Technology Group meeting earlier this month! The new committee will be overseeing the roll out of the new smart farm initiative and will identify new R&D projects for livestock and pastures.

A very big thank you goes out to all the members who attended the committee meeting in Nov, especially at this busy time of the year. We thank you for helping us identify your research priorities within this space and look forward to integrating some of these priorities as research grants come up and opportunity arise.



### SO WHAT ARE OUR FINDINGS & THOUGHTS SO FAR WITH THE DTN WEATHER STATIONS?

The weather stations have been in for approximately one month at each of the two smart farm sights, and we're starting to see some great data coming through. The rainfall predictions and timings in the models appeared to be correct, even when most of us were hoping it doesn't rain in November!

When we compare these SCF DTN stations to the closest DPIRD weather station located nearby (3.5km from West Kendenup & 8kms from Woogenellup stations), the maximum daytime temperatures are all very similar; but there are differences between the minimum recorded temperatures and rainfall as would be expected across the landscapes. Both sites recorded approximately 5mm difference between the DTN station and their neighbouring DPIRD weather station for November. But what was most impressive was the levels of variations recorded per rainfall event as shown in the graphs to follow.

At both SCF smart farm demonstration sites, there were individual rainfall events where there were double the rainfall amounts of the nearby station (DPIRD vs DTN, DTN vs DPIRD) located just a few kilometres away. One individual site recorded a 9mm rainfall difference on November the 1st. While the concept of rainfall variation and rainfall patterns is nothing new, this helps show the importance of creating large sensor networks (multiple weather stations or rain gauges) scattered across the district. SCF will be encouraging members to consider placing these inexpensive weather stations on their own farms in some months to help create a hyper-local weather station network across the region. Sensor networks help enable farmers to gain a better understanding of rainfall patterns and variation in real time throughout the season. This data can also be fed back into climatic models to help weather predictions at a higher accuracy level, and also provide the opportunity to create Water Use Efficiency maps across the landscape and improve nutrient or management decisions in real-time.

**SAVE THE DATE!**  
 DTN Weather station workshop  
 7 February 2020, venue to be confirmed.

LOCAL FORECAST | HISTORICAL WEATHER

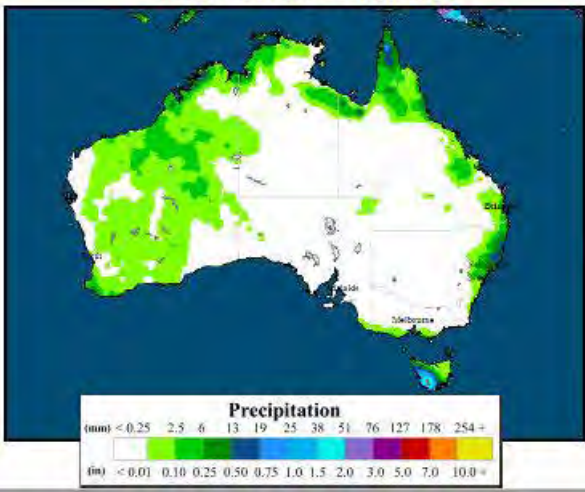
Adams, WA (DI7880)

Change Station | Add Slide | Print

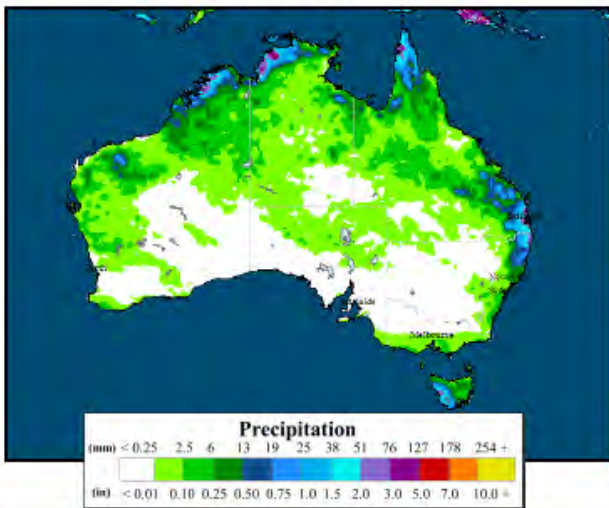
Date	Wed 12/4	Rest of Thu 12/5	Fri 12/6	Sat 12/7	Sun 12/8	Mon 12/9	Tue 12/10	Wed 12/11	Thu 12/12	Fri 12/13	Sat 12/14	Sun 12/15	Mon 12/16	Tue 12/17	Wed 12/18	Thu 12/19
Weather Condition																
Weather	Mostly Cloudy	Clear	Evening Rain Likely	Afternoon Rain Likely	Isolated Morning Rain Possible	Sunny	Sunny	Partly Cloudy	Partly Cloudy	Partly Cloudy	Partly Cloudy	Mostly Cloudy	Partly Cloudy	Partly Cloudy	Partly Cloudy	Partly Cloudy
Temperature (°C) (Lo/Hi)	14.4/31.1	12.8/28.3	12.2/37.2	14.4/27.8	11.7/22.8	8.3/27.2	10.0/28.3	12.2/28.9	12.8/32.2	14.4/32.8	13.9/30.0	12.2/28.7	11.7/27.2	11.7/26.7	11.1/26.6	10.6/26.8
Feels Like (°C) (Lo/Hi)	14.4/31.1	12.8/28.3	12.2/37.2	14.4/27.8	11.7/22.8	8.3/27.2	10.0/28.3	12.2/28.9	12.8/32.2	14.4/32.8	13.9/30.0	12.2/28.7	11.7/27.2	11.7/26.7	11.1/26.6	10.6/26.8
Growing Degree Days (°C)	12.2	10.6	11.1	11.1	7.8	8.3	8.9	10.6	11.7	12.2	12.2	9.4	9.4	9.4	8.3	8.3
Dew Point (°C)	13.3	12.8	11.7	11.1	9.4	8.9	10.0	11.7	11.7	11.7	11.1	11.1	10.0	10.8	10.6	9.4
Humidity (%)	80	52	35	48	53	46	48	42	40	47	53	49	49	52	48	48
Wind Speed (km/h)	11	18	14	23	14	6	10	13	11	11	11	8	11	10	13	10
Precipitation Chance (%)	-	-	83	59	20	-	-	-	-	-	-	-	-	-	-	-
Precipitation Amount (Rain:mm, Snow:cm)	0.0	None	Rain 1.02	Rain 1.02	Rain 0.25	None	None	None	None	None	None	None	None	None	None	None
ET (Ref) (mm/day)	7.11	7.87	9.14	7.11	5.59	5.84	6.88	7.11	7.87	8.13	6.88	5.33	6.35	6.1	6.1	5.1

Disable local forecast on click

**Total Forecast Precipitation**



**Total Forecast Precipitation**



▲ Users have the opportunity to create 'virtual weather sites', where they will be able to see the estimated 15-day forecast information. These sites can be located anywhere in the world, but their accuracy will be improved if it is near a weather-station that is reporting climate information into the DTN models.



▲ A fully installed DTN Hyperlocal weather station located at West Kendenup. The DTN hyperlocal weather stations are easy to install, are completely self-sufficient, operate off solar/battery power and are contained within a small footprint.

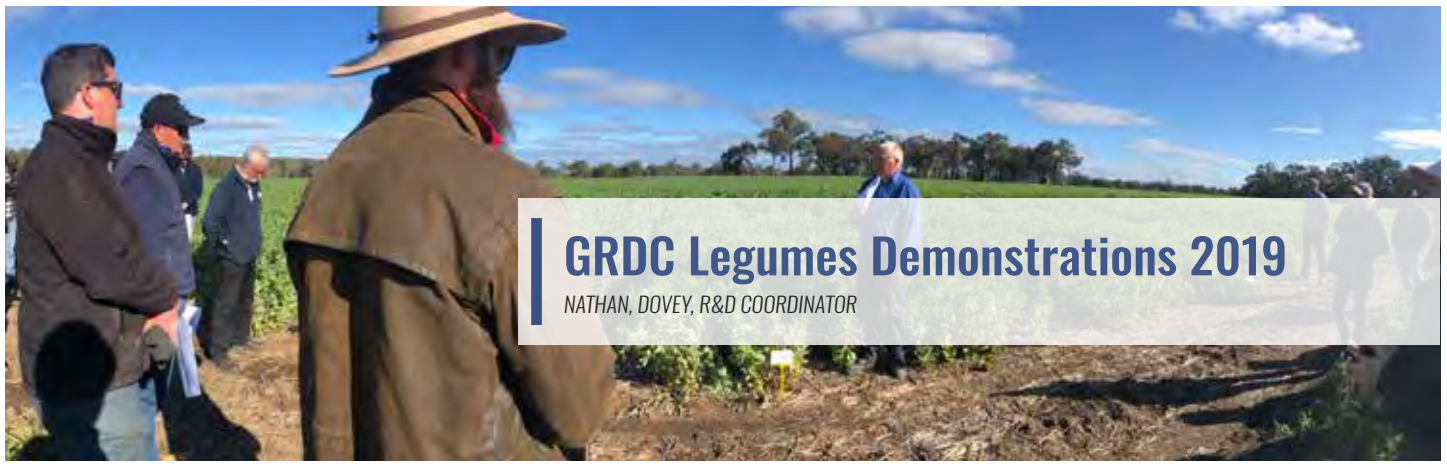
▲ Beyond looking at local conditions, subscribers to the DTN weather services can see daily reports of climatic conditions at scale for each continent. These reports show daily maximum and minimum temperatures, where rain fell in the previous day, forecasted rainfall for the day, along with the predicted 1-7 day rainfall (middle left) and 8-15 day rainfall (bottom left)

**ACKNOWLEDGEMENTS**

The Smart Farms Project is funded by DPIRD's WA IoT DecisionAg Grant Program & the National Landcare Program (NLP2)



Department of Primary Industries and Regional Development



# GRDC Legumes Demonstrations 2019

NATHAN, DOVEY, R&D COORDINATOR

## BACKGROUND

Grain growers in the Albany port zone lack diversity during the cropping phase with a canola-barley rotation the most frequently grown. Growers are now encountering fungicide resistance in barley and canola crops. The threat of herbicide resistance is always present in heavy crop rotation systems. Adding a legume to the cropping phase is one option to improve diversity which will have soil health, disease and weed benefits that should ultimately help farmers maintain or improve crop yields.

Current legume crops and varieties have improved yield potential and resilience to water logging, which is crucial in the high rainfall zone. Weed and disease control has become more affordable with increased competition in the farm chemical industry. In summary, the agronomic package available to growers is better than previous decades and legume crops should be a viable option in more farming environments.

This GRDC demonstration project aims to demonstrate the fit of certain legume crops in localised environments whilst re-introducing legumes crops to grain growers across the state.

In addition, prices for legume crops can be very high at times, which is attractive to growers. For example, Faba bean prices were over \$1,000 per tonne in WA last year.

## FRANKLAND (HILDER) LEGUME SITE.

2018- Legume crop phase

2019- Paddock and demonstration area was sown to Scepter wheat.

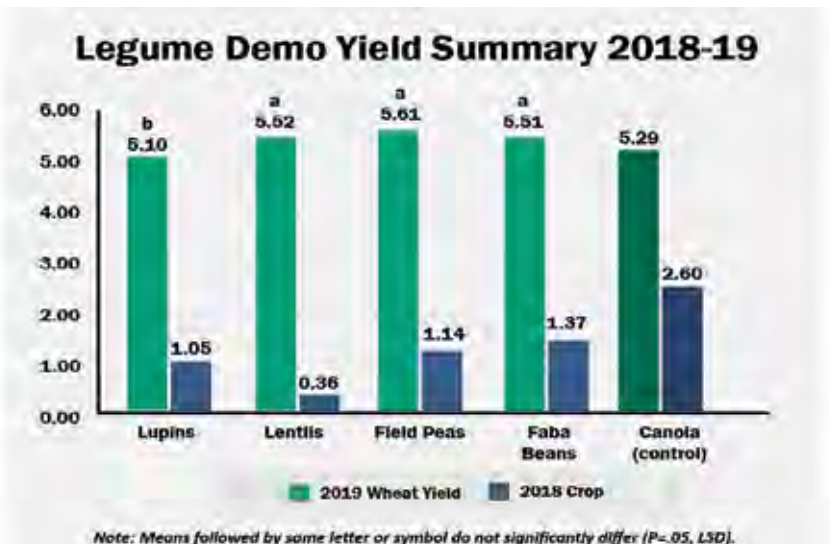


Figure 1: Grain yields (tonnes/hectare) from the 2018 (legume crops) and the following Scepter wheat crop in 2019. The control treatment comprised of canola in 2018 followed by Scepter wheat.

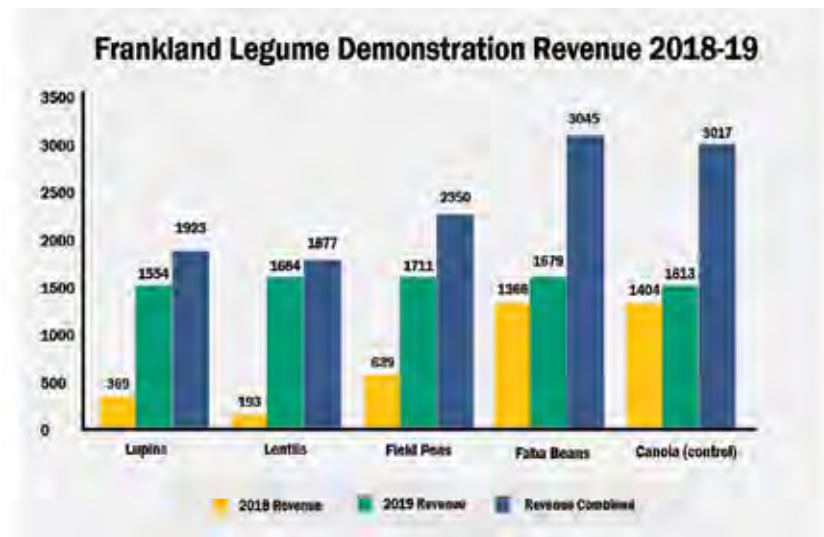


Table 1: Grain legume prices calculated as an on-farm price in 2018. The 2019 APW on-farm wheat price was taken on December 4th.

2018	2019
Faba beans \$1,000	APW wheat
Chickpeas \$750	\$305
Field Peas \$560	
Canola \$540	
Lentils \$530	
Lupins \$350	

Figure 2: Revenue derived from the Frankland Legume Demonstration site in 2018 and the 2019. Bars and figures represent (\$/ha) of revenue achieved from the various grain combinations in the last two years. Prices were calculated on the same day in 2018 and 2019 for each grain crop.



## RESULTS

- Wheat yields in 2019 are statistically similar after Lentils, Field Peas and Faba Beans in 2018.
- Lupin yields are significantly lower than the other pulses.
- Lupin seed was inoculated with granular ALOSCA (group GS), whereas all other legume seed were treated with peat based ALOSCA inoculum. The different inoculation procedure could account for the lower lupin yield.
- Faba beans followed by wheat derived the greatest two-year revenue in the trial. However, Faba beans were priced at \$1000/t in 2018, which was exceptionally high. By contrast the 2019 Faba bean price was \$500/t.
- If we used \$500/t for Faba beans in 2018 the total revenue over the two years would have been \$2,298.45 which is similar to the field peas and \$718.55 less than current grower practice (canola-wheat).
- The wheat on canola in 2018 yielded 5.29t/ha. All legume treatments except for lupins achieved higher wheat yields in 2019 than canola in 2018. However, the difference between the highest yielding legume-wheat combination and canola was only 320kg/ha which equals \$97.60/ha (APW @ \$305/t).
- Grain analysis is yet to be completed in 2019. Grain protein levels will be investigated as well as all other key quality characteristics.
- Soil testing (0-10cm layer) of the different legume treatments will also be completed post-harvest 2019.

## BROOMEHILL (BIGNELL) LEGUME SITE

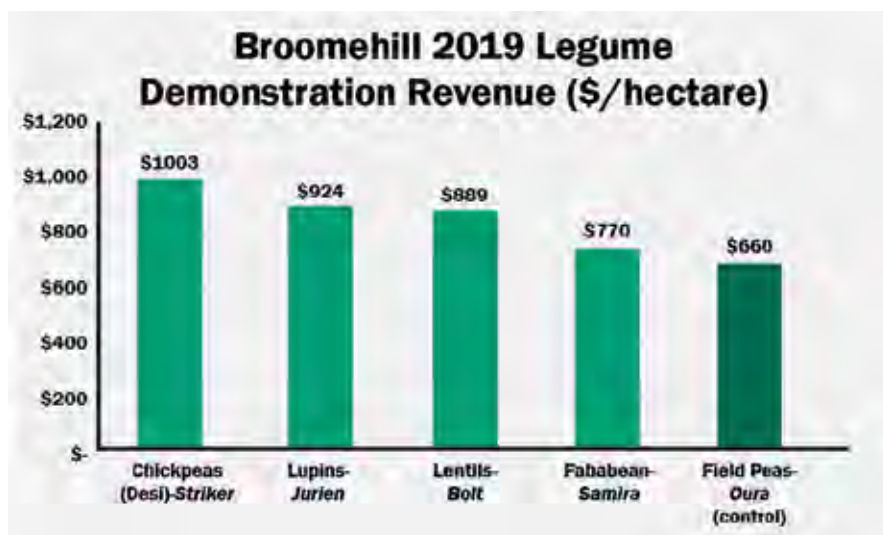


Figure 3: 2019 Revenue (dollars/hectare) of the Broomehill Legume demonstration site hosted by Southern Dirt grower Craig Bignell. 'On-farm' prices were determined on December 4th, 2019. Chickpeas \$790, Faba Beans \$500, Lentils \$520, Field Peas \$440 and Lupins \$420.

Legume crop	t/ha	Price \$/t	Revenue \$/Ha
Chickpeas- Striker	1.27	790	\$ 1003
Lupins- Jurien	2.20	420	\$ 924
Lentils- Bolt	1.71	520	\$ 889
Faba beans -Samira	1.54	500	\$ 770
Field Peas- Oura	1.50	440	\$ 660

Table 2: Summary of the 2019 Legume Demonstration site at Broomehill managed by Southern Dirt. Shows the differences between legume yields and revenue per hectare. On-Farm prices were calculated on December 4th, 2019, with assistance from Grain Brokers Albany.

## RESULTS

- Lupins yields were acceptable given the growing season rainfall (April-September 220mm)
- Revenue per hectare is largely affected by legume price per tonne. Chickpeas were the highest revenue crop this year yet yielded less 0.93t/ha less than the lupins.
- Demonstration site suffered wind erosion after sowing which reduced yield potential. However, the legumes recovered better than expected.
- The outside crop of PBA Oura field peas yielded 1.50t/ha. This achieved the lowest revenue in 2019 due to the lowest on-farm legume price of \$440/hectare.
- The average revenue achieved per hectare from the legume crops in 2019 was \$834/ha. This equates to the same revenue as a 1.51t/ha canola crop priced at \$550/t on farm.



Department of  
Primary Industries and  
Regional Development

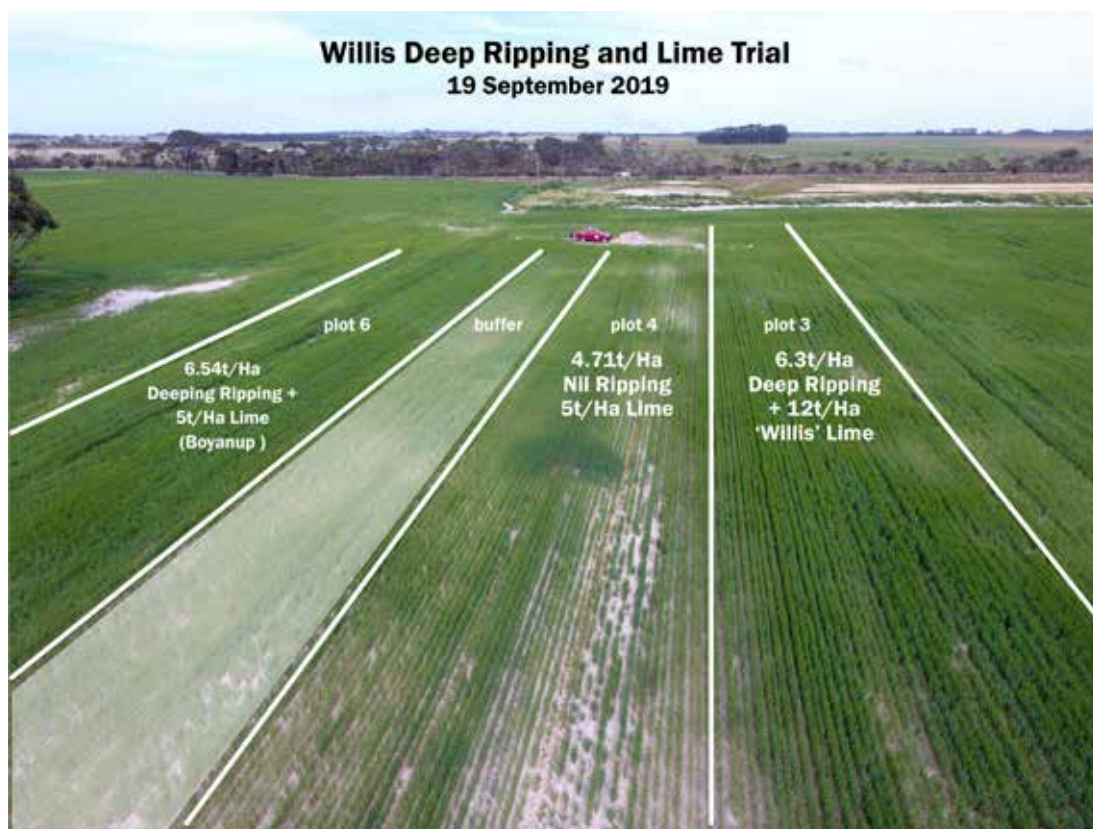


## BACKGROUND

This project aims to determine if deep ripping with inclusion plates after surface applied lime improves subsoil acidity (raises the pH) at a faster rate than surface applied lime applications only.

Inclusion plates are designed to allow for top-soil to relocate deeper into the soil profile down the back of the ripper tyne. If lime has been applied on the soil surface, then some of that lime should also move into the subsoil where it can react with acidity and increase soil pH. If subsoil acidity can be ameliorated faster than the traditional surface applications, then productivity gains through improved soil nutrient availability and soil biological interactions could occur sooner which will accelerate payback.

SCF researchers want to determine if subsoil compaction and acidity can be treated in the same pass of a ripping machine. The only extra cost of this strategy assuming the soil is compacted, is the wear on the inclusion plates and the extra drag created by them, increasing fuel costs, tractor hours and depreciation.



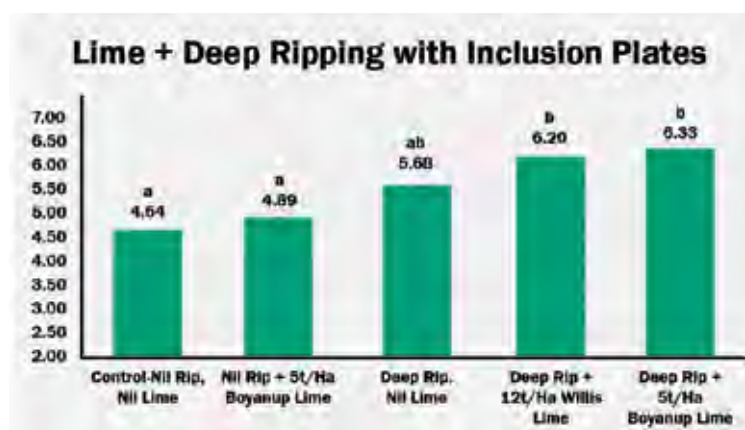
▲ Figure 1: Drone Image of the Willis lime by ripping trial at South Stirlings 2019. Crop biomass on the 19 September shows a distinct improvement over the unripped plots. Yield data collected at harvested correlates with this image.



▲ Figure 2: Image of a deep rip plus lime soil pit. The purple indicator shows lime has relocated down the ripper type in the subsoil.

## RESULTS

- Results show a clear response to deep ripping (60cm) in the first year with a 1.04t/ha difference between the deep ripping and control treatments.
- Nil ripping plus 5t/ha of Boyanup lime yielded 250kg/ha higher than the control (nil ripping & nil lime) but was not statistically significant.
- There appears to be an additive effect of ripping plus lime for both the Boyanup and the Farm sourced lime from Willis's property. An additional 520 and 650kg/ha of barley was achieved for the Willis and Boyanup lime respectively.
- The key questions remaining are 1) How long will the ripping benefits last? 2) How will the soil pH change, at 10cm increments, in subsequent years and 3) Will there be measurable difference in Willis lime (12t/ha) and Boyanup Lime (5t/ha)
- SCF will continue to monitor yields at this site in future years via yield data collected from the harvester.
- Soil pH data was benchmarked in March 2019 by a Joel Andrew from MapIQ. Each sample site was georeferenced and tested at 10cm increments down to 50cm. SCF will re-test the exact locations every few years to measure changes in sub-soil pH.
- A comparison of how quickly the lime ameliorates subsoil acidity will be made between surface applied lime and lime incorporated by deep ripping. Watch this space.



Note: Means followed by same letter or symbol do not significantly differ (P=0.05 LSP)

## ACKNOWLEDGEMENTS

This project is supported by funding from the Commonwealth Government's National Landcare Program Smart Farms Small Grants.



# How long does ripping last?

JEREMY LEMON, DPIRD ALBANY



- Yield increases from deep ripping last as long as the soil remains soft.
- Ripping on deep white south coast sands lasts for 2-3 seasons.
- Recompaction can be caused by several factors: traffic, waterlogging and wetting/drying cycles.

Frequent heavy cropping machinery passes compact soils reducing crop yields by restricting root growth and crop access to soil water and mobile nutrients. Compaction is most pronounced on sandy soils up to 60 or 70cm depth as shown in Figure 1. For best results, the full depth of compaction needs loosening. Shallow ripping to 35cm depth is only partially effective which is shown in Table 1 by the 0.26t/ha yield increase in 2014 barley yield. Deeper ripping to 70 and 120cm has shown bigger yield increases of up to 1.1 t/ha of barley and even higher on selected areas in the year of ripping (Table 1) on deep white south coast sands. Given the cost of ripping, the economic value will depend on the longevity of the effect. A trial at Kojaneerup indicates that there is a rapid decline in benefit. By the third and fourth seasons there is no measurable yield benefit.

year treatment	2014 barley	2015 canola	2016 barley	2017 canola	2018 barley
nil	3.26	1.57	5.90	1.76	6.35
35cm rip 2014	<b>3.52</b>	1.59	5.97	1.75	6.42
70cm Heliripper 2016	na	na	<b>6.61</b>	1.76	6.58
120cm dozer rip 2016	na	na	<b>7.03</b>	<b>1.84</b>	6.27
F prob	0.003	0.498	0.08	0.479	0.649
lsd 5%	<b>0.158</b>	0.097ns	<b>0.857</b>	0.085	
lsd 10%	<b>0.124</b>	0.074ns	<b>0.68</b>	<b>0.067</b>	0.472ns

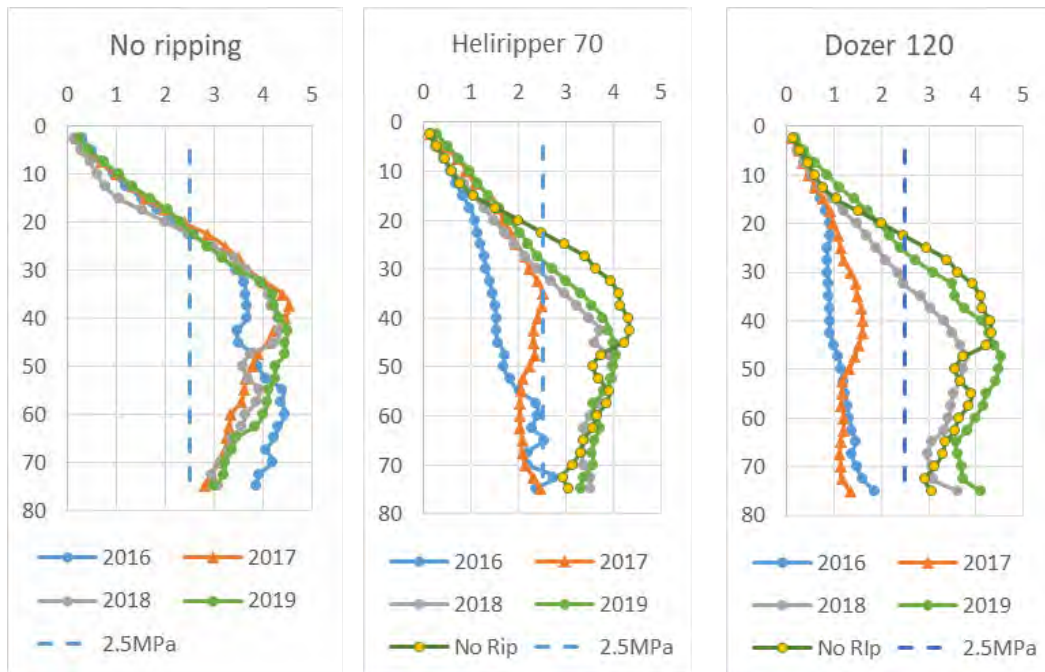
▲ Table 1: Whole plot grain yields from deep ripping deep sand at Kojaneerup 2014 to 2018. Values in bold are significantly higher than no ripping.

Annual soil strength measurements show clearly the recompaction over time. Measurements presented in Figure 1 are from a transect toward the western end of the plots. This area was waterlogged to the surface during spring 2017 after the 2017 penetrometer measurements. Coupled with unmatched traffic the soil strength below 30cm on ripped plots has mostly returned to unripped strength.

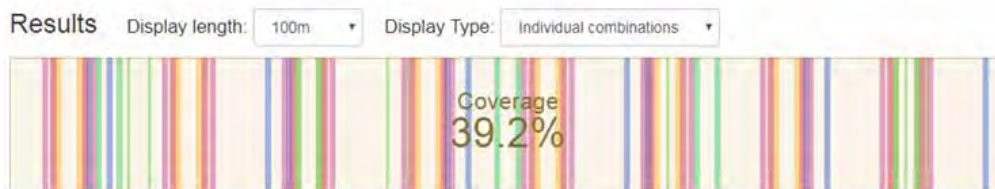
The increase in soil strength on the ripped treatments shown in figures 1b and c corresponds with the reduction of yield benefit. The no ripping treatment in figure 1a indicates the spatial variability of soil strength but in all cases is more than 3.5MPa between 30 and 60 cm depth. The 70cm Heliripper treatment depth is not as soft between as the 120cm dozer treatment due to the full depth tines being spaced 100cm apart with shallower tines mid way between each of the rear deep tines which means the ripping is not fully effective to depth across the machine width. The 120cm dozer treatment shows very soft soil to more than 75cm, the maximum depth of the penetrometer. The deep ripped treatments only show soil softening in the first two seasons. By the third season, 2018, both ripping treatments returned to soil strengths greater than 2.5MPa which is the strength at which plant root growth is restricted in sand when no old root channels are present.

Trial work on other deep sandy soil types across the state also show that deep ripping is only effective for a few seasons. It seems that higher clay content of loamy sand subsoils extends the duration of a ripping yield increase. We know that machinery traffic causes more subsoil compaction on wet than dry soils. Harvesting when soil (including subsoil) is damp causes a lot of compaction due to the weight of harvesters and chaser bins traversing the paddock.

In northern WA areas where ripping is practiced on loamy sands growers generally rip every 3-4 seasons. Growers in the Esperance area on similar deep white sands consider yield increases from ripping only last about 2 seasons. Sites around the state are being monitored to estimate the longevity of ripping on a range of soil types, many in controlled traffic cropping systems.



▲ Figure 1 a.b.c: Soil strength profiles for (a) unripped plots (b) Heliripped to 70cm plots and (c) dozer ripped to 120cm plots at Kojaneerup over 4 seasons. Treatments were ripped in April 2016.



▲ Figure 2: Current wheeling pattern on trial site drawn with the free online 'CTF calculator'. Each set of four dark pink lines represents header run wheeling corresponding with each plot. Yellow lines are seeding tractor, wider green or blue lines are 18m or 20m spreader tractor and thin green lines are sprayer. There are 8 full header runs from the left side, the fourth run represents plot 1.

## ACKNOWLEDGEMENTS

This work was set up with GRDC and DAFWA investment in the DAW242 project (Subsoil Constraints) and continued with GRDC and DPIRD investment in DAW256 (Building crop protection and production agronomy R&D capacity in regional Western Australia).



Department of  
Primary Industries and  
Regional Development





## Using rotary grain cleaners and/or a snail crushing grain roller to remove small conical snails from canola

ALAINA SMITH, SCF RESEARCH OFFICER

### BACKGROUND

Small conical snails are an emerging pest in the southern WA due to changing farming practises that have improved soil health and provide an ideal habitat for this pest. Small conical snails can damage crops at germination, reduce pasture biomass and potentially downgrade harvested grain if not managed carefully.

Snail management requires a number of tactics that can include removing the green bridge, burning windrows and strategic baiting early in the season to prevent snails from breeding. However even with a good program of control, snails can be a problem at harvest.

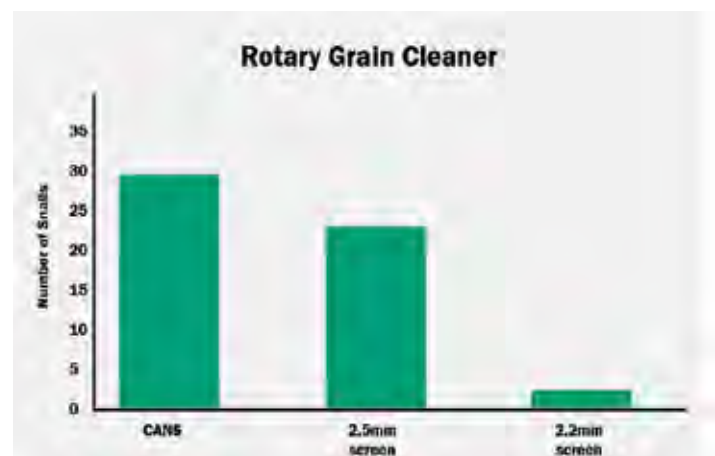
The 2019/20 grain harvest in WA saw the tightening standards for snail numbers in both canola and barley, causing concern among growers about how to deliver grain within these new limits.

Grain-cleaning snail rollers have been used for >10 years in the Yorke Peninsula to remove snails from grains such as canola, cereals, lentils and beans.

Stirling to Coast Farmers conducted a trial to determine whether snail rollers (with and without pre-cleaning using a rotary grain cleaner) are likely to remove small conical snails from canola in order to meet the current receival standards. We also wanted to develop clear guidelines about the optimal set up of the roller and cleaner to achieve these standards and estimate the cost of each process.

### KEY POINTS

- SCF cleaned 150t of CANS using a rotary grain cleaner and snail crushing grain roller.
- cleaning small conical snails out of canola using a rotary grain cleaner fitted with 2.5mm slotted screens reduced the number of small conical snails in canola by 19% with <1% grain losses.
- Using 2.2 mm screens removed 95% of snails but canola losses were 5.5%.
- The snail roller reduced snail numbers in canola by up to 91% when the gap between the rollers was tightest.
- However, tightening the gap between the rollers can increase admixture and damage seeds.
- Neither cleaning or rolling the grain affected oil, moisture or protein content.
- Both cleaning and rolling grain can reduce snail numbers in canola to acceptable levels, but care needs to be taken to get the settings right to reduce grain losses or damage.



▲ Graph 1: Number of small conical snails per 500g sample in uncleaned canola and after cleaning with a rotary grain cleaner using 2.5 mm or 2.2 mm slotted screens. Number of samples: CANS = 51, 2.5mm = 52, 2.2mm = 14.

▲ Photo 1: A pile of small conical snails removed from canola using a 4-barrel rotary grain cleaner with 2.5mm slotted screens.

## METHODOLOGY

SCF processed 150 t of canola to determine the optimal method for removing small conical snails with minimal grain loss or damage. The canola used for the trial was classified CANS and had on average 30 small conical snails per 500g sample.

The trial used a rotary grain cleaner and a grain crushing snail roller to remove snails from the grain. Before and after cleaning or rolling we took 500g samples of canola and measured:

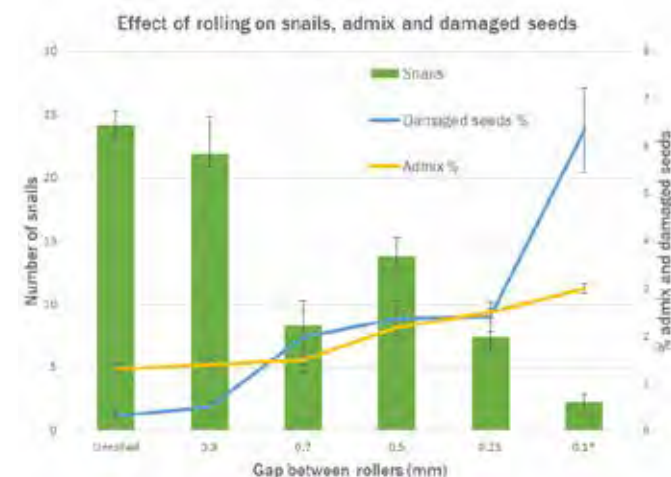
- snail numbers and mortality, shell size and shell damage.
- admixture, damaged seeds, protein, oil and moisture.



▲ **Figure 1:** Graph showing the size range of small conical snails found in a) uncleaned canola, b) canola cleaned with a 2.2mm slotted screen and c) canola cleaned with a 2.5mm slotted screen. Number of measurements: Uncleaned CANS = 360, 2.5mm = 282, 2.2mm = 19.



▲ **Figure 2:** Snails on the left were removed from the canola (centre) using a rotary grain cleaner with 2.5mm slotted screens. The snails on the right could not be removed using the same screens.



## ROTARY GRAIN CLEANER RESULTS

We tested a DE Engineers 4-barrel rotary grain cleaner with two screen sizes: 2.5- and 2.2 mm slotted screens.

Using the rotary grain cleaner with 2.5mm slotted screens resulted in a 19% reduction in snail numbers ( $p < 0.001$ ) with snail numbers dropping from 30 to 24 per 500g (Graph 1). This reduction was less than predicted from grower experience in the 2018-19 harvest, where the 2.5 mm screens were seen to remove large numbers of small conical snails (see Graph 1).

Cleaning with the 2.2mm slotted screens resulted in a 95% reduction in snail numbers ( $p < 0.001$ ) or from 30 to 2 snails per 500g. While this was a great result for snail reduction, the grain losses were 5.5% which is unacceptable for most growers, since there is no regular market for this type of seconds grain. The CANS used was a mix of TT and OP varieties with an average seed size of 1.85mm. It is estimated that the losses could be >10% for hybrid canola varieties which can have larger seeds.

Rotary grain cleaners rely on the difference in size between the snail and the grain to screen or scalp snails out of the grain. There is often a trade-off between removing more snails and minimising grain loss. Where the snails are a similar size to the grain, rotary grain cleaners may not be able to clean grain to specification without incurring unacceptable grain losses. Figure 1 below compares the size range of snails in the uncleaned canola with that cleaned with the rotary grain cleaner using 2.2- and 2.5 mm slotted screens and the average diameter the canola seed. The line showing the range of snail shell sizes in the canola cleaned with the 2.5mm screen is very similar to that for the uncleaned canola indicating the poor snail removal. In comparison the effectiveness of the 2.2mm screens can be seen by the very small number of snails available to measure.

Cleaning the grain with the 2.5mm slotted screens did not reduce snail survival and there were too few snails from the 2.2mm slotted screens to make an assessment. Rolling the grain significantly reduced the survival of the small conical snails (Figure 4) when the gap was 0.7m or less. 65% of the small conical snails were still alive in the unrolled grain but this dropped to 37% in the grain rolled with a 0.5mm gap and 6% with a 0.1mm gap.

▼ **Photo 3:** The snail roller processing canola during the trial.



▲ **Figure 3:** The green columns in this figure represent the number of small conical snails per 500g sample of unrolled and rolled canola with a decreasing gap width between the rollers. The lines show the percentage of admix (dashed yellow line) and damaged seeds (blue line) with tightening of the rollers. Number of samples: Unrolled = 52, 0.9 = 7, 0.7 = 12, 0.5 = 17, 0.25 = 33, 0.1 = 11). \*Gap width is estimated to be 0.1mm but it is impossible to measure gap when it is this tight.

The increase in snail mortality was mirrored by an increase in snail shell damage with the tightening of the gap (mm) on the snail roller (Figure 4). Shell damage increased from 25% in the unrolled grain to 100% in the canola rolled with a 0.1mm gap. This would have significantly contributed to the death of the small conical snails.

## SNAIL ROLLER RESULTS

A Kingsway Welding snail crushing grain roller with a combination of rubber and metal rollers was also used in the trial. The settings adjusted on the roller were the hopper opening, which controls grain flow into the rollers, and the gap width between the rollers.

The PTO speed driving the rollers can also influence the number of snails removed from the grain. Running the roller faster does not necessarily crush more snails and can cause the rollers to heat up and be damaged. Unfortunately, the PTO speed in this trial had to remain fixed at 450 rpm which is slightly higher than the 400-430 recommended for canola. This highlights the importance of using a modern tractor to drive the snail roller so that PTO can more easily be adjusted.

Using the snail roller with a roller gap less than or equal to 0.7mm significantly reduced the number of small conical snails in the canola by 43 to 91% ( $p < 0.001$ , see Figure 3). The lowest snail numbers (2 per 500g sample) were achieved where the gap between the rollers was tightest, estimated to be 0.1mm although it is impossible to measure the gap when it is this tight. While this represents a 91% decrease in snail numbers, only 1 snail per 500g is allowed for grain to be classified as CAN1/CAG1 under the 2019-20 receival standards.

Tightening the gap between rollers increased admixture and seed damage (see Figure 3). The admixture increased from 1.3% for the unrolled grain to 3% for that rolled with a 0.1mm gap. This level is still within the maximum limit for CAN1/CAG1 grades (5%) but any increase in admixture incurs a price discount. The number of damaged seeds also increased from 0.32% for the unrolled canola to 6.35% in the grain rolled with the tightest gap, more than double the maximum limit for CAN1/CAG1 (3%).

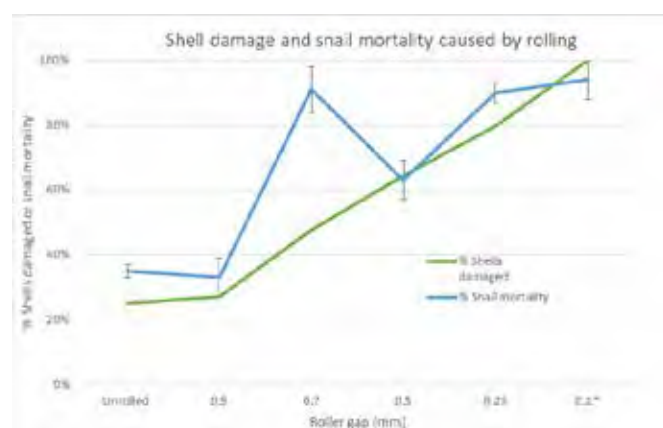


Figure 4. The percentage of shell damage (green line) and snail mortality (blue line) in unrolled and rolled canola with a decreasing gap width (mm) between the rollers. Results are not presented for some samples because they had no snails or too few for a reasonable estimate of survival. Number of samples: Unrolled = 52, 0.9 = 7, 0.7 = 12, 0.5 = 14, 0.25 = 30, 0.1 = 9). \*Gap width is estimated to be 0.1mm but it is impossible to measure gap when it is this tight.

## CONCLUSIONS SO FAR

While this has been a thorough assessment of the snail roller's capability, we expect that the experience of growers using rollers during the 2019-20 harvest will give us a much better picture of what these machines are capable of.

We found that it was a lot harder to crush all the small conical snails in canola than we anticipated. We had to run the roller slow and tight to get snail numbers down which caused increased grain damage. This may be because the trial was conducted in June and the canola we used had been stored for 6 months. Anecdotal information from growers in SA suggests that snails stored for this amount of time will have much harder shells than those that have recently been harvested.

The canola that was put through the 2.2 mm slotted screens and had 2 snails per 500g, was rolled at the same slow speed and tight gap as that from the 2.5mm screens which had 24 snails per 500g. It is possible that this grain could have been rolled faster and with a wider gap in order to speed up the cleaning process and reduce grain damage while still achieving 1 or less snails per 500g sample.

## WHAT'S NEXT?

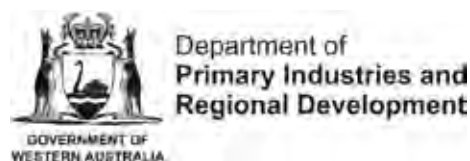
SCF is currently testing the effectiveness of snail rollers to remove small conical snails from wheat and barley and gathering firsthand information from growers who are cleaning canola. We would love to hear from growers who are cleaning grain this harvest or interested in using the snail roller. Contact Alaina Smith on 043 898 6404.

## ACKNOWLEDGMENTS

We would like to thank Fiona Goss (DPIRD) and Rob Dickie (CBH) for their assistance in organising the meeting with the federal Dept. of Agriculture. In addition, thank you to Darren Moir for attending the meeting, as a representative of the SCF Commodities Committee, and Mark Adams and Scott Smith for providing a grower's perspective.

SCF would also like to thank:

- GRDC for funding the trial,
- CBH for making the grain available and providing staff and facilities for grain testing,
- DPIRD: Svetlana Micic for helping with the snail measurements and Andrew van Burgel for statistical analysis,
- Scott Smith, Reece Curwen, Mal Thompson and John Howard for their help with the trial.







## The cost of removing snails from canola

ALAINA SMITH, SCF RESEARCH OFFICER

Small conical snails are an emerging pest in southern WA, and even with appropriate pest management earlier in the year, grain can require cleaning at harvest to mitigate costly downgrading. This concern is particularly relevant given the tightening of receival standards for snails in canola and barley this harvest.

Stirling to Coast Farmers worked with farm advisor Rod Grieve (Evans and Grieve) to compare the options available for removing small conical snails from canola and estimate the costs.

Currently growers can either:

- Accept snail delivery discount.
- Clean grain using a rotary grain cleaner.
- Clean grain using either a small or large snail crushing grain roller.
- Use a professional grain cleaner.

The analysis considered:

- The capital costs of cleaners or rollers and associated field bins, augers etc.
- Depreciation of machinery over time.
- Labour and fuel cost.
- Estimated grain losses.
- Changes in grain quality (increases in admixture or seed damage).
- The change in cost with grain volume.

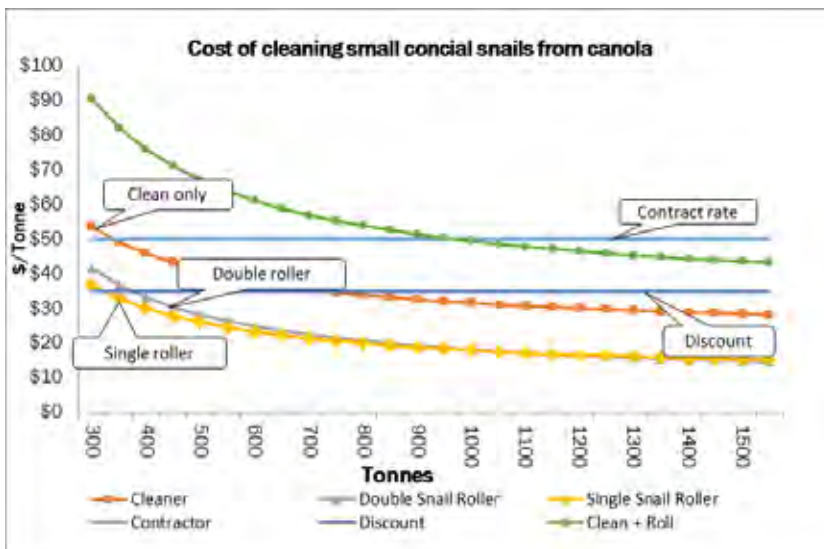


Figure 1. Graph showing the cost per tonne of cleaning small conical snails from canola with increasing volumes of grain. Methods assessed include cleaning with a rotary grain cleaner (Clean only), using a professional grain cleaner (Contract rate), using a single or double snail roller, taking the discount at delivery (Discount), or a combination of both cleaning and rolling.

Table 1. The individual cost per tonne of cleaning small conical snails from canola for volumes between 300 and 1500 t. Methods assessed include taking the discount at delivery (Discount), using a single or double snail roller, using a professional grain cleaner (Contract rate), cleaning with a rotary grain cleaner (Clean only) or a combination of both cleaning and rolling (Clean + roll).

	Tonnes Processed													
	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	
Single Snail Roller	\$31	\$24	\$20	\$17	\$15	\$14	\$13	\$12	\$11	\$11	\$10	\$10	\$9	
Discount	\$35	\$35	\$35	\$35	\$35	\$35	\$35	\$35	\$35	\$35	\$35	\$35	\$35	
Double Snail Roller	\$36	\$27	\$22	\$19	\$16	\$15	\$13	\$12	\$11	\$10	\$10	\$9	\$9	
Contractor	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	\$50	
Cleaner	\$54	\$46	\$41	\$38	\$36	\$34	\$33	\$31	\$31	\$30	\$29	\$29	\$28	
Clean + Roll	\$85	\$70	\$61	\$55	\$51	\$48	\$45	\$43	\$42	\$40	\$39	\$38	\$38	

## TAKING A DISCOUNT ON DELIVERY

In the 2018/19 harvest growers paid an average of \$35/t for delivering canola with >10 snails per 500g. In the 2019/20 harvest the limit will be 10 snails per 500g so for growers with >10 snails per 500g accepting a discount may not be an option. Some growers will be forced to use some form of cleaning to get snail numbers below 10 per 500g. A discount will still apply to canola with 2-10 snails per 500g and we will have to wait and see if the value of the discount will increase.

## ROTARY GRAIN CLEANERS

Using a rotary grain cleaner was one of the more expensive cleaning options, largely due to grain losses, which we estimated at 5% with seconds valued at \$200/t. There is obviously a trade off between using finer sieves to remove more snails and incurring larger grain losses. In our canola trial reducing the slotted screed size by 0.3mm increased grain losses by 5% but reduced snail numbers by 95%. If growers can manage to clean and sell their seconds, this would obviously reduce the cost of using a rotary grain cleaner.

## SINGLE AND DOUBLE SNAIL ROLLERS

Using a snail roller alone was relatively cheap, as, although the capital cost of the machinery was similar to a rotary grain cleaner, there were no grain losses. Rolling grain to crush snails can damage the canola causing an increase in admixture and seed damage which we did account for in this analysis. If admixture increases by 1% at \$600/t, there is an added cost of \$6/t which contributes about 25% to the cost of rolling. While an increase seed damage could move grain from CAN1 into CAN2 grades, Rod has indicated that most contracts offer CAN2 at no discount, so we did not include a penalty for this change. If canola has >30 snails/500g, then rolling the grain once may not make the receival standards and rolling a second time may be necessary which will obviously increase the cost.

## CONTRACT CLEANING

This was difficult to estimate as accurate information about the rates charged by professional seed cleaners to remove small conical snails from canola is hard to obtain. Anecdotally seed cleaners have said that it is difficult to clean small conical snails from grain without incurring significant losses, particularly if the snails are the same size as the canola. We set the cost per tonne for cleaning the grain at \$30/t, which, with an estimated 5% grain losses. This means that the cost of getting grain

professionally cleaned works out at \$50/t. While we have set this as a flat rate here it is likely that the actual cost will vary depending on the volume to be cleaned.

## CLEANING AND ROLLING

This was the most expensive option due to the capital cost to purchase a cleaner and roller, and grain losses associated with the cleaner. However, this system offers growers more flexibility, as, depending on snail numbers and sizes, growers can clean and/or roll in any given year. Growers can clean canola using finer sieves to bring snail numbers right down and lightly roll to crush any remaining snails. Using a light roll on most of the grain will keep admixture low and decrease seed damage, while the seconds from cleaning may then be rolled slow and tightly to recover some value. The value of using a bigger snail roller is that it can process grain at 40-50 t/hr and keep up with a rotary cleaner.

## LABOUR COSTS

Cleaning or rolling grain is generally a full-time role and not something you can set and forget. Labour costs were based on the need for someone to constantly monitor the flow grain from chaser bins, through various augers and field bins to cleaners, rollers and ultimately onto a truck. In addition, augers and tractors need refuelling, the roller temperature needs monitoring and snail numbers need to be checked to get the best results. While labour contributed to between 2 and 7% of the cost of cleaning or rolling grain, which is a relatively small, it can be difficult to employ and retain reliable staff in any farming operation, and needing an extra employee over harvest in order to clean grain is no small thing.

## WHAT'S NEXT?

Stirling to Coast Farmers are looking at the effectiveness of snail rollers to remove small conical snails from barley and wheat during this harvest. We hope to use this information to create an economic model for the cost of cleaning snails out of cereals. SCF will also be creating an online calculator so that growers can use their own data to estimate the cost of cleaning grain for their specific circumstances.

## ACKNOWLEDGEMENTS

Thanks to Rod Grieve for performing the economic analysis for this report and Harry Jensen (Great Southern Seed Grading) for information on grain cleaning here and in South Australia.

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**Philip Honey**

**0428 768 589**

**[philip.honey@scfarmers.org.au](mailto:philip.honey@scfarmers.org.au)**





# Bayer CropCast – Podcast

## Merry Christmas! Twenty Twenty is nearly here so why not listen to a podcast and tune into the latest episode of CropCast?.

In this episode the Bayer Australia Market Development Agronomy Team catch up to discuss a wide range of late season topics, including harvest results and key outtakes from the 2019 season and what you should keep in mind for 2020 plans.

Learn about TagTeam legume inoculant and the factors that affect legume inoculation, rhizobium survival and success. [www.tagteam.com.au](http://www.tagteam.com.au)

We saw good results, gained valuable insights and received positive feedback about our trials looking at managing root and leaf diseases with a range of products including EverGol Energy, Aviator Xpro and Prosaro.

We see interesting results from a range of strategies combining seed, in-furrow and foliar fungicides, testing out the fungicide resistance management guidelines available at [www.frac.info](http://www.frac.info) and we look forward to sharing the final yield results, with listeners in future episode of Bayer CropCast.

We build on the canola herbicide systems trial walk through that we presented in Episode 9, with TruFlex Canola and the increased flexibility and benefits it provides in managing weeds as part of an Integrated Weed Management system. More information on how to access TruFlex Canola: [www.truflex.com.au](http://www.truflex.com.au)

To listen, you can simply scan the QR code with your iPhone camera (or QR reader app on other devices) or subscribe in good podcast apps "Bayer CropCast." Search for it on Google or visit [www.crop.bayer.com.au/news-and-insights/cropcast](http://www.crop.bayer.com.au/news-and-insights/cropcast)



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# Smart farms, technology, rain and crop agronomy were all on offer at the 2019 Spring Field Day

KATHI McDONALD, SCF COMMUNICATIONS OFFICER

The 2019 SCF Spring Field Day was held on 26 September at the Green Range Country Club. SCF chairman, Ken Drummond, opened the morning by welcoming everyone and introducing our morning lineup. It was a full house with over 90 growers and industry attending the day and ready to hear some of the latest local research and topical issues.

Keynote speaker was Nathan Simpson of Binginbar Farms, Gollan, central west NSW. Nathan is CEO of a family owned and managed mixed farming enterprise consisting of 3350ha managed in rotation between lucerne based perennial pastures and dual-purpose wheat, barley and canola. The grain and fodder produced on the farm is then utilised in a lamb feedlot that this year will finish about 75,000 lambs. Nathan outlined his family's farming enterprise and how Ag Tech and IoTs are improving efficiency and their bottom line. A point of interest was the use of EID tags and utilising this technology to enable them to manage individual animals and track their performance on the farm and through the feedlot. This technology is something SCF will demonstrate in our Smart Farms projects.

Following Nathan's keynote address we had a fantastic lineup of presenters on a variety of topics before trekking out into the paddock for the afternoon trial tour. While the weather was a little chilly and damp, with a few showers coming through now and then, there were certainly no complaints from anyone about the wet stuff!

The first stop on the tour was a multi-company trial site where we heard from representatives from Bayer, Pacific Seeds, Elders and BASF on topics ranging from volunteer canola control, pre-emergent herbicide options and fungicide options including a demonstration on how to do the sampling for the CCDM free testing mentioned in the morning session. There was also an on-site demonstration of some IoTs and on-Farm connectivity options by Pivotal and AxisTech.

Second stop for the field tour was our Lime ripping trial hosted by Clint and Tammy Willis and funded as part of our National Landcare Program project. Jeremy Lemon from DPIRD, Albany got 'down and dirty' in his natural habitat of a soil pit to show us the lime getting down to depth in the ripped treatments.

The final stop on the SCF Spring Field Day before heading back to Green Range for dinner and drinks was the GRDC Canola NVT trial hosted by the Smith family. A number of breeders outlined some of the new up and coming varieties and their suitability for different situations.

Drinks back at the Country Club finished the day, along with a lovely dinner put on by Mal and Marie Thomson at the Club for those wishing to stay on. Thanks to all those who helped make the day run so smoothly, our presenters, bus drivers and the wonderful ladies from the South Stirlings P&C for the catering, as well as Mal and Marie Thomson and the Green Range Country Club for hosting the day and for the lovely dinner.





▲ Keynote speaker Nathan Simpson



▲ Opening by Ken Drummond



▲ Enjoying the delicious hamburger lunch supplied by the South Stirlings Primary P&C



▲ Fungicide options with Bayer's Craig White



▲ Inspecting the Elders Pre-Emergent herbicide demonstration



▲ SCF Snail roller in action



▲ Technology and communications towers on display at the Spring Field day

# MLA Red Meat 2019 Event

PHILIP HONEY, SCF SMART FARM CO-ORDINATOR

I recently attended the MLA Red Meat Event held in Tamworth during November. Over 500 producers and industry representatives across Australia attended the event over the three days, and we all had the opportunity to learn about the inner workings of Meat & Livestock Australia. It was interesting to hear what's happening on the ground, where the red-meat industry is heading in terms of sustainability & carbon-neutral production systems, marketing & traceability, as well as learn more about MLA's investment into Smart Farming Projects.

On day one we hopped onto the buses where 200 of us were split up into two groups and shipped down to the Elders Killara Feedlot & Romani Pastoral Co Windy Station. The 20,000 head cattle feedlot was fascinating to visit, and a strong emphasis was placed on the importance of backgrounding and communication between feedlots, processors and breeders on quality and performance traits to increase farm-gate returns. At Windy Station where the second MLA Smart Farm is being developed, we had the opportunity to learn more about the technology roll-out on their Smart Farm and to engage with the AgTech solutions providers, some of which we will be utilising on our two SCF Smart Farm Demonstration sites.



Day two featured discussions on producer consultation/adoption, digital agriculture and red meat integrity systems. The Chinese consumer is one of our largest export clients, and with an estimated 50% (or more) of "Aussie beef" in the Chinese market suspected of being counterfeit, it's important for our industry to look at ways to improve integrity through livestock identification and traceability throughout the whole supply chain system. Additional benefits of implementing an integrity system also include the potential to manage potential biosecurity risks, as well as improved eating & marketing outcomes through increased trust and recognition of Australian red meat.

Digital Agriculture played an important part in the second day's proceedings where discussions were made on the Carwoola Pastoral and Romani Pastoral Smart Farms funded by MLA. The Carwoola Pastoral Smart Farm located near Canberra has been in operation for 1 year now and contains 400 internet-connected devices, ranging from GPS tracking tags to weather stations, soil moisture probes and remote rain-gauges, to gate sensors, tank monitoring and pasture monitoring solutions.

There have been significant learnings since implementation across the range of devices, particularly with product designs, reliability and also how the trial was originally established. Gate sensors have proven to be problematic in their current design forms for all gates/doors which aren't fixed, which limits current technology to be effective on-farm shed doors or gates with very little movement. Tank Monitoring Solutions along with Soil Moisture Probes showed the biggest return on investment, particularly when it came time to organising operation planning. It will be interesting to see how the current learnings can be applied to the Romani Pastoral Co's MLA pilot Smart Farm and other smart farms, as well as the financial benefits realised from utilising AgTech.

The final day of Red Meat covered the red meat global markets, how we can expand market opportunities in Australia and why we need to demonstrate sustainability from paddock to plate. Particular focus was made on the fact what we export more than 70% of our production to over 100 different markets and the importance of understanding the effects of global trade on the industry. Lachlan Graham from Argyle Meats and Emily Pullen from Jim's Jerky presented the importance of unlocking new opportunities in developed markets, as well as understanding what the consumers want. Argyle Meats are currently delving into labelling meat characteristics on individual product packaging along some of their brand-lines. This allows the opportunity for consumers to purchase cuts based not on only quality characteristics, but also offers the potential for quality-based product pricing in the future.



## WHAT WERE THE KEY TAKE-HOME MESSAGES FROM RED MEAT 2019?

- There's a 7:1 return on investment for money spent improving red meat integrity, and it's important we capture the opportunity with technology & data to simplify and strengthen our integrity system.
- New technologies for tracking livestock through the whole supply chain opens the opportunity for both market differentiation and value-adding.
- It's important to note changes in purchasing behaviours and adapt the "red meat story" to stay relevant.
  - There's been a 40% annual growth in pre-assembled meal kits and pre-made meals
  - Australians are now more likely to spend more on fast foods & 'meal out' services than 'meat, fruit & veg' (approx. \$38bn vs \$29bn per annum in 2015/16, compared to \$24bn & \$25bn in 2003/2004 respectively).
  - Consumers are starting to focus more on meat quality characteristics and sustainability systems.
- The importance of selecting AgTech solutions to solve a problem first; rather than selecting a solution and trying to work out what issues it may solve later.
- Water Monitoring solutions were the fastest (and most easily calculable) return on investment of AgTech solutions installed.
- AgTech installations on the smart farms have benefits that are not always easily calculable. These include not only timesaving & labour-saving benefits but also less thought of aspects such as managing mental welfare/breaks particularly in drier years. "You don't need to continue to see how bad it is".
- The integration of block-chain technologies can be utilised to not only secure the supply chain but to also streamline the trade finance process.



▲ Windy Station MLA Smart Farm Presentation

▼ Panel Session: Building resilience in a changing climate



◀ Delicious local slowcooked masterstock lamb shoulder lunch prepared by MLA chef, Sam Burke



## WA Producers' Co-operative Update

CHRISTINE KERSHAW, CEO



The newly formed WA Producers' Co-op (WAPC) is off to a great start with its first shipment of 10,000 prime lambs from its 14 member's farms scheduled to commence to two WA processors in January 2020. Co-op members are also already enjoying additional benefits of being members of the co-op, such as access to free training workshops and discount deals on livestock handling equipment and data services.

The WAPC held its first workshop for members in October focusing on the use of technology for sheep farming systems. The workshop was all about the practical use of EIDs and new sheep handling equipment with demonstrations held in a member's sheep yards in Kojaneerup South followed by a BBQ. The workshop also included presentations from WAPC member and board director Sandy Forbes, talking about how farmers can select better performing sheep by using Australian Sheep Breeding Values (ASBVs) to improve production efficiencies and meat quality.

Sheep equipment supplier, Te Pari also demonstrated their precision sheep handling equipment and Beth Green (DPIRD) spoke on the importance of meat traceability and biosecurity regulations. Brett Matthews from Shearwell Australia talked about how to choose the right digital ear tags and readers while Mike Kirke from Rural Data Management presented practical examples of how to link data from the new digital technology to existing farm management systems.

The next WAPC members workshop will be on confinement feeding, backgrounding and lamb nutrition on 11 February next year.

The Co-Op is still in its early establishment stage, but it has got off to a great start and is steadily building good working relationships with meat processors and marketers on behalf of its members. The Co-Op's core business is to supply commodities, but members are already recognising additional benefits from being part of the new group. As you would expect, the initial 18-month establishment period is high risk for any new business. It will take a while for the WAPC to grow and its success will be very reliant on the support given to it by the local farmers who own the business. So slowly goes it as we start to develop a customer and membership base to support the Co-ops' activities. If you have any questions or want to learn more about what is happening with WAPC, please feel free to contact Christine Kershaw or Ken Drummond or visit the WAPC website.

Cheers all and happy Christmas

### For more information

Christine Kershaw, WAPC CEO: [ceo@waproducers.com.au](mailto:ceo@waproducers.com.au); 0429 236 729

Ken Drummond, WAPC Chair and member; [kgd@iinet.au](mailto:kgd@iinet.au); 0427 541 033

See also WAPC website: [www.waproducers.com.au](http://www.waproducers.com.au)

## Join WAPC and start receiving the benefits!

**SCF members, it is not too late for you to join and start enjoying the benefits of WAPC membership, just contact WAPC and we will make sure you are included on our mailing list.**

If you missed out on joining the Co-Op earlier this year, you will have another opportunity in Feb-March next year when we open up a new round of membership offerings. Membership is currently closed and limited to the first 14 members who signed up in June to ensure the co-op is focused on their benefits before expanding. There will be an additional 16 memberships opening up in February-March next year for SCF members.

So, if you think this may be of interest to your business, ensure you are on the Expression of Interest mailing list so that you don't miss out. Forms can be found on the WAPC website [www.waproducers.com.au](http://www.waproducers.com.au).



▲ WAPC Board member, Sandy Forbes presenting at the first WAPC workshop in Oct 2019.



# Pilot year for Future Farmers Student Connect project comes to a close

SAMMY LUBKE, SCF MEMBERSHIP OFFICER

The end of the school year is upon us and what a year it has been. SCF is proud to have partnered with the WA College of Agriculture Denmark, Great Southern Grammar (GSG) and Mount Barker Community College to host the Future Farmers Student Connect program made possible through the Federal Government's National Landcare Program Smart Farms Small Grants.

To conclude the final term SCF has hosted two successful careers information sessions, one at Denmark and the other at GSG. The students found the sessions to be very positive and relatable. Many learned about possibilities they had not considered before. It was noted that some advice from speakers contradicted others in terms of the best way to reach your career goals, especially in regard to further education. After some reflective discussion students realised that the speakers illustrated the diverse backgrounds and varied pathways to careers in the Agriculture industry. This demonstrated the breadth of possibilities ahead of them and that not one way was the best way. SCF would like to thank all the presenters who gave up their time to impart their personal experiences of their career journeys along with other relevant advice for the students. Speakers included Rodney Scott (CBH), Simon Bigwood (Rabobank), Brock Ramsay (Nufarm), James Bee (Elders), Carla Milazzo and Sarah Belli (DPIRD), Tim Chapman (Primaries), Phill Griffiths (PF Olsen), Emma Russelx (Grain Brokers Australia) and Phil Honey (SCF).

SCF also provided three scholarships, one at each school, for Year 11 Students going on to study Agriculture subjects in Year 12. The students were asked to complete a 500-1000 word essay on what role they saw technology, data management and the internet of things (IOT) playing in the future of the Agricultural Industry. All students who submitted an essay should be commended on their efforts; the calibre of essays received was very high, making the selection process considerably hard. Congratulations to Ruby Millard who won the SCF scholarship for the WA College of Agriculture Denmark for 2019.

Ruby was presented with her Scholarship Certificate and award by SCF CEO Christine Kershaw on behalf of the Board at the Denmark College's Graduation and Awards Ceremony held on Friday November 15 (pictured). The Great Southern Grammar and Mount Barker Community College winners will be announced after their graduation ceremonies have been held.



# Rabobank News - Livestock feed demand puts squeeze on Australian grain

Australia's grain 'balance sheet' is set to materially tighten over the next decade, with increasing demand for grain to feed livestock – coupled with growing human consumption – well outstripping projected supply, according to a Rabobank report.

This will see the proportion of the nation's grain harvest exported annually decline from the current 60 per cent to 53 per cent by 2030, and may also increase the likelihood of further grain imports into the country over time.

In its report *The Australian Feed Grain Squeeze*, Rabobank says by 2030, the domestic market for cereal grains (wheat, barley, oats and sorghum) will soak up an additional six per cent of Australia's annual production, leaving available supply for exports down by two million tonnes (or 10 per cent under the current five-year average)

Report author, Rabobank senior grains analyst Cheryl Kalisch Gordon says the bank is forecasting domestic demand for cereal grains to grow by 2.3 per cent per annum over the next 10 years (to above 17.5 million tonnes a year by 2029/30), well exceeding projected annual supply growth of only 0.4 per cent per annum over the same period.

## MORE MOUTHS TO FEED

Livestock feed will take an increasing proportion of Australia's domestic grain supply, the report says, driven by a rise in the number of stock being fed grain to satisfy local and international demand for animal protein.

Increased human consumption of food products containing grain will also fuel part of the rising demand.

"Despite changing diets, which have seen people's consumption of wheat and other coarse grains fall on a per capital basis, Australians will still consume more grain due to population growth," Dr Kalisch Gordon said.

This domestic appetite will also be augmented by a strongly-growing demand for Australian beef and lamb in export markets for at least the next five years, she said, as "the global protein market resets as a consequence of the African swine fever epidemic in China".

Dr Kalisch Gordon said a higher level of growth in feed-grain demand – compared with human consumption – forecast over the next decade meant the share of cereal grains going to feed in Australia would approach 70 per cent by 2029/30, up from 64 per cent (the five-year average to 2018/19).

"As such, we will not only see increased demand for grains in Australia, but an increase in the relative importance of feed grain as an end use compared with milling, malting and processing for human consumption," she said.



CHERYL KALISCH GORDON

## SUPPLY

On the supply side, the report says, production growth will not be able to keep up with the forecast increase in demand over the coming decade. "We expect Australian cereal grain supply to increase by just 0.4 per cent annually over the next 10 years," Dr Kalisch Gordon said.

"In the absence of any new technologies that offer step change improvements in yield growth – and in the face of a drying climate and challenges to crop management, such as herbicide resistance and potential limits on the use of glyphosate – we do not expect future yield growth to exceed historical growth trends."

Dr Kalisch Gordon said with a "southerly contraction" already occurring across Australia's cropping belt due to climate challenges, as well as relative commodity pricing, the bank was not expecting cropping area growth in the forecast period.

"And while genetic modification and new plant-breeding techniques offer the potential for step change increases in yield that would offset the feed grain squeeze, we consider the likelihood of development, adoption and end-market acceptance low within the coming decade," she said.

As such, the report says, Rabobank expects average Australian cereal grain production to be at around 37.5 million tonnes by 2030, up from the current five-year average of 35.8 million tonnes.

"However, Australian production will continue to be prone, and possibly more vulnerable, to year-to-year variation, so a range of 20 million to 52 million tonnes must be considered part of the outlook," Dr Kalisch Gordon said.



To find out more about other Rabobank research, contact Rabobank Albany on 9844 5600 or download the RaboResearch podcast app.

## EXPORTS AND IMPORTS

The report says the expected low rate of production growth, together with the forecast increase in domestic demand, will reduce Australia's annual export surplus – from an average of 22 million tonnes of wheat, barley, oats and sorghum (2014/15 to 2018/19) to an export surplus closer to 20 million tonnes by 2030.

"This will result in the proportion of Australia's grain production going to exports reducing from typically being 60 per cent of annual production to 53 per cent by the end of the next decade," Dr Kalisch Gordon said.

And, while Australia would "remain a net exporter of cereal grains", she said, there was increased potential to see further grain imports coming into the country over the next decade.

"Feed grains may be imported if the basis (price) reaches sufficiently high levels to cover freight and compliance with import biosecurity measures. However, the import of food-grade grains for milling, malting or other processing will be more likely."

## EAST/WEST DIVIDE AND PRICE

The Rabobank report says grain 'balance sheet' tightening will be particularly focussed on Australia's eastern states "where supply growth will be lowest and demand growth highest".

"The highest forecast growth in cereal supply will be in Western Australia and South Australia," the report says. When it comes to demand though, growth will continue to be concentrated on the east coast of Australia."

This tightening is expected to see the average underlying east coast basis rise by as much as five per cent per annum, she said.

"For WA and South Australia, higher supply growth will put downward pressure on the basis between local grain prices and global prices, though prices are expected to be supported more often by demand for their grain from the eastern states."

The growing demand for livestock feed will also narrow the premiums for food-grade grain and improve the profitability of growing feed grains in Australia, especially in Queensland, NSW and Victoria, the report says.

## Soil test sooner rather than later



Precise sampling and accurate soil analysis is much more than just identifying major production limitations. These days, it is more a case of helping growers continually fine tune the soil's physical, chemical and biological components. 'State-of-the-art' soil monitoring involves gathering critical information on nutrient levels and also other key soil traits such as organic carbon, electrical conductivity, pH, aluminium and the soil's phosphorus buffering index (PBI).

At Summit Fertilizers we often get asked, when is the best time to soil test?

The answer really is from now through to the end of January is the absolute best-case scenario. So, while soil testing may not be top of mind for growers that are deep into harvest and then preparing for well earned holidays, it should be.

Here are just some of reasons why soil testing and having the results sooner rather than later is grower best practice:

- It enables farmers to make decisions before the Christmas holiday period so they are armed with the right soil information to make sure the fertilizer intended for use is in the right balance and quantities.
- Knowing correct fertilizer inputs will enable more accurate budgeting, and,
- Soil amelioration techniques such as lime or gypsum application require planning, ordering and often contracting, so best to make sure these jobs are budgeted for and assigned sooner rather than later.

For Summit, the process incorporates the best possible sampling procedure and soil analysis through an independent Australian

accredited laboratory. Fully trained Area Managers are also on hand to interpret the results and provide impartial recommendations.

Your soil test reports available anytime & anywhere with SummitConnect

With our new and improved SummitConnect online customer portal, Summit clients are now able to view and download their entire soil and plant test history, including recommendation reports. Another exciting feature that has been added are trend maps, which allows farmers to visualize how soil nutrients are tracking over time, across different depths and in different paddocks.



◀ A SummitConnect trend map showing pH results at 10-20cm depth across all years

For more information on soil testing and how to sign up to SummitConnect, growers can contact Andrew Wallace or Mark Ladny.

Andrew Wallace – Area Manager: Albany East  
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## PHOTO GALLERY



MARK SLATTERY (MEMBER) HAVING A REALLY GOOD LOOK AT BRAD EGAN'S SOIL AMELIORATION WORK ON OUR RECENT TRIP TO ESPERANCE.

### Share your photo with the SCF community!

We would love to show your photos here – looking for farming life, great landscape shots or even that funny ‘whoops’ moment captured on film, please send it in to Kathi at [kathi.mcdonald@scfarmers.org.au](mailto:kathi.mcdonald@scfarmers.org.au) to be included in our SCF Focus Photo Gallery.



HARVESTING WHEAT IN 2019 AFTER LEGUMES IN 2018



PHOTO FROM THE DEMONSTRATION DAY SCF HELD WITH ROCKSGONE OF THE NEW H4 HYDRAULIC REEFINATOR

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