UNFS UPDATE

Upper North Farming Systems Newsletter

December 2019

A Year in Review

by Ruth Sommerville, Executive Officer

2019 will be a year many wish to forget when looking back on income and rainfall records. It has been tough to say the least, especially on the back of 2018, an equally challenging year for those on the land. Despite this I encourage all to take a moment and reflect on the year that has been; identify the strengths in your business, your landscape and your family that have shone through, identify the weaknesses that you are going to work on to make sure that in future dry years you are more resilient and better prepared. I have heard many times this year that people have stopped photographing the landscape because it is a picture they wish to forget. I encourage you to take that photo, to go around your farm and select 10 locations to create photo monitoring sites. From these sites you will be able to track your progress and celebrate the wins and remind yourself and all those in your business of where you do/don't want to be in 5-10 years time. So much to be learnt in the dry years! To those that have had a better season than most, we wish you well, sometimes in these dry years the successes can be hard to celebrate. Getting under that lucky cloud or planning for these seasons though the good years can feel like it is a blessing and also creates a feeling of guilt for many. I encourage you to the position you are in.

As an organisation, Upper North Farming Systems has had a great year. We have had some staff and delivery model changes and have got a stronger model and a great team going forward as a result, building on the work of so many over the past 10 years. We now comprise a part time management team of 3 paid contractors and have a project delivery team of over 10 extension and agronomy professionals. We recently reviewed the 2019 trials at the October Operations Committee meeting and are looking forward to planning the 2020 sites at a Trials Planning meeting in Jamestown on the 4th of December. Guiding this ship is our highly engaged Operations Committee of 23 representatives from across the region, identifying the research and extension priorities for the organisation. From this group, the Strategic Board of 10 ensures that the organisation is being managed appropriately, with effective and efficient governance and responsible fiscal management. This team are busy planning post harvest get togethers across the region...make sure you get along to discuss all things harvest, season in review or just where you are going fishing or skiing over the summer!

In the newsletter you will find some great content for the summer issue. Information for our upcoming February Event, to be held in Booleroo Centre this year, information on the weather station network, highlights from the 2019 trials and projects, and information from our many partners and sponsors! Remember we love any feedback on our events, publications or projects, so send us an email or contact one of our committee members and let us know what's been great this year or where we can improve for next year!

Wishing you all a Merry Christmas and a wonderful summer break somewhere with a cool breeze and great company!

Also in this issue:

- UNFS Event 5th February 2020
- 'Around the Hubs'
- Rural Business Support, Adelaide
- UNFS Trials Summary
- UNFS Project Planning 2020
- UNFS Strategic Planning 2020
- Fertcare Soil Sampling Guidelines
- Legumes Provide Significant N in
 Low rainfall systems
- NRM Living Flinders program
 update ______
- Article from ADM Trading
- GRDC Media Releases
- 'Something to Listen to'

- Climate Kelpie BLOG
- Revealing Canola's Super powers
- 'What's App
- 'Something to Read'
- AGT Media Release
- Sponsor's Corner
- Calendar of Events & Contact List



UPPER NORTH FARMING SYSTEMS February 2020 Event

'Dealing with the Dry and Building a Resilient Future'

February 5th, 2020 at Booleroo Centre Sporting Complex

UNFS has partnered with Ag Communicators and the Northern and Yorke NRM Living Flinders Program to bring a 2 part workshop to the region with funding from GRDC and National Landcare Program (Phase II) to assist farmers with addressing the current extended dry conditions and to plan for the future of their enterprise.

The morning session, Dealing with the Dry, will focus on practical implications of the dry conditions on planning for the 2020 cropping season and managing your grazing impacts. It will also have presentations of business management and accessing assistance and advice during the current conditions. This session has been run across NSW and Victoria over the past few months and will be doing a SA lap in December and February. The speakers are of a great calibre and will provide great advice on topics such as Government Services for Farmers and Rural Communities in Dry Times, Dry Time Production Management and Planning, Weed Management, Herbicide Resistance and Residues, Sheep Management Decisions, Farm Business Management, Effective Debt Management.

The afternoon session, Building a Resilient Future, will focus on forward planning and identification of system changes that will build resilience in your business and financial situation, the landscape you farm and people within your business. It will focus on developing and implementing a whole of farm business plan, identifying the strengths and weaknesses in your current business, team skills and the management of your landscape. Precision Ag and the use of tools and technology to improve your farm input efficiency will also feature.

Full details of the event will be out soon with speakers, times and how to register. For now save the date, it is shaping up to be a great program!





EBRUARY 5TH 2020

Eastern Spring Crop Walk, Wednesday 11th September

Up to 25 attendees, including members and industry reps, toured the district looking at trial outcomes from the 2019 season. Commencing in Morchard at the Dryland Legume Pasture Trial (1), followed by the Barley Grass Management Trial in Melrose (2), Northern Ag Pre-emergent herbicide on Canola Trial, Booleroo Centre (3), Cover Species trial (4) Barley Time of Sowing trial and Fodder Options trial, Booleroo Centre (5). A great day was had by all with a networking session sponsored by Grain Growers following the

official launch of the UNFS Weather Station Network.



Pasture Options Workshop, Jamestown Hub, Thurs 12th September

Beth Sleep, Cox Rural Jamestown facilitated a panel discussion on mixed species cropping with Emma McInerney, Penny Roberts, Dan Hammat and Tom Robbinson. Twenty Five people attended the event which included a summary of the UNFS Pasture Trial delivered by Beth, pasture species summarised by Rehn, Pasture Genetics and a summary of the 2016 - 2018 soil biology and spray interaction project by Jay Iwaski, University of Adelaide. The day was kindly sponsored by Cox Rural, Jamestown and Pasture Genetics.



Western Spring Crop Walk, Friday 13th September



Approximately 30 members from Upper North Farming Systems and Nelshaby Ag Bureau took up the opportunity of a 'Roaming Regional Tour'. Sites visited included the Warnertown Pulse Trial Site discussing herbicides on lentils, Stefan Schmidt's 'UNFS Vetch on Saline and Sodic soils' trial, deep ripping in sandy soils, demonstration seeder trials and other crops sites throughout the western district. Lunch was enjoyed at the newly developed ADM Trading P/L receival site south of Port Pirie.







NFR

Hub Event - Morchard/Orroroo/Pekina/Black Rock - Friday 11th Oct

"Getting sheep through the drought"

&

"To mate or not to mate"

Upper North Farming Systems and Elders Orroroo held a hub event between 4-6pm which was well attended by approximately 30 farmers. Emma Shaddock talked on the nutritional requirements of pregnant ewes and drought rations for sheep whilst local farmers Ian Ellery and Jim Kuerschner spoke about sheep feeding and the economics of lot feeding and paddock feeding. The speakers were informative and well received . UNFS Pasture legume trails were also visited with great interest. As the dry conditions continue, people are looking at other options for future farming rotations. Hub event coordinator, Gilmore Catford, aims to hold future events after harvest, particularly in the New Year, to keep farmers talking in an attempt to improve morale.





Weather Station Network Our Automatic Weather Station Network is now up anyarrie and running. The 16 SafeCom funded stations will improve harvest danger index management throughout summer and improve the ruce quality of spray and frost management information available. AgByte has partnered with UNFS to install and manage these sites. To access the Web App Explanatory Notes click here: Orroroo https://unfs.com.au/wp-content/uploads/2019/10/19Oct-Weather-web-app-explanation-1.pdf To visit the UNFS Automatic Weather Station Network Website click here: http://120.150.31.37:8080/custdata/ agbyte/unfs/agb index.html aqbyte🖬 📾 Disclaimer: The UNFS Automatic Weather Station Network is a data provision service. It is not an advisory service. All

Disclaimer: The UNFS Automatic Weather Station Network is a data provision service. It is not an advisory service. All decisions made using the information provided through this service are the responsibility of the user. UNFS takes no responsibility for any outcomes of use of this data. All weather sensitive activities should be undertaken with point of activity weather condition verification.

Ladies on the Land

Making a Difference through a simple idea

The Ladies on the Land Hub, led by Jess Koch, has been doing things a little differently on their Facebook page this last month. For November, Jess has followed the lead set by the 'Buy from the Bush' campaign and featured local businesses and artisans from across the region on the Ladies on the Land Facebook page. LOTL has a large following, with over 7500 followers, and each of the posts have been reaching between 1500 and 4000 views. Congratulations to Jess for turning a simple idea into a great outcome for our region and the small communities within it. It even made it in the Advertiser! Jump on board and check out some of the amazing businesses in our region. There are chocolate, clothing and jewellery makers, photographers, caterers, little boutique shops, hardware and tool stores, there are gift vouchers and just great spots to get a feed. Something for everyone and the great benefit of supporting our community with every purchase!

Head on over and check it out: <u>www.facebook.com/Ladies-on-the-Land</u>









UPPER NORTH FARMING SYSTEMS MEMBERS EXPO 2020 BOOLEROO CENTRE SPORTS COMPLEX



WEDNESDAY 5TH AUGUST, 9AM - 5PM

Jamestown Hub Event, 27th September 'Strategies to tackle the dry'

Photos and part text courtesy of Jessica Henderson, Natural Resources, Northern & Yorke Upper North Farming Systems **'Containment Facility Tag along tou**r' visited four properties across the Mid North providing over 50 local landholders with an opportunity to see how containment feeding set ups could be implemented at various scales.

Along with Deb Scammell from Talking Livestock, the group toured four properties at Booleroo Centre, Black Rock and Jamestown, hearing from farmers about why they had implemented containment feeding on their property, how they had selected their containment sites, what they had learned through the process of setting up the containment lots, the costs involved and the positive impact that containment feeding had had on their flocks. The day was kindly sponsored by Zoetis, Ag Excellence Alliance and Natural Resources, Northern & Yorke.



Rural Business Support

By UNFS Project Manager, Jamie Wilson

On the morning of 20th of November I attended a meeting presented by Rural Business Support on their services available in the Upper North.

Rural Business Support is not just a counselling service. They offer a range of services that can assist primary producers.

Rural Financial Counselling Service

Business Management Programs

Agricultural Support Services

The first step is to call the free 1800 836 211 (*refer to flowchart on next page*), this will help find someone that will fit your needs and work towards a solution, calling the 1800 number will find someone in your region that will be able to make an appointment to check eligibility and what options for relief may be available.

Once a Rural Financial Counsellor is appointed then there may be other programs available to assist with business management skills along with:

Government assistance programs

Emergency funding from Not-for-Profit charities such as SACWA, Redcross and Churches.

Government Funding - Farm Household Allowance

Natural Resources

Rural Business Support offers a confidential and independent look at your situation. It is for anyone that is in primary production that is feeling like they are not sure on how to manage a financial situation.

Please see **Page 7** for further Information.

Visit http://www.ruralbusinesssupport.org.au or call 1800 836 211



UNFS Trials Summary – November 2019

Jamie Wilson, Project Manager

Barley Grass Management Options - (GRDC Funded) - Matt McCallum hand-harvested the trial as there was limited crop for a plot harvester. The management options resulted in significant variations in the mid-season barley grass counts. In a tough year the higher numbers of barley grass provided significant crop competition and resulted in shorter crop and less heads. Yield results yet to be analysed. The Eastern hub crop walk visited the site where Gurjeet Gill (UoA) spoke on barley grass and the control options. The barley grass resistance tests offered to members are currently at the University of Adelaide being tested for resistance status.

Micronutrient Deficiency Treatment Sites—Copper, Zinc and Molybdenum (SAGIT Funded) – The 3 micronutrient trials sites were run in 2019, soil tests and tissue tests taken during the season. Throughout the year there was very limited visual differences however, tissue tests and grain quality testing will show any difference along with the harvested yield. The lentil trial was not harvested due to drought and frost.

Dryland Legume Pasture Systems (Rural R&DfP Funded) – In 2019 there were two sites of new dryland legumes pasture options

situatied at Morchard and Belalie North. The Belalie North trial became a demonstration site and was visited by the Jamestown Hub on a number of occastions. It will be re-sown in 2020. The Morchard site will be allowed to regenerate in 2020 to assess pasture species persistence and soil cover. It was visited on the Eastern Spring Crop Walk and provided a good look at a range of pasture legumes including some that would be unfamiliar like Bisurrula and Serradella. There was a mix of clovers, medics and some vetches. All plots appeared to set seed despite the conditions. 2020 will be interesting to see what regeneration will occur.

Barley Time of Sowing (SAGIT Funded) - The three times of sowing have been harvested. The initial view is that the early sown varieties had more biomass and most likely a larger yield. The grain samples are to be analyzed for protein and screenings to check plot differences. A couple of the varieties may be too long but it is hard to tell in a variable season. This is the first of 3 years of this trial and hopefully some good years will enable sound comparisons across a full range of seasons. A group of Booleroo Centre District School students attended the 2019 UNFS Expo and the trial site to learn about trials and their importance in research for agricultural advances.

Fodder Options Trial—Alternative Cereal Options for Hay Production (Balco Funded) - 6 treatments were grown including new IMI tolerant oats along with awnless wheats and feed barley. This had dry matter cuts done in early spring and grain was harvested late November. Harvesting these plots is a good way to identify if they could be used as a dual-purpose crop. This trial will be continued in 2020.

Mixed Cover Cropping (National Landcare Program Funded) – The mixed species cover crop at Matt Nottle's farm provided a look at a range of species, with the aim of using increased soil biology to tackle extensive root and soil borne disease loads in the paddock. Of interest was at the tillage radish tap root size. There was an excellent establishment of all species. Unfortunately for the trial, the levels of biomass did not grow enough due to seasonal conditions, for biomass cuts to be done. The trial will continue for a futher 2 years and hopefully future seasons will show up differences in growth and disease levels. During the members expo there was a soil pit dug which showed large variations in soil profile. Input from Marg Evans and Joel Williams generated a lot of discussion. Soil tests have been taken for Predicta B testing and soil nutrient analysis to provide base levels for the start of the trial.

Micronutrient trial @ Carey's







Project Planning 2020 By Ruth Sommerville

The trials and extension events for 2020 are well into the planning phase! We have a number of great projects continuing next year, including Barley Time of Sowing, Fodder and Legume Pasture Options trials (3 sites confirmed), Cover Crop Options, Micronutrients and Barley Grass Management. We will be discussing these trials and sites in detail on the 4th of December in Jamestown as all of the research and project delivery partners come together to plan the season ahead.

We are also putting together project scopes and funding applications for some great projects that came out of our recent Operations Committee Meeting. These include "Regenerating Goyders Line", a "Smart Farm Demonstration Farm" and "Upper North Grain and Graze Interactive Information Trail". The October Operations Committee Meeting is set aside as a project review and planning / brainstorming meeting and this year was a ripper. A great cross section of industry and farmer reps from across the geographic spread of UNFS. We had some great ideas put forward and the ground up approach to project identification in our organisation is a true strength. We'll work on getting them funded now and hopefully bring them to you in the coming years!

We are always seeking new ideas, the priorities you need addressed or the training and extension events you would like to attend. If you are keen to have a trial on your place get in touch with your hub representative or Jamie Wilson to discuss opportunities!

Thank You to all of our research co-operators and partners for a great trial and extension season in 2019 and looking forward to a great one in 2020!.

Strategic Planning 2020 By Ruth Sommerville

Every good business needs a good plan to follow for what they are trying to achieve and how they are going to do it. Upper North Farming Systems is no different. We developed our first strategic plan back in 2015 for the 2016-2020 period. As we are nearing the end of that period it is time to once again do some navel gazing and review our organisational aims and how we are going to go about delivering them into the future! The launch of the new strategic plan will coincide with 20 years of Upper North Farming Systems as a group and 15 years as an incorporated body! I think that may be cause for a celebration!

The Strategic Board and Operations Committee will meet in the new year to undertake a facilitated planning session. Members will be invited to attend and provide input and be given the opportunity to provide input prior to the event as well.

FIT FOR PURPOSE SOIL SAMPLING

Get the new Fertcare® soil sampling guidelines

Published 17 September 2019, Jeff Kraak, Fertilizer Australia

Why use the guidelines?

Fit-for-purpose sampling

Sampling plans should vary based on what you're looking for. This could be:

- 1. predicting what and how much nutrients the crop needs
- 2. monitoring soil fertility over time
- 3. diagnosing a nutrient deficiency or toxicity
- 4. compliance with environmental standards
- 5. a combination of the above.

The Fertcare® soil sampling guidelines will help you develop a fit-for-purpose sampling plan to get the right samples for the job at hand.

ampling

Accurate fertiliser advice:

Without soil and plant testing, crop nutrition is best guess. Accurately collecting soil samples is essential for evidence-based fertilizer recommendations. The amount of soil sent to the lab represents about 0.00001% of the field soil being assessed. Variable soil test results and fertilizer advice can often be traced back to sampling errors or different sampling techniques.

Collecting a representative soil sample is essential to meaningful soil analysis. Many of the differences in soil test results and ultimately in divergent fertiliser recommendations, can be traced back to sampling errors or varied sampling approaches, so it is essential to reduce errors by getting the sampling process right. Fertiliser

Data

Interpretatio

Figure 1. Accurate soil sampling is an important first step in a wholistic, four-part fertiliser recommendation process.

Figure 1. How much soil is actually analysed at the lab for some chemical testing. Source: A guide for 'fit for purpose' soil sampling

Continued on Page 11

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What's in the guidelines?

The guidelines include advice on:

- when to sample
- where to sample, including approaches for areas with fertilizer banding
- getting representative samples
- dealing with atypical areas and areas to avoid
- how to collect samples
- sampling depths
- sampling equipment
- submitting samples to labs and quarantine issues.

The guidelines also include a soil sampling checklist.

Who should use the guidelines?

These guidelines are for growers and advisors who collect soil samples to give fertilizer advice. They are part of the Fertcare B and C training resources and the sampling section of the Fertcare Accredited Advisor Performance Standards.

Download the guidelines now.

Excerpt from GRDC Communities: Crop Nutrition Talk October 2019



Regional Development Strategy Engagement

UPPER NORTH FARMING SYSTEMS

participated in this process and has been recognised for its work in the region. Click on the link below to read the report or just check out what they said about UNFS on page 18 !!

https://www.pir.sa.gov.au/__data/assets/pdf_file/0006/351546/Regonal_Development_Strategy -_Engagement_Report.pdf

Legumes provide significant N in low rainfall systems

PUBLISHED - 11 OCTOBER 2018 BY MICHAEL MOODIE, MALLEE SUSTAINABLE



Legume break crops can provide significant fixed nitrogen (N) for subsequent cereal crops. From 2013 – 2015, Michael Moodie (<u>Mallee</u> <u>Sustainable Farming</u>) compared various legume crop productivity and N contribution in low rainfall environments. Trials were conducted in the Victorian and South Australian Mallee regions, where N is often limiting.

Trial details

The trials compared dry matter (DM) production and symbiotic N fixation of chickpea, field pea, lentil, lupin, faba bean and vetch crops. Each trial was located on sandy-loam or loam soil. Trials were sown into moist soil in the first week of May each year. Growing season rainfall during the three trial years was 130-145 mm. These were less than the regional average of 175 mm.

Range of results

On average, peak shoot DM produced across species and seasons was 3-4 t DM/ha. Average grain yields were about 1 t/ha.

Most of the legume crops fixed about 60 kg shoot N/ha across the three seasons, with the exception of chickpea, which fixed significantly less shoot N than the other species.

The researchers also measured the N removed in harvested legume grains across the three seasons and estimated the likely contributions of fixed N by the nodulated roots. Using these measurements, they calculated that 12 of the 15 legume crop/season combinations provided agronomically significant fixed N contributions for subsequent crop use.

Future research

Average cereal grain yield in the region where the trials were located is 1.6 t/ha. This means about 32 kg/ha N is removed at harvest with these cereal crops. Using the trial results, a grain legume crop would need to be grown for every 1-2 cereal crops to replace the N exported from the farm with a typical cereal crop. To confirm these trial results, the trial program has expanded to investigate legume productivity across a wider range of seasons and soil types. Future research is required to look at how to maintain a positive N balance across the farm in addition to using grain legumes. Options include legume pastures, forage or manure crops and N fertiliser strategies.

More

<u>GRDC 2017 Updates paper – Pulses show low rainfall adaptability</u> International Nitrogen Initiative conference 2016: <u>The net contributions of fixed N by crop legume in low rainfall farming systems</u>



Excerpt from GRDC Communities: Crop Nutrition Talk October 2019

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NRM LIVING FLINDERS PROGRAM UPDATE



Landcare

These projects are derived from the NRM Community Action Planning process (CAP)

COORDINATED FOX BAITING



Two rounds of coordinated fox baiting were conducted across four participating properties at the Horseshoe Range during June and October 2019.

There was a significant reduction in bait up take between the June (66%) and October (28%) rounds of baiting.

NRM can assist land holders with all aspects of baiting.



Natural Resources

WILD DOG TRAPPING WORKSHOP



On 2nd October 2019 a wild dog trapping workshop was held at Willangi Bush Escapes, Peterborough.

The hands on workshop was delivered by experienced professional trappers. Topics covered in the workshop included basic trapping equipment, trap cleaning and preparation, trap planning and techniques, and the use of lures. The event was attended by 17 land holders from across the district.

NRM carries a small supply of some basic trapping equipment that can be made available to land holders upon request.

GOAT CONTROL

During February and March 2020 the Living Flinders program will contribute funding to aerial mustering and culling of goats.

Participating land holders within the project area contribute to the cost of helicopter flight hours over their property from income generated from the animals mustered. Participants must also agree to an aerial cull subsequent to the muster. There is no cost to the land holder for the aerial cull.

Participation in these programs helps land holders meet their requirements for feral animal control under the NRM Act.



Another year of challenges...

ADM

Article by Damian Bradford, Group Manager Accumulation ADM Trading Australia Pty Ltd

HARVEST is drawing to a close across the Upper North for another year. Once again, the season and market has thrown up its challenges, with differing results to what many expected.

On the market, one could easily be mistaken that harvest 2019 was shaping up like a repeat of 2018 fuelled by the eastern drought and the need to continually supply grain to a vast array of east coast consumers.

So what happened? Why aren't we now seeing \$380 plus wheat or barley well north of \$300? There are a number of factors at play. But the reality is from Western Australia to SA and through to Southern Queensland as an industry (from farm to consumer), it turns out we are pretty good at logistics. The fear of the unknown in mid to late 2018 was nothing to fear. Industry quickly learned from experience. Railing grain from SA – even in mid 2018 – was a likely method for New South Wales consumers, as was road. Bulk shipments from WA and Port Lincoln were on the radar, however the storage and logistics piece in Brisbane was a big unknown. Some said shipping one to two million tonnes domestically simply wouldn't work. Well it did work. Once the first vessels were executed some 18 months ago, many realised this market was no different to an international export market.

Storage providers in Southern QLD and Northern NSW suffering from no export volume welcomed the opportunity to store imported grain from SA and WA. Transport companies that had little local work jumped at the chance to generate steady income by shifting grain from Brisbane to the Darling Downs and other nearby regions. Importantly, the consumers, even though they were paying big prices for wheat and barley, could buy their requirements a week or two from delivery. The ease of buying was a scenario they had not experienced since the last big crop in 2016.

Since late 2018, WA and SA wheat and barley found its way to QLD, NSW and Victoria first, before moving to lower-priced international markets. As the fear of execution dissipated, so did grain prices and WA and SA grain was priced back into export homes over the second half of 2019. In addition, the realisation that SA and WA had ample supply to cover the east coast's requirements also assisted the market to soften.

Skipping ahead to harvest 2019, the market as we know is very different compared with 12 months ago. The WA crop will be about 25% smaller this year compared with 2018 (-4mt), SA production will be about 35% larger (+1.5mt) and Victoria could be 50-60% (+2mt) larger than last year.

For the Southern NSW and Victorian consumer, having more grain closer to market, while not ideal for SA grain producers pricing wise, will assist their bottom line. Like with the fodder market, once harvest is complete and early grain purchases are consumed, it's reasonable to think prices may firm post March-April.

Upper North grain will continue to head east via rail as it has over the past 12 months, however, it will also sail by sea. In what can be described as "what's old is new again", handymax bulk vessel, Super Lydia, loaded with Upper North hard wheat and barley via ADM's Port Pirie Grain Storage Facility, departed Port Pirie destined for Brisbane. It's been 20 years since the last grain vessel left the berth in Port Pirie. At ADM, with the support of the Upper North farming community, we look forward to this being a more frequent occurrence in the future.





Think strategically before ripping into sandy soils

Grain growers are advised to understand the yield-limiting constraints of their sandy soils before undertaking deep ripping of paddocks ahead of the 2019 sowing season.

While deep ripping offers potential to improve grain yields on compacted sandy soils, experts say it does not necessarily solve issues with all soil types.

CSIRO senior research scientist Lynne Macdonald, who leads the Grains Research and Development Corporation's (GRDC) 'Increasing production on sandy soils in low and medium rainfall areas of the southern region' research investment, says it is important to target ripping practices to those sands where hard or compacted layers are the primary issue.

"Where acidity, water repellency or subsoil toxicity are primary constraints, other amelioration practices may also be needed for the full benefits from ripping to be achieved," Dr Macdonald says.

"Ripping sandy soils aims to remove physical constraints to root growth which result from compaction due to machinery trafficking, animal trampling or natural consolidation (cementing) due to drying, but ripping alone does not fully address other soil constraints such as acidity, subsurface toxicities or non-wetting."

Dr Macdonald says identifying and prioritising the key constraints on sandy soils can be difficult.

"Assessing where crop roots stop growing can be a useful first indicator of the depth of relevant constraints. However, it is important to look beyond the depth of rooting and consider issues that might be present deeper in the profile."

Hard and compacted layers can be identified in sands by digging a pit and looking and feeling for changes in soil structure, using a simple push probe to feel for hard layers or by using a penetrometer.

Soil moisture has a big impact on how hard the soil will feel, with most soils hardening on drying. Push probes and penetrometers should be used after significant rain when the soil moisture profile is full. This will help to avoid misleading penetrometer readings caused by lack of moisture alone.

Dr Macdonald says the depth of hard and compacted layers varies across the sandy soil landscape. Ripping to depths deeper than necessary is very costly due to fuel requirements (for example, doubling the depth may quadruple the power needed).

"It is important to look beyond the depth of rooting to identify how deep the physical constraint continues," she says. "Targeting the ripping depth to either past, or at least well into, the compacted layer will help maximise rooting depth."

Acidity-related constraints can stunt root growth, limit nutrient availability or lead to toxicity effects. The full yield benefits of ripping are unlikely to be achieved if acidity goes untreated, according to Dr Macdonald.

Threshold levels for soil pH (in water) are above 5.5 in the top 10 centimetres, and above 4.8 in the subsurface soil.

Acid layers can occur in a relatively thin zone that prevents root growth, and can be missed by traditional 0-10 cm soil sampling. Applying pH indicator dyes (available from hardware or gardening stores) can be an effective first step in identifying if there is an acid problem, and where in the profile it occurs.

"Where pH falls below the threshold targets, a liming plan should be part of a long-term amelioration strategy," Dr Macdonald says. "Yield benefits to ripping alone may be limited where subsurface acidity constraints are not addressed."

Water repellency is common in sandy soils, leading to uneven soil moisture and poor establishment. Although providing some surface disruption in the year of implementation, most ripping practices do not provide enough surface mixing to overcome repellency for multiple years.

Continued from Page 15

"Rather than ripping alone, repellency is better addressed through deep ploughing approaches that mix the repellent sand to dilute and/or bury the problem layer," Dr Macdonald says.

"Where available, clay can provide a permanent solution to overcoming water repellency. Specific delving and mixing tine designs are required to effectively mix the surface soil layers, and can be applied with/without claying practices to overcome water repellency.

"If repellency is not overcome, the full yield benefits of ripping are unlikely to be achieved as issues of water infiltration, establishment and erosion risks will remain."

Dr Macdonald says subsoil toxicities and nutrient deficiencies exist within sandy soil

landscapes in the southern region and can change rapidly with topography. A subsoil 'health' check can be useful in enabling growers to avoid areas where deeper rooting depth may not bring yield returns due to subsoil toxicities.

"Diagnosing subsoil issues involves assessing pH, electrical conductivity, exchangeable sodium, boron or chloride and essential plant nutrients, and various packages are offered from commercial laboratories."

Growers are also encouraged to consider the risk of erosion: "Ripping will loosen and soften the soil profile to depth, flattening and unanchoring standing stubble," Dr Macdonald says.

"The reduction in soil cover, coupled with the loosened surface, will leave ripped areas prone to wind erosion. Rolling after deep ripping will help to consolidate the soil surface but a lack of standing stubble will make the site vulnerable."

A successful ripping operation is likely to increase the potential of crops and pastures for several years and therefore management of ripped areas should be adjusted to match the new potential yield.

"For example, without higher N inputs the crop yields may not fully respond to the benefits from deep ripping," Dr Macdonald says.

More information on deep ripping can be found in the GRDC's Deep Ripping Fact Sheet, <u>http://bit.ly/2UnEJV7</u>. Information on subsurface compaction is available via the Soil Quality website at <u>http://bit.ly/2FPgirx</u>.

A suite of GRDC YouTube videos on soil constraints can be viewed via http://bit.ly/2WBQvIZ.



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Photo: Lynne Macdonald

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"Something to listen to"

Rebuilding the soil carbon sponge and Cooling the Climate fast with Walter Jehne. by John Kempf

http://regenerativeagriculturepodcast.com/rebuilding-the-soil-carbon-sponge-with-walter-jehne

The safe and powerful technologies of genetic engineering have had tremendous impacts in agriculture and **medicine.** by Kevin Folta.

http://www.talkingbiotechpodcast.com

New chemistry derived from the Aussie bottlebrush; BASF new actives and Tecfarm mills

https://weedsmart.org.au/podcasts/new-chemistry-derived-from-the-aussie

bottlebrush-basf-new-actives-and-tecfarm-mills/







Indian Ocean in the 'Climate Driver's Seat' for 2019

"BLOG"

Posted by BCG on 23rd September 2019

Excerpt from Climate Kelpie: www.climatekelpie.com.au

Some parts of southern Australia have received enough winter rainfall to make a reasonable start to the season. But for many, dry conditions are persisting and it's the cool water in the Indian Ocean to our north west that is a major driver of these conditions.

"Where you get warmer than average water is where you get more cloud and rainfall," says Dr Andrew Watkins, longrange forecaster with the Bureau of Meteorology. "This winter the warm water is on the other side of the Indian Ocean, near Africa, so that's where the cloud is (Figure 1)."This scenario is referred to as a positive Indian Ocean Dipole, or +IOD. Essentially, the IOD is a measure of the difference between water temperature anomalies at either side of the



Indian Ocean. "By anomaly, we mean whether the waters are warmer or cooler than normal," says Dr Watkins.

"At the moment the IOD is positive, which means more rain over the African continent and less for much of Australia. While this may help farmers in Africa, it's not so good for Australian farmers."

Important source of rain

The Indian Ocean Dipole is similar to the El Niño Southern Oscillation (ENSO) in the Pacific Ocean. Together the two are the most important year-to-year climate drivers for Australia.

In a neutral IOD – neither positive or negative – the equatorial trade winds blow from the west, pushing warm water towards Indonesia where clouds and moisture will form off the north west coast of Australia. This moisture can be a source for frontal rain systems for southern Australia.

Continued from Page 17

If the westerly trade winds intensify, the IOD moves into its negative phase. More warm water is pushed towards Indonesia, generating more moist air and cloud and a much better chance of good rainfall to much of Australia.

"Unfortunately, in our current IOD positive phase the trade winds reverse, taking that warm water away from Australia," Dr Watkins says.



The Indian Ocean Dipole tends to form around May-June and lasts through to the end of spring. It breaks down quickly once the tropical monsoon season gets going in November-December.

A positive IOD typically means higher pressures, less cloud and less rain over central and south eastern Australia. Depending on the season, these effects can be felt more broadly. "The positive IOD generally has a stronger impact on southern New South Wales, but this season we are really feeling the impact up into northern NSW and south-west Queensland," Dr Watkins says.

"Less cloud also means we get warmer daytime temperatures across southern Australia in winter and spring, and sometimes cooler nights in the north. For example, this year we've seen cooler nighttime temperatures in the Northern Territory, which is great for the mango industry."

A positive IOD is normally defined when temperatures exceed a +0.4°C threshold for eight weeks. However, the Bureau's measurements show that while the IOD moved into positive territory in May, it has hovered either side of that official +0.4°C threshold throughout June and July, before strengthening in August.

"Basically, we measure the difference in temperature anomalies in two 'boxes' (or locations) in the ocean," Dr Watkins says. "There have been some local weather effects near Africa that have seen the temperature in that specific location fluctuate. In reality, all the evidence is consistent with a positive IOD. Waters are cool near Indonesia and warm near Africa, and the clouds and winds have shifted to the west, away from Australia."

"Regardless of the numbers, our weather patterns in 2019 are clearly consistent with a positive IOD."

It's all about probabilities

"While the official thresholds haven't been reached, we are definitely seeing positive IOD-like behaviour with the wind and cloud patterns," says Dale Grey, seasonal risk agronomist with Agriculture Victoria.



"But, as with all climate drivers, it is still all about probabilities."

"In a neutral IOD year we see about one third of the seasons being wet, one third dry and one third average (Figure 3 left)," he says. But in a positive IOD year the scales are tipped in favour of a drier than average year. It doesn't mean we can't get an average or wet year, just that it is less likely."

For example, Elmore in Victoria has experienced dry springs in two thirds of positive IOD years since

1900 (Figure 3 right), but only about a quarter of these were decile 1. Some of these years were about average (14 per cent) and some were even wetter than average (19 per cent), although none have been wetter since 1983.

Continued from Page 18

"Climate models expect the IOD to stay in positive territory through spring," Mr Grey says. "This means there is definitely a higher risk of a dry spring and anyone relying on spring rainfall might want to play it on the safe side."

"Every season is different. In 2019 we have seen some large high-pressure systems, typical of a positive IOD, but they have been sitting far enough north to let some cold fronts through coastal South Australia, Victoria, Southern NSW and Tasmania. This is where we see other climate drivers, like the Southern Annular Mode, coming into play and helping frontal activity out. Frontal activity won't cut the mustard in spring through, where significant rainfall is needed from tropical sources."

Serious impact

"Unfortunately, NSW and southern QLD have not been so lucky and are now very dry," says Dr Watkins. "In fact, NSW is so dry that the Bush Fire Danger Period has been declared two months earlier than usual for some regions. Increased bushfire risk is very closely associated with a positive IOD, more so than with El Niño, and we are already seeing an increased incidence of fires in Indonesia."

Recent positive IOD years include 2006, 2012 and 2015, although it is worth noting that in 2006 and 2015 a positive IOD coincided with an El Niño, amplifying the dry conditions.

When a positive IOD combines with an El Niño there is an increased likelihood of dry conditions for much of eastern and central Australia.

"At least in 2019 the positive IOD is not coupled with an El Niño" says Dr Watkins. "In 1982 this double whammy led to one of our worst droughts, with the Melbourne dust storm and the Ash Wednesday fires in February 1983."

"The same goes for the opposite situation. When a negative IOD combines with La Niña we can get very wet conditions like we had 1974 and 2010."

"Without the impact of El Niño we can be confident that the positive IOD will break down once the monsoon season kicks in around November-December," says Dr Watkins. "It may be of some consolation to know that the positive IOD won't have any impact on the potential for summer rainfall."

Contact

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Find out more information about the current state of the Pacific and Indian oceans with the <u>Bureau of</u> <u>Meteorology's ENSO Wrap-Up</u>.





For more information or to register your interest please contact Amy Harwood at amy.harwood@bcg.org.au or 0456 979 561

Revealing canola's super-powers

Excerpt from article from the University of Western Australia, Australian Herbicide Resistance Initiative, News, October 4, 2019.

Written by: Cindy Benjamin

Weed control doesn't get more 'site-specific' than this! Bioherbicide plantfactories that bounce out of the ground, monopolise the sunlight and produce allelopathic chemicals to stave off weeds in-crop and in the following summer fallow.

Within a large project led by Professor Leslie Weston at Charles Sturt University and Associate Professor Dr Chris Preston at The University of Adelaide, to investigate several aspects of crop competition, PhD candidate James Mwendwa and the project team conducted field trials at Wagga Wagga comparing the weed-suppressive effect of six hybrid and one openpollinated canola cultivars, both in-crop and post-harvest, in 2014. The



experiment was repeated in 2015, a drier year with much lower weed pressure, using the same cultivars plus two new cultivars. In 2015 and 2016, another site at Condobolin was added to test the same cultivars in a lower rainfall environment.

Continued on Page 21

Continued from Page 20

Cultivar ⁴	Туре	Commercial use	Growth characteristics	
Hyola® 50 §	Conventional Spring Hybrid	grain	Mid to mid-early maturing hybrid. Widely adapted for medium rainfall areas with excellent vigour. Replaced by newer cultivars.	
CB Taurus 9	Conventional Winter Hybrid	grain/ grazing	A winter type from Europe. Late maturing cultivar with vernalisation requirement for flowering, generally performs well with high winter rainfall. Excellent early vigour and growth. Replaced by newer cultivars.	
GT-50 ^{\$}	Roundup Ready [∞] (RR) Spring Hybrid	grain	Mid maturing hybrid. Suited to medium-high rainfall zones. Medium-tall plant height. Replaced by newer cultivars.	
AV Opal [§]	Conventional Spring OP*	grain	Early maturing variety. Suited to medium-high rainfall zones. Medium-tall plant height. Replaced by newer cultivars.	
Barossa 4	Conventional Spring OP*	grain	Spring canola variety. Replaced by newer cultivars.	
ATR Bonito	Triazine tolerant (TT) OP*	grain	Early-mid season maturing OP. Short-medium height. Suited to low- medium rainfall areas.	
Hyola [®] 600RR [®] [§]	Roundup Ready [®] (RR) Spring Hybrid	grain	Mid to mid-late maturing. Suited to medium-high to very high rainfall areas. Can be sown relatively early. Replaced by newer cultivars.	
Hyola® 725RT® §	Dual herbicide tolerant (RT®) Spring Hybrid	grain	Mid-late maturing. Suited to high-very high rainfall areas. Can be sown relatively early. Taller cultivar.	

anola cultivars used for field trials performed in Condobolin in 2015 and 2016 and Wagga Wagga, NSW in 2014, 2015 and 2016

In-crop weed suppression

In-crop weed suppression in canola is clearly driven by early vigour and high crop biomass. GT-50 was the most weed suppressive canola cultivar in both years while Barossa, ATR Bonito and Hyola 725RT were least weed suppressive in-crop.

In the drier season (2014), weed pressure was lower and the suppressive effect of the crop was not significant although weed growth was adversely impacted. In the wetter year (2015), with 10-fold greater weed pressure, the suppressive effect of early vigour cultivars truly shone, driving down weed biomass. Low weed biomass before crop flowering is typically associated with reduced weed seed production and seedbank replenishment.



But the story is not as simple as high early vigour + high crop biomass = fewer and smaller weeds. There appears to be other factors at play to reduce weed growth.

Continued from Page 21

For example, the Hyola 600RR cultivar exhibited only moderate weed suppression, despite having high early growth vigour and biomass. In comparison, AV Opal and Hyola 50 had similar early vigour to Hyola 600RR yet were far more weed suppressive, and, CB Taurus did not produce high early biomass in either year but demonstrated strong weed suppression ability. This suggests that there are other factors at play – not just crop competition.

Note that the poor performance observed in ATR Bonito in 2014 was likely associated with its susceptibility to blackleg and other pathogens.

'Bioherbicide factories' in the field

Brassica spp. produce glucosinolates, which can be enzymatically degraded to isothiocyanates in their seeds, roots and foliage. In fact, glucosinolate-containing seed meals have been intensively investigated as biofumigants for weed control. Charles Sturt researcher Md Asaduzzaman has previously noted the reduction in annual ryegrass root and shoot growth as the density of canola seedlings increases. Additionally, he found that the Australian cultivar Av-Opal and the breeding line Pak85388-502 suppressed root length of ryegrass more than other genotypes, even at low densities.

This suggests that enhanced weed suppression is potentially associated with the production of bioactive secondary metabolites, or allelochemicals including over 120 different glucosinolates produced by Brassica spp., some of which are exuded by certain canola cultivars, potentially a useful trait that could receive additional consideration within the plant breeding framework.

The by-products of glucosinolates include nitriles and isothiocyanates, some of which are toxic to livestock, are also volatile, rendering them difficult to study. Others are more resistant to degradation in soil, with potential bioherbicidal effects evident, even post-harvest.

Post-harvest weed suppression

The weed-suppressive effect of canola stubble is also two-fold. Firstly, high biomass crops produce higher stubble load and secondly, the release of bioactive substances varies over time and by cultivar and their release is clearly impacted by environmental conditions. Detailed examination of the allelopathic power of canola stubble was beyond the scope of this body research however, some interesting observations can be made from the ranking of cultivars against summer weeds.

Please click here to read the full article:

What's App

Lets get organised - farmer, parent, student - whatever your employ.

There is no doubting that if you use a schedule to map out your day/week/month, you'll operate in a less stressed environment. Paper-based is great, if that suits you ,but there are some great apps out there to help you, and as we all carry our phones with us wherever we go, they're literally at our fingertips. Here are just a few available:



Microsoft ToDo: Allows you to create lists of tasks that need doing. Can have multiple lists for different topics (ie Farm, House, Family, Bills etc.) Synchronises between devices (ie iphone/iPad/PC so anything you enter on one will automatically appear on other devices.) Can add photos/files etc as well as reminders and due dates. Simply click on a task when its done to remove it from the list.



Microsoft OneNote: Great for storing and sharing information. Can have multiple Notebooks for different topics, then each Notebook can have multiple pages in it. Synchronises between devices (ie iphone/iPad/PC so anything you enter on one will automatically appear on other devices.) Can share Notebooks with other people so both can contribute, useful for things like shopping lists, grain storage info, cropping plans etc. Can attach files and images to pages as well





A new app to assist grain growers to identify the most profitable liming strategy for their paddocks was developed by the Department of Primary Industries and Regional Development, with co-investment by the Grains Research and Development Corporation (GRDC).

The free, digital tool draws from more than 20 years of research data, as well as the expertise of Dr James Fisher, from Desiree Futures, and Premier's Midcareer Fellow, Dr Fiona Evans, who works with Murdoch and Curtin Universities.

The easy-to-use app enables growers to compare and evaluate the profitability of two different liming scenarios, based on a series of straightforward settings.

For more information visit this website: https://www.agric.wa.gov.au/apps/ilime



"Something to Read"

Understanding the cause and effect of herbicide carryover on pulses

It is not uncommon for grain growers to experience negative effects in their pulse crops resulting from carryover of clopyralid or picloram-based herbicides that were applied in previous seasons.

To help growers better understand the issues involved, the Grains Research and Development Corporation (GRDC) has produced a fact sheet 'Rotational constraints for pulse crops following the use of aminopyralid, clopyralid and picloram herbicides'. The fact sheet can be downloaded from the GRDC website at <u>https://grdc.com.au/rotational-constraints-for-pulse-crops</u>.

GRDC publication 'Rotational crop constraints for herbicides used in Australian farming systems' is also a useful reference to further understand herbicide carryover constraints for many herbicides. This can be downloaded from the GRDC at <u>https://grdc.com.au/rotational-crop-constraints-for-herbicides</u>.

More information on herbicide behaviour is available at the GRDC webpage, <u>http://bit.ly/2peRWCp</u>.



Disclaimer: "GRDC is a sponsor of the UNFS. This article is supplied and not endorsed by the UNFS"

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Media Release

Spring 2019



AGT 'Catapults' new variety into market

A high yielding wheat which provides a safer option for dry sowing is part of AGT's new variety offering for Australian growers.

Over recent years a substantial portion of Australia's wheat crop has been planted dry, and in many instances germination of these crops has been delayed due to a later than anticipated season break.

AGT Wheat Breeder Dr James Edwards said variety choice was very important when it comes to dry sowing. "Growers are continually looking for earlier sowing options that don't compromise on yield," he said.

"A variety like Catapult is a great choice for dry sowing because it maintains its high yield over a wide range of germination dates, including into May where it remains competitive with the benchmark variety Scepter.

"In fact, Catapult may be viewed as a 'longer season' Scepter, allowing growers to achieve Scepter-like yields when sown in late April.

"When sown towards the end of April, Catapult has taken longer for heads to emerge relative to Trojan and Scepter, but that accelerates when it is sown in May.

"We believe growers are likely to be able to plant Catapult a week earlier than they would plant Scepter, with this planting window extending well into late May, offering great flexibility to growers."

When sown around ANZAC day, Catapult has consistently out-yielded Trojan, Cutlass and Yitpi, as well as other varieties used in this sowing window.

"The very high yield potential of Catapult relative to other varieties has been recorded across a large range of growing conditions and environments, highlighting its very wide suitability for most cropping programs," Dr Edwards said.

"Catapult is an exciting development for the wheat breeding team at AGT.

"Sometimes in breeding, you get unexpected but very exciting results. Out of a standard Mace cross, Catapult has emerged as an exceptionally unique combination of features that we believe will help growers increase productivity, while providing flexibility that has not been available previously".

Catapult is also one of the best choices for use in wheat on wheat rotations due to its disease risk profile.

"Apart from Catapult, there are no other wheat varieties that combine this maturity type with cereal cyst nematode resistance, yellow leaf spot resistance and AH quality," Dr Edwards said.

AGT National Marketing Manager Dan Vater said Catapult's wide adaptation will mean it can fit the front end of most growers' cropping programs and be utilised as a second wheat in a rotation, a practice very common in low-rainfall environments.

"Catapult is very closely related to Scepter and shares its physical grain quality characteristics of high test weight, low screenings and AH quality classification," he said.

"Our team are excited to offer Australian growers this new variety".

Catapult has an AH quality classification for SA, and commercial quantities of Catapult will be available through Booleroo Centre Seeds.





Upcoming Events Calendar

Decemb	December					
3	Crop Protection Forum 2019, Moama	<u>Megan Skeer</u> 0407 604 524				
3	Diversified Farming Business, Kingston	Danielle England 0429 676 077				
10	Coping with the Season Workshop, Parndarna	Darren Keenan 0428 716 330				
10	WoTL Webinar: Negotiating with your Bank & Managing Finance Du	ring Dry Times.				
		Kim Blenkiron 0427 592 243				
12	Jamestown Livestock Market					
2020 January 28	MSF Mallee Research Update, Bow Hill	Sonia Allen 0438 854 581				
February						
5	, UNES 'Dealing with the Dry (am) and Building a resilient future (pm)	" Booleroo Centre 9am—5nm				
		Kristina Mudge 0438 840 369				
11-12	GRDC Grains Research Undate Adelaide	ORM Communications 03 5441 6176				
13	GRDC Grains Research Undate Balaklava	ORM Communications 03 5441 6176				
20	MSE Mallee Research Undate, Nandaly	Sonia Allen 0/38 85/ 581				
20	MSE Mallee Research Undete, Lake Cullulleraine	Sonia Allon 0438 854 581				
21	Interview Agricultural Detential 2020, Coomendaals	Sonia Allen 0430 034 30 1				
21	The structure of the second se	Kylle Montz				
24 - 25	Inniving women's Conference, Hanndori					
21	MSF Mallee Research Update, Brown's Well / Paruna,	Sonia Allen 0438 854 581				
Marah						
March		O				
	Getting the Grop in Seminar, Hart	Sandy Kimper 0427 423 154				
20 - 21	South East Field Days, Lucindale	Lyn Crosby 08 8766 7001				
l l						
July	AND ALL AND THE THEFT	0				
	winter waik, Hart	Sandy Kimper 0427 423 154				
28	GRDC Farm Business Update, Miniaton	ORM Communications 03 5441 6176				
29	GRDC Farm Business Update, Clare	ORM Communications 03 5441 6176				
August						
5	UNFS 2020 Members Expo, Booleroo Centre	Kristina Mudge 0438 840 369				
4-6	WeedSmart Week, Clare	<u>Lisa Mayer</u> 08 6488 3189				
11-13	Eyre Peninsula Field Days, Cleve	R <u>enee Kelly</u> 08 8628 2219				
13	Ag Excellence Annual Forum & Awards, Barossa	Kerry Stockman 0418 841 331				
Septemb	er					
9	Minnipa Field Day, Minnipa	Naomi Scholz 0428 540 670				
15	Hart Field Day, Hart	Sandy Kimber 0427 423 154				
18-19	Riverland Field Days, Barmera	<u>1 im Grieger</u> 0409 099 122				
October						
20	Spring Twilight Walk, Hart	Sandy Kimber 0427 423 154				
22-24	Australian National Field Days, Borenore	<u>ANFD</u> 02 6362 158				



"Wishing all our members and families a Merry Christmas and Happy New Year from Ruth, Kristina, Rachel and Jamie and all of the Strategic Board and Operations Committee Members."



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