

GRDC's Kwinana West port zone Grower Network held their member meeting on 28th and 29th July, 2020 at Freemasons Tavern, Beverley. As part of their meeting, the Grower Network members visited the Elders technology site with Bill Moore (Elders Vetch, Truflex canola, oat agronomy and grass management in cereals site); followed by a visit to Dale frost site with Ben Biddulph (DPIRD National Phenology trials, canola time of sowing, nitrogen management – hay vs grain). All 12 of the Kwinana West port zone Grower Network members attended their meeting including: Tony White, Gary Lang, Roger Newman, Ben Wilson, Bill Moore, Blayn Carlshausen, Daniel Dadd, Chad Hawksley, Dani Whyte, Norm Jenzen, John Scotney, and Natalie Purdy. Juliet McDonald (Western Panel) and Lizzie Von Perger (GRDC Grower relations – West) attended via Zoom; Julianne Hill, Grower Network coordinator and Grower Network support Cindy Power, as well as Grace Barden (3rd Year Murdoch student) were also in attendance.

All Grower Network members were asked to bring ideas from five farmers/advisors from their area, and to consider these ideas along with ideas raised from the online open feedback that was hosted at www.rcsn.net.au and open for the month of June. They were then asked WHAT WILL HELP GROWERS? Consideration was given to area, frequency and impact on profit of the issue or idea and ideas rated accordingly. These ideas/issues were further discussed: Does this issue still need some work done or has it been fully addressed with past or current R, D or E? ie there is a Research, development or extension gap still. Are they still an issue? Has enough been done on them?

From this, the following were developed:

- A full list of Issues, constraints and opportunities impacting on growers in the Kwinana West port zone
- Area, impact and frequency of Issues that the Grower Network considered needed more work or that there was a gap still
- NVT update given by NVT manager Andrew Heinrich (via Zoom); & NVT representatives Bill Moore and Tony White.

Grower Network members then further discussed and expanded on those top issues that they believe need further investment, and decided on some areas to further explore for possible R, D or E by GRDC and/or partners as below:

- Four Deep Dive issues & MAKATs: Deep sowing; Frost; Improving N use efficiency; Oat agronomy, profitability & resilience
- Two Issues Captures: Oat agronomy; Rhizoctonia

A Zoom update on “Oat agronomy and fit for end use” was held. Josh Johnson & Georgia Megirian (GRDC) joined this Zoom meeting and put together some ideas for the group to think about. Speakers included Chris Maughan (Global Proc Associate Manager at Quaker Oats Australia Pty Ltd) with Georgie Troup (DPIRD Oat research agronomist) attending in person. This formed the basis of discussion and input for one of the Deep Dive/MAKATs above.

Table 1: Summary of areas of Interest raised via Online Open feedback or by Grower Network members

Top issues, opportunities or constraints raised at previous meetings (Feb 2020 & July 2019)	Idea Description	GRDC Action Taken	Any Further Action Required & Comments
Options for farming without glyphosate are not well known	Kwinana West port zone RCSN members ranked this issue very highly. Farming without glyphosate: What other options are there? Has laser stacked up? If we can't use glyphosate, what can be used?	Grains Weed Advisory Committee, lead Rural Directions (RDP00015) - working to provide integrated weed management strategies for major crop-weed threats to grain production GRDC currently has over \$20 million invested in non-chemical weed control and integrated weed management.	Grower Network members believe that current work in this space is likely to address this issue

<p>Lack of rotation options; alternative break crops, legume and pastures</p>	<p>Rotation options are needed to increase the diversity of crops available, however it isn't enough just to have a break crop for the sake of it – RCSN members noted that the rotation needed to make a profit from each crop type in the year that it is grown. We can't find a profitable break crop that fits the system or is profitable. Most successful is canola. We are still lacking any options for heavy land.</p>	<p>Liebe Group Legume demonstrations (LIE1802-003SAX). Southern Dirt Linseed project (SDI1906-005RTX), three sites this year with Southern Dirt (Wagin, Darkan, Kojoonup). High value pulse project, lead Mark Seymour DPIRD DAW1903-004RTX, started last year. Best-bet legume packages for different areas. Particular focus on new faba bean, chickpea and lentil varieties and agronomy packages. Dryland pasture legumes systems with Ron Yates (Murdoch Uni) and CFGI, CSIRO, MIG (UMU1805-001RMX). Increasing the effectiveness of nitrogen fixation in pulses through improved rhizobium strains with Ron Yates (Murdoch Uni) and Curtin Uni (UMU1805-001RTX). Double break with a high value pulse WMG (WMG2003-001SAX) - lentil or chickpea after a canola, against a cereal. Sites in Dandaragan, Latham, Narembeen and Cuballing.</p>	<p>Would also like to see herbicide screening in pulses and legume pastures (like HART field day herbicide tolerance trial). Thought that was excellent and a big gap here especially as weed control of radish/doublegee/capeweed is so important in these crops, and this is more important than ever with weedy paddocks from late break seasons. Further discussion - how do we increase N fixation in lupins as we get higher harvest index? Also, discussion on why faba beans weren't included in the double break crop trials</p>
<p>Better agronomy packages to manage brome and barley grass in the Kwinana West port zone</p>	<p>The Kwinana West port zone RCSN members noted that management of brome and barley grass is becoming an increasing issue. Developing a package to control these weeds and manage them long term in the face of developing herbicide resistance and no HWSC options will be a great investment. These weeds are becoming an issue because they have had consecutive years of no knockdown due to dry starts in their crop rotations, leading to increase in numbers.</p>	<p>University of Adelaide 'Demonstrating and validating the implementation of integrated weed management strategies to control barley grass in the low rainfall zone farming systems' (UOA1904-004SAX) - looking at seed dormancy in barley grass, herbicide resistance screening, best herbicide management options. Working with SEPWA, Kellerberrin Demonstration Group, MIG, WANTFA (Cunderdin), Lakes Grower Group. AHRI Phase 5 - resistance management that extends to Barley and Brome grass. Roberto Busi UWA 'paddock level herbicide resistance survey' (UWA2006-006SAX) - 200 samples of rye, brome or barley grass. Grower perceptions of resistance before and after. Identify effective herbicide control solutions, workshops, field days</p>	<p>Grower Network members believe that further work needs to occur on this area</p>
<p>Dry seeding has seen weeds become an even bigger issue</p>	<p>Era of dry seeding - but we somehow need to beat the weeds, not just ryegrass. Dry seeding our whole program this year highlighted the importance of pre-emergent chemicals; crop hygiene; harvest weed seed management; and rotation to minimise weeds and allow for cleaner establishment of crops. Further extension on looking at the whole of system approach rather than relying of post-emergent chemicals especially in a system which</p>	<p>AHRI Phase 5 - resistance management research ongoing. Roberto Busi UWA 'paddock level herbicide resistance survey' (UWA2006-006SAX) - 200 samples of rye, brome or barley grass. Grower perceptions of resistance before and after. Identify effective herbicide control solutions, workshops, field days and working with numerous consultants and growers to deliver. Peter Newman (Planfarm) 'whole of systems approach to weed management' pilot workshops (PLN1905-001SAX) - assisting growers to understand why weeds are growing where and how they do and the management practices that have led to this. Workshops delivered in Mingenew, Morawa, Liebe, West Midlands and Corrigin.</p>	<p>No knockdown due to poor starts is definitely putting a lot of pressure on post-ems</p>

	<p>includes oats and those who have not traditionally used dry seeding as a high proportion of their program.</p>		
<p>Maximising profitability and reliability from canola</p>	<p>In their July 2019 meeting, Kwinana West RCSN members were very keen to improve canola establishment in drier starts and developed a MAKAT to address this issue. Kwinana West port zone RCSN felt strongly about this area for GRDC research and identified possible activities to help address the issue. At their February 2020 meeting, they again wanted to see work happen in canola and more particularly to see profitability maximised in the canola rotation. It is an important crop for this port zone</p>	<p>New project in Procurement - providing better info and tools to growers to enable them to better predict % canola establishment required. TrialCo (TRC2004-001SAX) - improving germination and establishment (especially of canola) when dealing with non-wetting across different stubble loads and types. Sites located in Cuballing, Nyabing, Newdegate, Lake King and Gibson. DPRID 'expanding sowing window for canola and lupins' led by Martin Harries (DAW1901-005RTX) - developing risk profiles for canola across sowing dates, varieties and environments. Kelly Cussons Media (CMP1903-001WCX) 'Golden Rules for Canola in the Kwinana East port zone' booklet' - pulling together NVT info, info from tactical break crop agronomy project, and learnings from growers successfully growing canola year in year out.</p>	<p>Seed vigour is an important part to getting good canola establishment. What is the effect of leaving canola seed sitting around for a period of year or two on seed vigour (is it worse if canola has had seed treatment applied)? Time of sowing data is needed in frost zones. Why do we need to germinate canola in April? Early sown canola and poor establishment has changed the focus from rotational benefits from a well-established competitive break crop to focus on profitability of that crop</p>
<p>Frost is still a high priority with more work needed in canola and legumes. Deep Dive & MAKAT conducted on this issue</p>	<p>Frost is still an issue for this port zone with discussion amongst the group that there is not enough work being carried out particularly around canola and legumes, which growers note are being impacted more frequently.</p>	<p>New investment: Extension of the current knowledge. Whole swag of frost investments still underway: DAW00234 - Determining yield under frost one degree at a time. CSP00198 - Spatial temperature measurement and mapping tools to assist growers, advisors and extension specialists manage frost risk at farm scale. UA00162 - Screening of frost tolerance in cereals. CSP00202 - Identification of wheat frost tolerance loci using a combination of genetics, biochemistry and molecular approaches. ACP00010 - Benchmarking and field validation of transgenic frost tolerance wheat lines. GRS11000 - Frost temperature dynamics and rapid post event identification of damage to broadacre cereals. GRS11001 - Frost tolerance in wheat: Grain Research Scholarship for field-based phenotyping tools in pre-breeding. IMT1806-001AWX – Frost treatment (novel chemistries). FMO1806-002AWX - Applying Technology Solutions for Improved Frost Detection</p>	<p>Grower Network members believe that further work needs to occur on this area</p>

Independent analysis of weed kill and machinery wear of the HWSC tools	This issue has been of interest for some time.	Ben White (Farming Ahead) has put together an independent assessment of all of the HSD's, Seed Destroyers etc. See War Against Weeds: Harvest Weed Seed Warriors. February 2020 Research Report. Covered mill wear, maintenance, fuel usage, HP requirements and depreciation.	Grower Network members believe that further work needs to occur on this area including looking at rotary vs axial flow; Comparison to chemical options that are now coming through; and new chemistry compared to cost of ownership. They want to see true total cost of seed destruction and compare it to other control methods. This includes cost of machinery, extra running cost, maintenance and wear and tear. This needs to be brought back to a cost per hectare
Lack of skilled labour supply; access to skilled labour	Listed as one of the high impacting issues at their July 2019 meeting, Kwinana West again noted this as one of the biggest impacts on their farm profitability in February 2020. They want to see a way to upskill their staff using a labour/staff traineeship or apprenticeship s there is currently a lack of skilled labour.	GRDC is writing a submission to the 'National Agricultural Workforce Strategy (due 3 Aug 2020). GRDC invests in 'People in Ag', a cross RDC initiative led by Dairy Australia DAL00001. Provides HR templates, inductions etc. GRDC supports 'Careers in Grain'. Farm business Updates - can be included as a topic in 2021. Some of this was started by DPIRD recently in the coronavirus pandemic. https://www.jobsinwafoodandag.com/jobs-eeker-information	Grower Network members believe that further work needs to occur on this area
Maximising canola establishment	Kwinana West RCSN members are very keen to improve canola establishment in drier starts as has been the case for the past 2 years. They want to explore a number of areas including: Soil wetters as seed coatings? Crusting of heavy soils and could gypsum help? TOS and does it need to germinate as early as generally recommended? With and without press wheels. Novel ideas to prevent crusting in heavy soil types to increase canola germination success. Can we use liquid on furrow system with different products like liquid Gypsum, wetters etc?	New project in Procurement - providing better info and tools to growers to enable them to better predict % canola establishment required. TrialCo (TRC2004-001SAX) have a new project invested in by GRDC looking at improving germination and establishment (especially of canola) when dealing with non-wetting across different stubble loads and types. Sites located in Cuballing, Nyabing, Newdegate, Lake King and Gibson. DPRID 'expanding sowing window for canola and lupins' led by Martin Harries (DAW1901-005RTX) - developing risk profiles for canola across sowing dates, varieties and environments. Kelly Cussons Media (CMP1903-001WCX) 'Golden Rules for Canola in the Kwinana East port zone' booklet' - pulling together NVT info, info from tactical break crop agronomy project, and learnings from growers successfully growing canola year in year out.	Has the golden rules of canola been published yet? Also, discussion on whether the new project in procurement is looking at sowing data to look at risk at the end of the season regarding frost risk & varietal differences

<p>Harvest losses in canola</p>	<p>Harvest loss in canola must look at more than loss out the back of header ie losses from swathing and/or draper fronts vs tin fronts. RCSN members recognise that there are losses from the back of the header and these have been reasonably well covered now through Planfarms 'Halving the \$90 million losses of canola'.</p>	<p>Primary Sales Australia, Regional Harvester Set-Up Workshops for the Economic Optimisation of Harvest Losses, Efficiency and Grain Quality (PRS2005-001SAX) - Project has scope to look at harvest losses from front of header as well as back. Planfarm & Pete Newman 'Halving the 90 million of canola harvest losses' (PLN1803-001SAX) - completed, however grower case studies include losses from front of the header.</p>	<p>Grower Network members believe that current work in this space is likely to address this issue</p>
<p>Oat agronomy particularly oat weed management. Deep Dive, MAKAT and Issues Capture conducted on this issue</p>	<p>Kwinana West port zone have identified that oats is an important crop in their rotation and have noted a number of issues:</p> <ul style="list-style-type: none"> • Herbicide performance on oats. • Lack of knowledge around alternate herbicide options for Oat control. • Registration of products has lacked investment because a small market/industry. • Price (Human Consumption) • Quality to hit Oat1 concerns in drier regions. • Lack of Ryegrass weed control, need alternative registered grass weed control options. • Want to use Oats to mitigate frost risk. 	<p>Georgie Troup DPIRD 'investigating the phenology diversity in germplasm to optimise the profitability of April sown oats' (DAW1901-002RTX). Started last year, running till 2021. Variation also processed to look at Beta Glucan analysis through AEGIC to determine if different management strategies had any impact on beta glucan in oat grain. National oat breeding program finishes at the end of 2020. Murdoch university (UMU2003-002RTX) looking at oat genomic resources for breeders and pre-breeders. Identification of novel sources of resistance to Septoria Leaf Blotch and understanding of evolution and virulence of the pathogen, lead Uni of Adelaide (UOA2007-001RTX) - just commenced with aim to give growers access to oat varieties with increased resistance to Septoria Leaf Blotch. Integrated disease management in western region grain crops, lead Geoff Thomas DPIRD (DAW1907-001RTX) - ConsultAg coordinating trial sites focussing on oat yield and grain quality through disease management in high and low rainfall zones (Narrogin and Lake Grace).</p>	<p>Grower Network members believe that further work needs to occur on this area. Don't just concentrate on grain oats. Hay oats is a bigger crop in WA and is a high value rotation that misses out on research. Visible this year that more hay crops are being planned due to weed burdens and achievable returns.</p>
<p>Improved knowledge needed for aerial application of fungicides and herbicides; Spray application technology in general</p>	<p>RCSN members expressed frustration of inconsistency of the aerial spray application job and were concerned about resistance issues, particularly to fungicides, due to poor application. They believed that there is a lack of knowledge of the principles and best practice principally by aerial operators, and by growers.</p>	<p>Bill Campbell's spray application workshops (BCC1910-001SAX) - cover this to some extent. Bill will now cover this issue in more detail in remaining workshops for the KW port zone. Locations yet to be determined.</p>	<p>There also needs to be increased uniformity of spray contractors as they often have different ideas. A leaflet that clearly describes the way spraying needs to be done (rates, timing etc) could be handed out to farmers and pilots.</p>

Increasing and short-lived technology is increasing turn-over of otherwise good machinery	<p>Machinery costs are growing each year, and this is in part exacerbated by the rapidly changing technologies that are built into new machines. They questioned if machinery was heading more towards constant updating technology at the cost of reliability? This ends in a short life machine with huge depreciation and no value after 10 years adding substantially to the overall cost of machinery.</p>		<p>A lot of these issues arise from the belief that buying new improves reliability and performance but that isn't always right. These rapid depreciations are because of rapid changeovers, cheap or no interest charges and over supplied second hand market for good near new gear</p>
Understanding potassium testing and response curves	<p>Kwinana West port zone RCSN members identified that they believed there was still a gap in potassium knowledge, and more specifically understanding what the best testing (sample collection as well as reading results) and responses after application of K. Also, how will the K shift through the profile, and length of effect?</p>	<p>Response curves: NPK Project (UWA1801-002RTX) led by Craig Scanlan (with UWA, Murdoch uni, Summit and CSBP) looking at rates and frequency of applications of K and responses. Project will update nutrition guidelines (response curves), efficacy of new K fertilisers and the benefits of ameliorating subsoil K deficiency. Sampling: Improved sampling methods to better predict nutrient availability project (CPS1801-004RTX) being led by CSIRO is looking at a new standard method for soil sampling across nutrients, soil types and farming systems (specific to each).</p>	<p>Are these compound fertilisers with high Potash more toxic in dry conditions and therefore better to split? Also, further work could look at the effect of compound fertiliser and seed together on performance of soil enhancers ie SE 14</p>
Poor germination and vigour in lupins	<p>What are the major causes of low lupin % germination as well as low vigour? While Grower Network members identified that there are a lack of lupin varieties suited to their area, they are keen to find out and understand what is causing the issues with lower germination in their lupins.</p>	<p>Liebe Group GRDC invested project - impact of harvest lupin handling on seed germination and crop establishment (LIE1905-001SAX) - so far shows that mechanical harvesting led to a 9% decline in germination. Was a variety effect, Mandelup is the worst. Mn was not deemed a contributing factor in this study. 27 growers in the KW, KE and Geraldton port zones participated in the project with samples collected from properties. Crop Circle consulting 'Mn solutions to manage split seed in high yielding lupin varieties' (CRC1908-001SAX) - looking at different forms of foliar Mn, application rates and timing on plant uptake - aiming for best Mn concentration in seed to reduce incidence of split seed.</p>	
Creating resilience in growers to manage poor income years.	<p>How to build resilience in farming businesses to allow them to withstand retirement/education commitments etc in low income years. Can anything else be done here?</p>	<p>GRDC Farm Business updates - Topic to be included in the 2021. Future Drought Fund - Australian Government initiative that will include resilience programs. These kick off in July 2020. https://farmhub.org.au/future-drought-fund/ for more information (note not a GRDC investment)</p>	

<p>Developing leadership and capacity in the farming community</p>	<p>Kwinana West port zone RCSN members raised a need to develop leadership and capacity in our farming businesses and communities. They identified that there is an increasing scrutiny on agriculture, and this has seen the resultant need for growers to have highly developed technical skills, and a further need for development of 'soft' skills both from a farm/industry business perspective and a whole industry perspective.</p>	<p>GRDC's current approach is heavily scholarship/awards focussed: - Nuffield Farming Scholars; Emerging Leader Awards (selected by Regional Panels); NFF Diversity in Agriculture Leadership Program; Support towards GGL Innovation Generation Conference. Leadership courses run by GrainGrowers: Australian Grain Leaders Program https://www.graingrowers.com.au/leadership-events/australian-grain-leaders-program/ https://www.graingrowers.com.au/sustainability/grains-social-leadership-program-gslp/. This program takes growers with current enthusiasm and some experience in social media and provides them with more confidence and skills to craft a positive message about Ag and constructively engage and perhaps lead discussion on issues.</p>	<p>A gap that we have identified is the knowledge gap with technology given this is constantly changing and improving.</p>
<p>Measuring nutrient loss and moisture loss on burnt paddocks including those burnt for frost.</p>	<p>Topical after this year where high stubble loads after 2018 season saw greater than normal levels of stubble burnt.</p>	<p>The NPK Project (UWA1801-002RTX) being led by Craig Scanlan (with UWA, Murdoch uni, Summit and CSBP) looking at loss of K with burning only however. DPIRD Stephen Davies 'Delivering enhanced agronomic strategies for water repellent soils in WA' (DAW00244) - Includes aspect on soil moisture on retained stubble vs burnt, final report being reviewed and C&E to come.</p>	<p>Grower Network members believe that further work needs to occur on this area</p>

New ideas from this meeting	GRDC Action Taken	Any Further Action Required & Comments
<p>Nitrogen. Deep Dive & MAKAT conducted on this issue</p>	<p>Farmanco ' Grain protein yield project - How does behaviour impact the technical choices that are made to grow better quality wheat' (FMO2002-001SAX). Response curves: The NPK Project (UWA1801-002RTX) being led by Craig Scanlan (with UWA, Murdoch uni, Summit and CSBP) looking at rates and frequency of applications of N and responses that may have changed due to climate and farming systems since original crop nutrition work done. Project will update nutrition guidelines (response curves), improve understanding of soil N supply and will develop a N decision support model with new info. Sampling: Improved sampling methods to better predict nutrient availability project (CPS1801-004RTX) being led by CSIRO is looking at a new standard method for soil sampling across nutrients, soil types and farming systems (specific to each).</p>	<p>Grower Network members believe that further work needs to occur on this area. Low protein in all cereals indicates still under applying. Nitrogen rates and response in current farming systems. How high can you go with N? Questions arising about the curve and it's relevance now. Variety also will change the effectiveness of response to N. Need to correlate N soil and plant supply in relation to soil available moisture using moisture probes. We are still guessing too much. We are underapplying nitrogen so there was almost no 10% protein wheat last year. No one is putting nitrogen on because we are nervous about the end of the year.</p>
<p>Transient salinity</p>		<p>Grower Network members believe that further work needs to occur on this area. Salinity is continually overlooked. Why? It is one of biggest problems when growing crops like lupins for a rotation. How can we better manage these very mild saline areas that seem to show up in lupin crops?</p>

<p>Fungicide selection and management</p>		<p>Grower Network members believe that further work needs to occur on this area. When and where we need to use the fungicides and where they have been evaluated? When and where to use new chemistry.</p>
<p>Increase reliability of emergence with deep sown crops (lupins, canola, oats). Deep Dive & MAKAT conducted on this issue</p>	<p>New project in Procurement - providing better info and tools to growers to enable them to better predict % canola establishment required. define minimum establishment needed for different soil types and soil temperatures and the understand better the varying establishment between seed types, seed treatments, seed size and seeding depth. Will include lab work, glass house and in-field.</p>	<p>Grower Network members believe that further work needs to occur on this area. Increase coleoptile length, moisture attractants, reduce soil crusting??? Quick infield test to estimate moisture to make sure that deep sowing is a valid option. Yield drops off significantly in canola crops if you go 1cm deeper Accuracy of soil moisture probes. Better seeding equipment needed for deep sowing, especially in heavy texture soils</p>
<p>Rhizoctonia management. Issues Capture conducted on this issue</p>		<p>Grower Network members believe that further work needs to occur on this area. Ability to predict where it is going to be particularly bad, especially in barley? Knowledge of agronomy packages to manage this. Cultivate below the seed? After amelioration and tillage the incidence of rhizo is higher - until year 5. A very bad year for Rhizo. How do we manage it in future? Has there been enough trial work done in the past to review? In 2020, rhizoctonia has also been bad in barley as well.</p>
<p>Capeweed control especially in hay</p>		<p>Grower Network members believe that further work needs to occur on this area. Multiple farmers discussing issues within hay crops. Carry-over is also an issue. MRLs used for hay would be a good set of knowledge to have access to</p>
<p>Discs as an option for canola, lupins and pastures?</p>		<p>Grower Network members believe that further work needs to occur on this area. Are discs a better option to establish canola, lupins and pastures more reliably in dry starts by preserving soil structure and marginal moisture? Why are discs so successful around the world and not in WA? Is fertiliser toxicity more damaging to canola than cereals when delayed emergence from dry starts or insufficient moisture to germinate and therefore is it better to delay sowing of canola to avoid toxicity and improve emergence when rainfall and germination is more likely later in the sowing season. Moisture differences of tine vs disc</p>

Quick, affordable and reliable mapping of depth to clay in duplex soils	New Investment: Out to open tender 'An analysis of 3D soil constraint diagnosis and options for on the go management of variable soil types (PROC - 9176250) - aimed to enable accurate and timely amelioration of variable paddocks on the go, optimise ameliorants and inputs (i.e. lime, fertiliser rates, ripping depths) and reduce risk of soil structural damage due to blanket or incorrect amelioration. Soil Constraints Extension Project, lead Wayne Pluske (PLT1909-001SAX) - a variation recently processed to put together a handbook on just this topic. Starting with ID of variability (incl. depth to clay) and what exists/cost etc., How you then use this info to prioritise soil types and then implementation – what machinery, timing etc.	Depth maps would be valuable, particularly for duplex soils
On-row soil testing	Improved sampling methods to better predict nutrient availability project (CPS1801-004RTX) being led by CSIRO is looking at a new standard method for soil sampling across nutrients, soil types and farming systems (specific to each).	CSIRO have done a lot of testing on and off row and where nutrients are ending up. What does on row sowing mean for soil testing? Questioning the relevance of a mid-row test when the plants are 15cm away.
Soil acidity and Calcium application options (received via online open forum)		It's widely accepted that soil acidity is a key constraint to crops but there are also now a lot of options to supposedly tackle the problem. Lime sand is the big easy option, but some are trying liquid options to deal with crop requirements only in furrow. What are all the options, how do we quantify them, what are their benefits and pitfalls?
Waterlogging in valley floors in wet years (received via online open forum)	ROI of Subsurface soil drainage - demonstration trials in Albany & Esperance Port zones (SCN2005-001SAX & SCF2005-001SAX). Summer cropping trials for reduce winter waterlogging Albany port zone (SDI1802-001SAX).	Grower Network members believe that further work needs to occur on this area. High gravel ridges let water through to the valley floor and in wet winters weed control and crop health is severely affected.

NB: ALL issues raised will continue to have presence at the Grower Network discussion table and will be forwarded to the GRDC Western Panel and GRDC for continued visibility that may feed into existing or future initiatives.

Further Details.

For further details, contact the Grower Network Facilitator Julianne Hill on 0447 261 607 or email grdcgrowernetwork@gmail.com. You are also welcome to visit the Grower Network website – www.rcsn.net.au; and to follow us on Twitter @Julianne_Hill, or visit GRDC - www.grdc.com.au. A number of Grower Network initiated projects have been put on the ground in the Esperance port zone since 2011 and can be found on the Grower Network website.

The summer round of Summer Sesh events will be held in January 2021, followed by a Grower Network member meeting (depending on Covid-19) which will be held in Fremantle as a combined meeting with Kwinana East port zone in February at a similar time to Perth Research Updates. Further details will be available soon.