

GRDCs Geraldton port zone Regional Cropping Solutions Network (RCSN) held three Open Forums in August, 2018. The meetings were held at Eneabba Recreation complex (22nd August at 2pm); Morawa Agricultural College (23rd August at 8am) and Geraldton Lavender Farm (23rd August at 2pm). A total of 97 guests attended the three Open Forums. Members of the general public were able to register for the Open Forums at the RCSN website www.rcsn.net.au and could submit an issue/idea should they be unable to attend.

Those presenting across the forums included:

- Jo Wheeler (GRDC) & Darrin Lee (Western Panel): GRDC investment into agronomy & farming systems in WA
- Phil Barrett-Lennard (AgVivo): Developing synergies between crop and livestock enterprises (Eneabba only)
- Richard Bell (Murdoch): Managing and measuring potassium in a year like this (Geraldton and Morawa only)
- Deb Gillam (MIG): Tactics for improving rooting depth and crop yield on sodic soils (Morawa/Geraldton)

Also in attendance were some Kwinana East port zone RCSN members. A key part of the Open Forum was the opportunity for participants to share the top issues affecting their profitability. The aim of these discussions was to provide growers with direct input into the analysis of current local priorities affecting productivity and profitability to assist in the discussions relating to future projects by GRDC's RCSN and by GRDC's Western Panel and GRDC staff.

A number of shorter term, smaller RCSN initiated projects have been put on the ground in the Geraldton port zone since 2011. Final reports are available online at the Online Farm Trials website, www.farmtrials.com.au or on www.rcsn.net.au. Those that were contracted in 2018 (that primarily arose from Open Forum meetings and RCSN member meetings in 2017) were:

Table 1: Summary of RCSN initiated projects for Geraldton port zone in 2017/18 (GRDC)

Project Number	Project Title	Leader(s)
9176166	'Ripper Gauge' Demonstration Sites in the Western Region	Nathan Craig, West Midlands Group
9176141	'Yardstick' Demonstrations for the Western Region port zones	Kathryn Fleay, MIG
9176058	A Review of Seeding Systems that Provide Improved Crop Establishment for Growers in the Western Region	Kelly Cussons, Cussons Media
9176041	Halving the \$90m Canola Harvest Losses in WA	Peter Newman, Planfarm
9176023	Return on Investment of Using Drones	James MacFarlane, Farmanco
9176164	Demonstrations of Legumes crops for reliable profitability in the Western Region	Rebecca McGregor, Liebe Group
9176047	Tactics to Improve Crop Establishment in a Drying Soil Profile in the Western Region	Kaaren Latham, Coxinall Communications
9176012	Tactics for Improving Rooting Depth and Crop Yield on Sodic Soils	Kathryn Fleay, MIG
9176009	Benefits of foliar micronutrients on cereals in a low rainfall environment	Rebecca McGregor, Liebe
9176151	Making lupins profitable again in the northern wheatbelt	Kelly Cussons, Cussons Media
9176016	Improving Crop Emergence	Nathan Craig, West Midlands Group

All issues raised at the Open Forums at Eneabba, Morawa and Geraldton were discussed by the RCSN members at their meeting held on 24th August in Geraldton. The RCSN also added further issues after gaps were identified. All issues were ranked according to five main factors: Does it impact on grower's profitability? What area is affected by the issue? How frequently does the issue occur? If work was conducted on the issue, would it deliver more value to growers? Is the issue something that we can effect change upon?

Table 2: Summary of areas of Interest raised at the Open Forums at Eneabba (E), Morawa (M) and Geraldton (G) or by RCSN members

Areas of interest raised at Kwinana East zone Open Forums and RCSN members	Expanded areas of interest	RCSN member feedback from Closed meeting and further action
E, M, G, RCSN - Weeds management	For consideration of resistance and saving out of season rainfall - integrated weed management, imi technology (summer weed control), harvest weed management; innovative (emerging) management tools (in crop spray technology etc.) and stubble management. Spray tech, camera detecting green-ness of weeds and reduce weed control costs (summer and winter applications). Autonomous weed control systems? Herbicides and weed control tactics to manage weeds in very early sown cereals. Residual	Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this time as there is a current RCSN initiated project and a large GRDC investment (AHRI and others) occurring on the ground on this topic. However, the RCSN wanted to ensure that it remained as an important issue within GRDC.

	control of brome grass, wild oats and radish, in crop not HWSC. Changing system and seasons have made controlling these weeds later in the season more difficult, and we have no chemical options. Late germinating weeds when we have no chemical options based on crop stage (MRL problem) before it lays flat and can't be captured by HWSC. Chemical management options for ryegrass and radish in lupins. New chemistries? Will run into huge issues if grass selective resistance occurs. Alternative options to glyphosate. Need to come up with a new farming system without glyphosate if legislation changes. MRL issues, market access risks. IMI rotations and residuals. Degradation of pre-em's after dry seeding. How long do they last in the soil before wetting up?	
E, G, RCSN – Social Licence	Communications training. Many farmers have good intentions but cause more harm than good when communicating to the media and wider community. Educating the general public on glyphosate. What would be options if glyphosate was lost and are the other options worse i.e. paraquat? Promotion of Australian farmers. Educating general public about ag industry, live export industry, glyphosate issues such as CBH penalties, furthering extension process to increase farmer intake of new knowledge, value in peer to peer learning, not all farmers being involved in grower groups and rather keep knowledge to themselves, not having time to for involvement in educational grower events.	Ranked very highly by all, however this issue was not further developed at this time. The RCSN wanted to ensure that it remained as an important issue within GRDC.
G, M, E - Plant Breeding	Short season, high yielding varieties (for later sowing), longer coleoptiles (for early sowing), disease tolerance (powdery mildew, yellow spot). Best output on a low to medium input system - 2-3 tonne (efficiency to achieve yield) . Transgenics for weeds - possibility for inserting into crops. Dicots that act like monocots after soil erosion events - will regrow.	Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this time as there is a current large GRDC investment occurring on the ground on this topic. However, the RCSN wanted to ensure that it remained as an important issue within GRDC.
E, G, RCSN - Soil amelioration questions and issues	Herbicide carry over, plant back and rates of applications after soil amelioration. Ripping, spading, ripping with inclusion plates. Need access to info from previous research. Cost of ameliorating soil acidity on yellow sand at depths greater than 30cm. Transport, application and getting it to depth is the greatest costs. Crop establishment of canola on ameliorated soils. More cost-effective options for overcoming soil constraints specifically pH, acidity, acidity at depth and to depth. How amelioration affects herbicide residuals and effectiveness. Non-wetting soils - management of nutrients following amelioration, collation of existing data to inform decision making, matching amelioration method to problem. Longevity of solution, measuring non-wetting with moisture probes moisture loss up and down, comparison water budget, use of seed coatings to overcome water repellece,	Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this time as there is a current large GRDC investment occurring on the ground on this topic. However, the RCSN wanted to ensure that it remained as an important issue within GRDC.
M - Accurate yield forecasting	Throughout the season to best match inputs to the season. Training for growers to understand data they already have like yield maps. Skills training for new technology.	Noted as an issue by RCSN members at their closed member meeting, however the RCSN did not further develop this issue at this time. RCSN will ensure that GRDC are aware of this issue
<i>G, RCSN - Revisiting previously grown crops in the northern regions</i>	<i>i.e. BARLEY, chickpeas, field peas, lentils and faba beans. New varieties have better disease resistance and soils have improved since the 1990s. Markets for some of these grains have also improved. Chickpeas, lentils, faba...all possible to grow but need to deliver them to Perth...transport and storage issue for Growers.</i>	<i>Ranked very highly by RCSN members at their closed member meeting. The RCSN identified this as an issue impacting on profitability and further developed some aspects of this issue.</i>
M: Machinery costs	High Cost of machinery - high specs, equipment purchasing on general, simpler machine may be more cost effective, best way of handling this problem. Machinery costs continually increasing with technological advances - you can't buy a new cheap simple harvester anymore.	Ranked highly by the RCSN members, however this issue was not further developed at this time as there is current RCSN initiated projects on the ground. The RCSN wanted to ensure that it remained as an important issue within GRDC.
M - Adoption of new technologies	Better understanding of usefulness/profitability - comms and extension of present and past R&D perhaps focusing on the profitability of adoption to grab attention of growers. Examples include variable rate, use of soil and tissue testing, herbicide resistance testing.	Ranked very highly by all, however this issue was not further developed at this time. The RCSN wanted to ensure that it remained as an important issue within GRDC.
G, E: Summer weeds	Summer weed control - when to spray, what to spray (new weeds), innovative technologies (autonomous vehicles), spray nozzles etc.	Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this

	Cost vs benefits and ways to effectively manage new species such as button grass and milk thistle.	time. GRDC do have some investments in place, and Bayer are currently working on a range of weeds including hard to kill weeds, however the RCSN wanted to ensure that it continued to have presence within GRDC.
M, RCSN: Heat stress	Factors/Practices/Characteristics that reduce heat stress on all crop types. Heat stress at flowering, variety selection flowering window, heat stress worst timing, what's already happened in the season.	Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this time as there is a current large GRDC investment occurring on the ground on this topic. However, the RCSN wanted to ensure that it remained as an important issue within GRDC.
G, E: Potash	Potash rates and management - look at it in terms of ameliorated soils including correct testing.	Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this time as there is a current large GRDC investment occurring on the ground on this topic. However, the RCSN wanted to ensure that it remained as an important issue within GRDC.
G - Issues with connectivity	Ability to link to transformational technology. Amount of data required is too high and cost is too high. Getting different machines to talk to each other. Linking all of the data to extract the best from them. Education of growers from PA & AI. Need to train the trainer.	Ranked very highly by all, however this issue was not further developed at this time. The RCSN wanted to ensure that it remained as an important issue within GRDC.
G, M - Maximise WUE In Low Rainfall environments	In all soils, overcome subsoil constraints, on a local level. Maximising WUE in heavy country. Not enough research in complex soils, so need research away from yellow sands. Winter heat is pushing our crops, and we need to understand how to get the most out of our heavy soils. Heavy soils in dry climates - amelioration, controlled traffic, soil health, hard setting compaction, subsoil constraints on red clay, sodicity, biological function, boron, salt, hardpans, compaction, sands. WUE of all crops through soil renovation costings of options. Long term cost and benefits.	Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this time as there is a current large GRDC investment occurring on the ground on this topic. However, the RCSN wanted to ensure that it remained as an important issue within GRDC.
M - Weather forecasting for improvement of decision making and reducing risk.	Is it climate change or can we measure it better?	Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this time as there is a current large GRDC investment occurring on the ground on this topic. However, the RCSN wanted to ensure that it remained as an important issue within GRDC.
E - Increasing value of lupins	Using them as something other than feed to increase price.	Noted as an issue by RCSN members at their closed member meeting, however the RCSN did not further develop this issue at this time. RCSN will ensure that GRDC are aware of this issue
M, RCSN – Cereal varieties	Have a suite of cereal varieties that can handle germination from April 1st to June 15 th , so they don't rush under heat or drought stress and can survive until real winter rain. Variety releases to be accompanied by ratings and specs. More detail required. Ability to choose varieties on farm and tabulate for ease of management decisions. Not words 'blurb' but comparable apples for apples	Ranked very highly by all, however this issue was not further developed at this time as GRDC have some large investments in this area. The RCSN wanted to ensure that it remained as an important issue within GRDC.
E - Adoption of VRT technology	To better understand how much N and K to apply during different seasons.	Ranked highly by all, however this issue was not further developed at this time. The RCSN wanted to ensure that it remained as an important issue within GRDC.
E, M: Soil biology and soil organics	Understanding the contribution that managing soil biology could make to the cropping system, how are farming systems affecting soil health, how to promote it, carbon inputs to improve soil health, whether knife points are destroying the structure, farming system changes to promote farming systems. Mining of soil nutrients over time, interactions between nutrients, crop nutrition under evolving conditions. Tools or method to measure soil biology levels in soil. What long term damage/benefit are we causing with our farming practices and chemicals. Put real science behind regenerative agriculture	Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this time as there was a large GRDC investment occurring on the ground on this topic over recent times. However, the RCSN wanted to ensure that it remained as an important issue within GRDC.

RCSN - Lupin agronomy	<i>Revisiting chemistry and alternative weed control strategies ie blue lupins. Weed management in lupins and Volunteer canola control in lupins (particularly RR/hybrid) especially in seasons with no knockdown opportunity. This area also encompassed a lot of other areas of interest</i>	<i>Ranked very highly by RCSN members at their closed member meeting. The RCSN identified this as an issue impacting on profitability and further developed some aspects of this issue.</i>
RCSN – P & K after soil amelioration	How have the critical P and K levels moved after soil amelioration?	Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this time as there is a current large GRDC investment occurring on the ground on this topic. However, the RCSN wanted to ensure that it remained as an important issue within GRDC.
G, M: Heavy soil break crop options	Heavy land pulse options and agronomic package for pulses or lupins particularly in low rainfall northern ag region. Need a phomopsis fungicide, control of blue lupins, imi tolerance and sclerotinia control, chemical options and herbicides. Chasing out-of-season rainfall, chasing summer rainfall- how deep to sow, opportunistic deep sowing of wheat, pre emerging chemical use for dry sowing.	Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this time as there is a current large GRDC investment occurring on the ground on this topic. However, the RCSN wanted to ensure that it remained as an issue within GRDC and will highlight these areas of difference.
RCSN, E – Weed management after ripping for amelioration	<i>Deep ripping stimulates grass weeds. How to get the best bang for your buck out of grass pre-em. What are the best seeding boots and the effect deep ripping has on weeds and the incorporation of pre-em. Effect of different seeding boots on pre-emergent chemicals eg Sakura at seeding. Weed issues after deep ripping particularly grasses like rye and brome so wondering if a lupin crop a better option first after ripping.</i>	<i>Ranked very highly by RCSN members at their closed member meeting. The RCSN identified this as an issue impacting on profitability and further developed some aspects of this issue.</i>
E - Lack of sclerotinia control research in lupins.	<i>Effect of row spacing on disease severity. Registration of fungicides already registered in canola. Timing of fungicide applications in lupins. Harvest management of sclerotes eg chaff lining, chaff carts, HSD.</i>	<i>Ranked very highly by RCSN members at their closed member meeting. The RCSN identified this as an issue impacting on profitability and further developed some aspects of this issue.</i>
E - Unreliable weather forecasting - timing and quantity		Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this time as there is a current large GRDC investment occurring on the ground on this topic. However, the RCSN wanted to ensure that it remained as an important issue within GRDC.
E - Improved adoption of tech to aid decision making	Moisture management - e.g. soil moisture probes, modelling - how info can be used to give better results. Better measurement for better management.	Noted as an issue by RCSN members at their closed member meeting, however the RCSN did not further develop this issue at this time. RCSN will ensure that GRDC are aware of this issue
E – CTF cost benefit	More economics behind the advantages of CTF farming vs conventional min till farming. Not just grower testimonials. Cost benefit analysis.	Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this time as there has been some GRDC investment occurring on the ground on this topic. However, the RCSN wanted to ensure that it remained as an important issue within GRDC.
M, E, G, RCSN - Labour availability, sourcing skilled seasonal staff, training staff and retaining them	Farm safety facilitation that is easily adopted on farm to meet legislation requirements, an app for backpackers to sign? Single touch payroll- single biggest disruptor to small business, facilitating learning on this	Noted as an issue by RCSN members at their closed member meeting, however the RCSN did not further develop this issue at this time. RCSN will ensure that GRDC are aware of this issue
RCSN - Importance of trace elements	Lots of money spent on adding trace elements to fertilisers on gut feel. Best ways to test available trace elements. Soil Testing trace elements not reliable.	Noted as an issue by RCSN members at their closed member meeting, however the RCSN did not further develop this issue at this time. RCSN will ensure that GRDC are aware of this issue
G - Succession.	Farms are getting more professional, bigger, and society is more demanding...succession needs to be strong and have impact.	Noted as an issue by RCSN members at their closed member meeting, however the RCSN did not further develop this issue at this time. RCSN will ensure that GRDC are aware of this issue

E - Different forms of N for sandy soils	To help with leaching, slow release form could be useful, could go upfront and stay in the soil in drier years and available in wetter years. Would be more economic when N becomes more expensive.	Noted as an issue by RCSN members at their closed member meeting, however the RCSN did not further develop this issue at this time. RCSN will ensure that GRDC are aware of this issue
M - salinity issues	Increase in saline soils in Australia and increasing in our farming systems, and reducing the amount of arable land. Would like to know agronomic options for sodium amelioration, genomics for salt tolerance, exploring crops such as quinoa that are salt tolerant.	Noted as an issue by RCSN members at their closed member meeting, however the RCSN did not further develop this issue at this time. RCSN will ensure that GRDC are aware of this issue
RCSN - Chaff lining	Is it achieving the weed control, how to deal with chaff-lines in following year	Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this time as there is a current RCSN initiated project occurring on the ground on this topic. However, the RCSN wanted to ensure that it remained as an important issue within GRDC.
E - High rainfall zone	Nutrients and leaching, closing yield gap - potential vs actual.	Noted as an issue by RCSN members at their closed member meeting, however the RCSN did not further develop this issue at this time. RCSN will ensure that GRDC are aware of this issue
E - Interactive effects of chemical & liquid fertiliser mixes	Overcoming compatibility issues, yield penalties associated with crop scorch & crop effects.	Noted as an issue by RCSN members at their closed member meeting, however the RCSN did not further develop this issue at this time. RCSN will ensure that GRDC are aware of this issue
M - Profitability of farming	Cost of WA wheat production is \$260-270, cost of BLACK SEA \$160 (delivered to Indonesia). Alternative land uses...wool is \$22/kg dry and prime lambs \$200/head. High inputs costs are challenging long term profitability.	Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this time. However, the RCSN wanted to ensure that it remained as an important issue within GRDC.
RCSN – Non-wetting soils	In what way can we change our cropping systems and rotation after amelioration to lengthen time-frame before return of water repellence	Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this time as there is a current large GRDC investment occurring on the ground on this topic. However, the RCSN wanted to ensure that it remained as an important issue within GRDC.
M, RCSN – Soil borne pathogens	Low awareness and uptake of PreDicta B. Many growers may not realise the yield lost from soil borne pathogens. Impact of nematodes on long term cereal rotations	Noted as an issue by RCSN members at their closed member meeting, however the RCSN did not further develop this issue at this time. RCSN will ensure that GRDC are aware of this issue
RCSN – Using and accessing information	Getting access to more info regarding challenges and solutions for grain industries from around the world. What’s happening in the US, Canada, Europe, BSR, South America etc. Incorporating new communication technologies.	Noted as an issue by RCSN members at their closed member meeting, however the RCSN did not further develop this issue at this time. RCSN will ensure that GRDC are aware of this issue
RCSN – Better use of technology for communications	Better use of technology for communicating ideas and information, especially audio visual media for "multitasking" E.g. podcasts, youtube, gotomeeting, periscope, online forums etc.	Noted as an issue by RCSN members at their closed member meeting, however the RCSN did not further develop this issue at this time. RCSN will ensure that GRDC are aware of this issue
RCSN – Lack of rhizobia for our soils	Breed/select more acid tolerant rhizobia for pulse crops. Presently locked onto neutral to alkaline soils due to lack of nodulation.	Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this time as there is DPIRD and GRDC investment occurring on the ground on this topic. However, the RCSN wanted to ensure that it remained as an important issue within GRDC.
E - Mixed farming	Integration of livestock with crops. Communicating work done, balance of sheep crop enterprises.	Noted as an issue by RCSN members at their closed member meeting, however the RCSN did not further develop this issue at this time. RCSN will ensure that GRDC are aware of this issue
RCSN – Seeding equipment options	Seed singulation demonstrations and economics compared to normal seeding systems.	Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this time as there is a current RCSN initiated investment occurring on the ground on this topic. However, the RCSN wanted to ensure that it remained as an important issue within GRDC.

M - Platform for moisture probe interpretation		Noted as an issue by RCSN members at their closed member meeting, however the RCSN did not further develop this issue at this time. RCSN will ensure that GRDC are aware of this issue
E, M - Pastures	Pasture management and benefits of cropping phase. Best fit legumes for rotation and nitrogen fixing for deep sowing, good nutrition value. Annuals and perennial mixes, new species etc. Pasture selection guide for soils and environment, chemical carry-over, N production, time of sowing	Ranked highly by RCSN members at their RCSN member meeting but was not further developed at this time. Grain and Graze 3 could be of use here
G, RCSN – Management and planning for soil amelioration	Design individual farm plans to fit in amelioration processes through minimising soil erosion and minimising losses in the implementation season. Management strategies for sand hills that you want to seed but you don't want them to blow.	Ranked highly by RCSN members at their RCSN member meeting. The RCSN identified this as an issue but did not further develop this issue at this time as there is a current large GRDC/DPIRD investment occurring on the ground on this topic such as that of ROSA (see https://www.agric.wa.gov.au/managing-soils/ranking-options-soil-amendments-tool). However, the RCSN wanted to ensure that it remained as an important issue within GRDC.
E - Value adding crop residues	Chaff lines, making a product out of our chaff and weed seeds such as safe feed pellets or biochar.	Ranked highly by RCSN members at their RCSN member meeting but was not further developed at this time.
RCSN - Fallow systems	Struggling in low rainfall areas, and on fragile soils (general rule - less than 1.5t/ha wheat is not enough to support a fallow system in the next year as the stubble will be too thin, and has erosion risk). Late breaks or dry seasons increase risk of fallow paddocks which have to be force fallowed for more than 1 year...need something short and fast to sow and cover soil.	Ranked highly by RCSN members at their RCSN member meeting but was not further developed at this time.
RCSN – Aerial application of pesticides	More work on aerial application of pesticides. In wet seasons significant \$ are applied out of planes often with poor results potentially leading to increasing risk of resistance. Work required on water rates, adjuvants, nozzles etc	Ranked highly by RCSN members at their RCSN member meeting but was not further developed at this time.
RCSN – NVT site management	NVT local practices not being used eg lupins at Binnu	Noted as an issue by RCSN members at their closed member meeting. RCSN have discussed this issue with GRDCs NVT manager
M - Summer crops to make use of summer rainfall		Ranked highly by RCSN members at their RCSN member meeting but was not further developed at this time. Grain and Graze 3 could be of use here

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

Thanks and Further Details.

GRDC now have a Facebook page – www.facebook.com/theGRDC/ (like us!) as well as a dedicated RCSN website – www.rcsn.net.au. Follow us on Twitter @Julianne_Hill, or visit GRDC www.grdc.com.au. Thank you to everyone who attended the Open Forums and contributed to the detailed discussions. For further details, contact the RCSN Facilitator Julianne Hill on 0447 261 607 or email regionalcroppingsolutions@gmail.com