

## GRDC Regional Cropping Solutions Network – South

### Issues (opportunities and constraints) which have the greatest impact on the profitability of growers in the medium rainfall zone of the Southern Region

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Rank No.	Title
1	Developing new food-based markets for pulses to help growers manage price volatility
2	Nitrogen (N) decision-making – technology to measure nitrogen in real-time and improved nitrogen budgeting tools, better rules of thumb for nitrogen (N) mineralisation, N budgeting and management, improve N use efficiency
3	Evaluation and pre-breeding of canola varieties for tolerance levels to dim herbicide chemistry could lead to improved annual ryegrass control and reduce the risk of crop damage resulting in increased profitability and increased area of canola production
4	Social licence - perception (not evidence) and expectations of wider community which will impose restrictions or greater obligations which will ultimately increase cost of production for example, restricted access to agri-chemicals etc.
4	Profit focused cost and productivity management can increase profit
6	High value pulse and legume varieties (e.g. lentils and chickpeas) bred for a wider range of soil types and rainfall zones will improve farm profitability on a broader scale
6	Long term no-till cropping farms may not have the infrastructure, tools or knowledge to effectively integrate livestock into the business
8	Level of knowledge and skills of advisers, farmers and staff is critical to the profitability, risk management and/or compliance of farm businesses
9	Efficacy of glyphosate is declining due to over-use and increased incidence of glyphosate resistant weeds including Fleabane, Wild Radish, Tares, Milk Thistle and Canary Grass in addition to Annual Ryegrass
9	Stubble retention has increased the risk of economic damage from pests including but not limited to insects e.g. lucerne flea, slugs, snails and mice
9	Access to local spray application training for local operators including in the border areas of Victoria and New South Wales to increase spray efficiency and reduce off-target damage
9	Using soil moisture information to make better decisions; tactical management to optimise the use of plant available water
13	Variability in seed supply and limited choice of canola varieties, particularly high yielding, open pollinated varieties with durable disease resistance increases production risk, compromises weed control and herbicide residue management and reduces profitability
14	Updated variety specific agronomy packages (VSAPs) to ensure successful adoption and growing of pulse crops
14	Cost-effective non-chemical weed control systems such as robotic weeders in broadacre crops will prolong the life of important herbicide chemistry such as glyphosate and minimise the economic impact of difficult to control weed species such as Fleabane
16	The current processes for pesticide legislation and governance within APVMA restrict timely access to pesticides which negatively impacts crop production and profits
17	Cereal leaf diseases - genetic solutions and integrated management strategies to manage Yellow Leaf Spot (YLS), Eyespot and Septoria tritici blotch (STB)
17	Increased seasonal climate variability creates extremely contrasting growing seasons which requires adaptive, agile and flexible management options to optimise yield and maximise profit, including but not limited to a "menu" of crop species and cultivars

19	Growers cannot easily predict the likelihood of pest and disease incursions which is important for planning and management
20	The continual breakdown of genetic resistance to Blackleg in canola impacts on yield and profit of growing canola
20	Spatial monitoring of farms using sensor technology and digital platforms may improve crop scouting efficiencies and enable site specific management including crop nutrition, weed and pest control
22	Which is the more economically sustainable option in high land price areas - a crop rotation dominated by high value crops or a more balanced rotation with a mix of cereals, pulses and other land use options?
22	Nitrogen requirements to maximise profitability of wheat and canola in a long term no-till system are not well understood
22	Over-reliance on chemicals i.e. herbicides, insecticides and fungicides has reduced sensitivity and increased resistance which limits cost-effective management options
25	Summer weed spraying in conditions conducive to inversions and/or with inappropriate spray quality (droplet size) creates a high risk of drift and off-target damage
26	Canola variety specific agronomy packages (VSAP) to optimise yield potential and maximise profit
26	Limited influence on barley variety development which may lead to a lack of varietal choice
26	Soil residual herbicide used to control weeds on fencelines and "voids" can damage vegetation if they move through the soil from the target area
26	Increased incidences of fires when harvesting pulses, particularly lentils and/or when harvesters have an in-built seed destruction could have consequences for insurance e.g. exclusions and higher premiums
30	Sub-soil constraints — understanding how acidity, sodicity, nutrients and structure limit yield, quantifying the economic impact of amelioration techniques, management of sub-surface and sub-soil acidity, genetic advancements, soil amelioration and drainage strategies to reduce the impact of waterlogging
30	Opportunity to improve the mitigation of frost risk via pre-sowing risk assessment, new monitoring tools, better frost identification skills and shared learning
30	Compaction – What is the impact, which soil types are impacted and which soils will be responsive to tillage?
33	Harvester set-up to increase efficiency and effectiveness to reduce losses
33	What are the practical strategies that can make best use of precision agriculture (PA) data and technology to maximise profit by reducing or re-allocating costs and/or increasing yields
33	Pre-emergent herbicides do not work effectively in heavy stubbles
36	Registration of short residual imi-herbicides to control problem weeds in lentils reduces the risk of herbicide residue damage in cereals and the off-label use of other short residual Group B herbicides in lentils
37	Vetch variety improvement and grain market development would enhance the profitability of farms with soil types which are not suitable for growing lentils
37	Profit from cereals sown on early autumn rainfall events could be enhanced by clearly defined management packages which include variety selection, canopy management and crop protection strategies
37	Soil amelioration techniques for specific situations to improve crop establishment, nutrition and production on non-wetting sands resources for growers for soil amelioration – extension and resources for growers
37	Rhizoctonia
37	Influence of stubble removal on the farming system – pros and cons
42	Growers and advisers cannot make informed decisions about adopting a new variety as non-biased National Variety Trials (NVT) data is not available or accessible until after a variety is released
43	Identify and test alternative pasture options, including annual, perennial and hard seeded varieties (compared to vetch) to provide a range of options which will produce feed throughout the whole year across variable environments
43	Succession planning for R,D&E expertise and capacity plus building the skills of growers
43	The commercial structure of plant breeding in Australia is leading to monopolies and reducing customer choice in varieties
43	Opportunity to expand dual purpose crops (grain, graze or silage/hay options)

47	On-farm storage to maintain the quality of product to optimise price
47	Precision seeding to improve crop establishment, yield and profitability
49	Soil health – increasing organic matter to address declining levels and consequences by understanding the impact of inputs on soil biology and soil health plus understanding the impact of practices such as controlled traffic farming (CTF) and growing cover crops
49	Growers can optimise price received by improving their grain marketing knowledge and skills and/or accessing quality grain marketing advice
49	Poor understanding of soil water use in pulses leads to poor yield predictions
49	More effective extension of valuable research and development findings to enable adoption and practice change
49	Pod drop in lentils
49	Management of (cereal, canola and pulse) diseases e.g. Septoria tritici blotch, aerial blackleg and sclerotinia, ascochyta and grey mould in pulses in medium to high rainfall seasons
55	The accumulation of herbicide residues in soils, especially low organic carbon sands over several seasons may be impacting crop health and yield and restricting crop options
55	Identify and understand the constraints which limit the yields and profitability of lupins, including Black Pod Syndrome and Phomopsis Blight
55	Soil acidity is increasing as liming programs and rates are not keeping up with rates of acidification
58	Insecticide resistance especially in aphid species and the need to reduce prophylactic use of insecticides particularly neonicotinoids
58	Cover crops, green and brown manuring crops are options to increase inclusion of legumes and other broadleaf species which provides the opportunity to increase the diversity and sustainability of farming systems
58	Foliar diseases and poor agronomy of oats reduce hay yields and quality
58	There is a paucity of grazing with-holding periods for chemicals which are commonly used on cereals
58	Lack of grass control options in pulses (faba beans and others)
58	Lack of vegetative frost tolerance in oat varieties
64	Quantify nutrition (N, P, K, S, Cu, Zn and Mn) responses for a range of crop types including pulses, canola and cereals for a range of diverse environments across the medium rainfall zone
64	Conical snails reduce harvest efficiency, contaminate grain and reduce marketability
66	Stem frost caused by regular or extended periods of frost or cold temperatures limits yields and profitability
66	Profitable pulse or grain legume crop options and agronomy packages for sandy soils with a pH < 6 or > 8
68	Faba beans - evaluation of varieties and agronomy to maximise the value which faba beans provide to farming systems and businesses in the lower rainfall districts (of the medium rainfall zone)
68	Long term consequences of not retaining stubbles i.e. declining organic carbon levels given the benefits are outweighed by the significant challenges of heavy stubble loads and the increased risk of frost with increased stubble load
68	The development of integrated strategies which includes bio-control options for the management of Sclerotinia in pulses and canola plus a quick test to accurately distinguish sclerotes from Sclerotinia from ryegrass ergot to avoid product being unnecessarily downgraded are required
71	The efficacy of zinc phosphide wheat bait on mice at registered rates is not providing adequate control and late season control strategies are unclear
71	Crop yields are declining on non-wetting sands after a number of years of no-till cropping
71	Enabling flexible phenology in cereals through chemical application or breeding to match flowering date to emergence date and seasonal conditions would mitigate the risks associated with of dry sowing e.g. heat stress or frost
74	Identify alternative options for frosted pulses and legumes
74	Uncertainty in the rotational break time required for Eyespot inoculum breakdown in stubble, reduces confidence and leads to prophylactic fungicide applications in cereals
76	Updated variety specific agronomy packages (VSAPs) to increase durum yields

77	Too much information prevents the message from being received
77	Minimising downside/maximising up-side
79	Strategies to stop and manage the increasing area affected by seeps and soaks i.e. dryland salinity and waterlogging
80	Irrigation water decisions - decision support tools to understand the economics (\$/ML) of irrigating crops
80	Effectiveness of liquid systems to deliver crop inputs, including granular versus liquid fertiliser delivery
80	Annual Ryegrass and later germinating Brome Grass limit crop choice, hay quality and grain yield and therefore price and returns – require locally relevant data to quantify impacts and demonstrate and support adoption of best management practices
83	High pH sub-soils and compaction limits the yield potential of canola crops
84	Solutions including drainage to reduce the impact of waterlogging on trafficability, management and profitability of crops
84	Understand the impact of weather damage on oaten hay varieties – independent evidence for a range of varieties over number of years is required to assist growers to select varieties
86	The risk of growing lentils close in an intensive rotation could be reduced with specific and targeted weed, disease and pest management guidelines to address the key risks
87	It is difficult to estimate plant available water (PAW) and yield potential of calcareous soils and limestone of rubble sub-soils
87	Practical engineering solutions are required to cost- effectively to inject animal waste, lime and gypsum at depth to ameliorate sub-soils
89	Strong demand means hay is a profitable option but alternative uses for frosted crops is required because cutting frosted crops for hay is not without risks and the area or amount of hay that can be made is limited by the narrow window, machinery and logistics required to make hay
90	Biomass is critical for dual purpose wheat varieties and awnless varieties may provide a more productive option compared to the currently available cultivars and the cultivars that are being tested
91	Accuracy and consistency of virus testing in pulse seed
91	Quantify “unusual frost” damage in grain growing areas near wind farms
93	Lack of independent product evaluation
93	Risk and impact of frost on canola and limited uses and market for canola hay has caused growers to reduce the area planted to canola or to not grow canola which has limited the break crop options and diversity in rotations which has consequences particularly where pulses are not adapted which means there are no suitable break crops
93	Growers have difficulty controlling Blanket Weed (Toadflax) after wet years with standard summer weed control herbicide mixes
96	Multi-peril crop insurance - is it peril or a pearl?
97	Irrigated cropping, including maize requires a different set of crop and/or cultivar selection and specialised management to maximise the profitability and return on investment in irrigation water and infrastructure
98	Perennial crops - is there a place for these crops e.g. perennial wheat in broadacre dryland cropping systems?