GRDC Regional Cropping Solutions Network – South

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

February 2020

Rank No.	Title
1	Herbicide options and tips and tactics for summer weed control because restrictions on the use of important products has meant that spraying may not be able to occur under optimum conditions as the window for spraying has narrowed
2	Potential for external societal influences to affect farmers ability to produce in an effective manner e.g. biased consumer attitudes
3	Improved pulse varieties to increase the profitability of farming systems in the low rainfall zone
4	The loss of glyphosate as a major tool through either regulation or resistant weed species would significantly impact on the profitability and sustainability of farming systems in low rainfall zone
5	As the global trend for pesticide regulation based on hazard rather than risk continues, deregistration of affordable active ingredients will cause an increase in pesticide costs and erode profit margins
6	Increased model skill in seasonal forecasts provided from March to May and better forecast utilisation by growers and advisers presents an opportunity to improve decision-making management risk more effectively
6	Potential for climate change to become a significant constraint due to increasing spring heat, shorter growing seasons and possible increased frost incidence
8	Farm business management skills are essential to improving long term profitability
9	Robotics provide opportunities to increase efficiencies and profitability of farm businesses
10	New and novel methods of weed control e.g. microwaves
11	The risk (either perceived or real) of herbicide residues accumulating in sandy soils in low rainfall environments is reducing returns
12	Hard to control weeds
12	Limited knowledge, skills and experience of growers and advisers new to pulse growing increases production risk of pulses in the low rainfall zone
14	Opportunities to improve the integration and management of livestock into the farming system with site specific grazing are impeded by technology cost and state regulation
14	Predicting flowering time and manipulating crop development to reduce exposure during high risk periods to mitigate impact of frost
16	The sustainable use of cost effective herbicides and the development of alternative management tools are critical for effective weed control and profitability of cropping systems
17	R,D & E capacity in the low rainfall zone is diminished by retraction of public investment in infrastructure and human resources and the exit of experienced professionals
17	Opportunities to improve profit are missed as new practices are not adopted due to a lack of grower trust in small plot results
19	The downside risk of highly leveraged, high input, high crop intensity farming systems threatens the economic viability of low rainfall farm businesses

19	The strong preference growers demonstrate for peer to peer learning via digital communication (twitter) is an opportunity for effective extension to builds skills and capacity and practice change
21	Economic thresholds for insect control in the low rainfall zone are poorly defined which causes the over-use of insecticides
21	The opportunity to use big data to improve grower profitability in the low rainfall zone
23	Glyphosate resistant weed populations are developing on fence lines
23	Nitrogen management decisions – value of legume contribution and cost vs returns
23	Managing insects -forecasts and alerts, new pests, thresholds, new insecticide groups and control of resistant populations
23	Barley grass and Brome grass control
27	Phenoxy herbicides - alternatives
28	Easy to use decision support tools would enable better use of objective data and reduce grower financial and production risk
28	Residual herbicides affecting legumes in sandy soils, how to assess risk
30	Better adapted cereal and pulse varieties i.e. shorter season varieties with a longer flowering period
30	Opportunity to improve profitability and long term management of weeds, diseases and soil fertility through better crop sequencing
32	Real time and rapid tools to measure residual fertiliser/nutrition (N, P and trace elements, particularly Zn), especially after pulses to enable fertiliser rates and timing to be adjusted
32	Seed banks of problem grass weeds are increasing because harvest weed seed management is not being fully utilised
32	Local data for Russian Wheat Aphid risk factors (volunteer species, aphid flights) is scant
32	The soil nitrogen supply is declining as crop intensity increases
32	The lack of low cost open pollinated canola varieties is contributing to the reduction in canola area in the low rainfall zone
37	Widespread adoption of seed applied insecticide for Russian Wheat Aphid control may harm beneficial insects and soil microbes
37	Sandy soils - crop establishment and growth, cover crops and amelioration strategies
39	Head loss and shattering in crops including lentils, canola and barley
40	Increasing awareness of nitrogen (N) removal and cycling may improve N management, lower risk and increase profit in the low rainfall zone
40	Lack of particularly seasonal farm and agribusiness labour-improving the image and promoting the opportunities to attract the next generation to a career farming and agriculture. Educating the wider community and particularly school aged children to appreciate the importance of agriculture and gain an understanding of issue is important for building the capacity of the industry
40	Cost of compliance to meet occupational, health and safety (OH&S) legal obligations could be reduced by making simples and practical safety guidelines and templates which could be adapted for an individual business or situation
43	Better access to profit and production focused precision agriculture (PA) support would increase return on investment in PA
43	Rhizoctonia – economics of fungicides (seed dressings and in-furrow application)
43	Fertiliser toxicity
46	Poorly calibrated moisture probes provide incorrect estimations of Total Available Water (TAW) and Plant Available Water Capacity (PAWC)
46	Soil biology - understand the value of beneficial microbes and the impacts of farming practices e.g. herbicides and insecticides on beneficial species
46	There is an opportunity to obtain higher return on investment from sulphur fertiliser by understanding of sulphur dynamics in sandy soils and low rainfall environments

46	Improved integration of livestock - flexibility, economics and animal health
50	Understanding seed zone environment - vertical furrows - need confirmation
50	Crop establishment under marginal conditions - moisture, stubble, precision seeding, discs, chemicals
52	The nitrogen supply of sandy soils is being over-estimated
53	Populating the Flower Power Decision support tool with varieties and locations relevant to the GRDC Southern Region will help mitigate frost risk
53	Access to regional soil descriptions would help define management zones in variable soil landscapes
55	Farm efficiencies
56	Spot spraying
56	Control of grasses in cereal based pastures creates a feed deficit at certain time of the year
56	Growers are concerned that the erosion risk of bare tramlines may outweigh the benefits of reducing compaction in sandy soils
59	Crown rot is increasing with changed farming practices leaving stubble crowns intact and not susceptible to break down
59	Is there an opportunity to increase the productivity and profitability of shallow calcareous soils?
59	There is limited choice of legume pasture species adapted to the low rainfall zone
59	Do more intensive cropping systems require greater micro-nutrient inputs?
59	Re-visit old chemistries (efficacy, crop safety and maximum reside limits) for control of weeds in vetch hay and fodder crops
64	Over-coming highly alkaline and saline sub-soil constraints would increase rooting depth and access to plant available water
65	The risk of wind erosion due to inadequate ground cover constrains the use of legumes in low rainfall environments
65	Is regular use of in-furrow fungicides changing soil microbiology and increasing *Pratylechus neglectus* populations
65	There is limited data on the nutrient use efficiency of calcareous soils
65	Mice – improved options that provide effective and long term control of populations
69	Growers are unaware of recently developed techniques to improve common white snail control and off-label product use is occurring
69	Sodic soils are not profitable in low rainfall zones
71	Variety specific agronomy for irrigated crops
72	Soil acidity is an emerging and under-recognised issue which is limiting the productivity of legumes and even precluding the growing of legumes
73	The potential for improved profitability from retaining more stubble by investing in stripper front disc seeder technology needs to be quantified
73	Evidence of impacts of regenerative agricultural systems, specifically cover crops in low rainfall environments
73	Soaks and seeps
76	Powdery mildew is reducing medic production
77	Milling oats
78	Is there potential to use alternative crops such as safflower as a viable rotation option for the low rainfall zone
79	Irrigated high value crops could improve profitability of low rainfall zone growers who have access to water for irrigation