

GRDC Regional Cropping Solutions Network – South

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

July 2018

| Rank No. | Title |
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| 1 | Potential for external societal influences to affect farmers ability to produce in an effective manner e.g. biased consumer attitudes |
| 2 | Improved pulse varieties to increase the profitability of farming systems in the low rainfall zone |
| 3 | 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 |
| 4 | 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 |
| 5 | 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 |
| 5 | Potential for climate change to become a significant constraint due to increasing spring heat, shorter growing seasons and possible increased frost incidence |
| 7 | Farm business management skills are essential to improving long term profitability |
| 8 | Robotics provide opportunities to increase efficiencies and profitability of farm businesses |
| 9 | New and novel methods of weed control e.g. microwaves |
| 10 | The risk (either perceived or real) of herbicide residues accumulating in sandy soils in low rainfall environments is reducing returns |
| 11 | Hard to control weeds |
| 11 | Limited knowledge, skills and experience of growers and advisers new to pulse growing increases production risk of pulses in the low rainfall zone |
| 13 | 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 |
| 13 | Predicting flowering time and manipulating crop development to reduce exposure during high risk periods to mitigate impact of frost |
| 15 | 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 |
| 16 | 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 |
| 16 | Opportunities to improve profit are missed as new practices are not adopted due to a lack of grower trust in small plot results |
| 18 | The downside risk of highly leveraged, high input, high crop intensity farming systems threatens the economic viability of low rainfall farm businesses |

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| 18 | 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 |
| 20 | Economic thresholds for insect control in the low rainfall zone are poorly defined which causes the over-use of insecticides |
| 20 | The opportunity to use big data to improve grower profitability in the low rainfall zone |
| 22 | Glyphosate resistant weed populations are developing on fence lines |
| 22 | Nitrogen management decisions – value of legume contribution and cost vs returns |
| 22 | Managing insects -forecasts and alerts, new pests, thresholds, new insecticide groups and control of resistant populations |
| 22 | Barley grass and Brome grass control |
| 26 | Phenoxy herbicides - alternatives |
| 27 | Easy to use decision support tools would enable better use of objective data and reduce grower financial and production risk |
| 28 | Opportunity to improve profitability and long term management of weeds, diseases and soil fertility through better crop sequencing |
| 29 | Seed banks of problem grass weeds are increasing because harvest weed seed management is not being fully utilised |
| 29 | Local data for Russian Wheat Aphid risk factors (volunteer species, aphid flights) is scant |
| 29 | The soil nitrogen supply is declining as crop intensity increases |
| 29 | The lack of low cost open pollinated canola varieties is contributing to the reduction in canola area in the low rainfall zone |
| 33 | Widespread adoption of seed applied insecticide for Russian Wheat Aphid control may harm beneficial insects and soil microbes |
| 33 | Sandy soils - crop establishment and growth, cover crops and amelioration strategies |
| 35 | Increasing awareness of nitrogen (N) removal and cycling may improve N management, lower risk and increase profit in the low rainfall zone |
| 36 | Fertiliser toxicity |
| 36 | Better access to profit and production focused precision agriculture (PA) support would increase return on investment in PA |
| 36 | Rhizoctonia – economics of fungicides (seed dressings and in-furrow application) |
| 39 | Poorly calibrated moisture probes provide incorrect estimations of Total Available Water (TAW) and Plant Available Water Capacity (PAWC) |
| 39 | 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 |
| 39 | Improved integration of livestock - flexibility, economics and animal health |
| 42 | Understanding seed zone environment - vertical furrows - need confirmation |
| 42 | Crop establishment under marginal conditions - moisture, stubble, precision seeding, discs, chemicals |
| 44 | The nitrogen supply of sandy soils is being over-estimated |

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| 45 | Populating the Flower Power Decision support tool with varieties and locations relevant to the GRDC Southern Region will help mitigate frost risk |
| 45 | Access to regional soil descriptions would help define management zones in variable soil landscapes |
| 47 | Farm efficiencies |
| 48 | Spot spraying |
| 48 | Control of grasses in cereal based pastures creates a feed deficit at certain time of the year |
| 48 | Growers are concerned that the erosion risk of bare tramlines may outweigh the benefits of reducing compaction in sandy soils |
| 48 | Crown rot is increasing with changed farming practices leaving stubble crowns intact and not susceptible to break down |
| 52 | Is there an opportunity to increase the productivity and profitability of shallow calcareous soils? |
| 52 | There is limited choice of legume pasture species adapted to the low rainfall zone |
| 52 | Do more intensive cropping systems require greater micro-nutrient inputs? |
| 55 | Overcoming highly alkaline and saline sub-soil constraints would increase rooting depth and access to plant available water |
| 56 | The risk of wind erosion due to inadequate ground cover constrains the use of legumes in low rainfall environments |
| 56 | Is regular use of in-furrow fungicides changing soil microbiology and increasing <i>Pratylenchus neglectus</i> populations |
| 56 | There is limited data on the nutrient use efficiency of calcareous soils |
| 56 | Mice – improved options that provide effective and long term control of populations |
| 60 | Growers are unaware of recently developed techniques to improve common white snail control and off-label product use is occurring |
| 60 | Sodic soils are not profitable in low rainfall zones |
| 62 | Variety specific agronomy for irrigated crops |
| 63 | The potential for improved profitability from retaining more stubble by investing in stripper front disc seeder technology needs to be quantified |
| 63 | Soaks and seeps |
| 65 | Powdery mildew is reducing medic production |
| 66 | Milling oats |
| 67 | Is there potential to use alternative crops such as safflower as a viable rotation option for the low rainfall zone |
| 68 | Irrigated high value crops could improve profitability of low rainfall zone growers who have access to water for irrigation |