



GRAIN INDUSTRY NETWORK MAPPING REPORT

July 2015

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Prepared by:



The GRDC have funded the Regional Scenario Analyses for Cropping in Future Climates Project. The Network Mapping Platform and content have been developed by Future iQ Partners.



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1.0 Background

The Grains Industry Network Mapping process was carried out as part of the GRDC project, “Regional Scenario Analyses for Cropping in Future Climates”. The project worked with farmer groups across Australia. The investigation of the nature and strength of information networks, as they relate to farm adaptation in Australia, was conducted in conjunction with collaborating farmers in order to assist with the continued adaptation in the grains industry.

The Network Mapping process was conducted in order to obtain a visual representation of the information networks, as they relate to farm adaptation amongst the participating farmer groups. The network maps were built from responses to a survey, and represent a snapshot in time.

The survey was sent out electronically on Monday 4th May to 170 individuals who represented GRDC, government agencies and consultants/advisors as well as the growers involved. It was closed on Friday 12th June, to ensure maximum response rates were achieved. This was aided by four reminders sent to participants during the process, to fill in the survey.

There was a 54% response rate (80/170), taking into account the 13% bounce rate of 23/170. This is considered a very adequate response rate for network mapping surveys, which generally achieve a response rate of between 30-40%.

In order to obtain the most useful information to feed into the larger project, “Regional Scenario Analyses for Cropping in Future Climates”, six key themes were identified and questions related to these themes were formed in order to produce the network maps. The themes were:

- Aspects of Farm Production (e.g. agronomy and animal production)
- Seasonal Forecasts (e.g. projection, interpretation and use of such forecasts) and Climate (e.g. climate interpretation and climate change)
- Farm Diversification (e.g. new or alternative enterprises or land use diversification)
- Farm Technology (e.g. precision agriculture, data handling and robotics)
- Farm Financials (e.g. farm budgets, economic planning and financial investments)
- Community and Social Matters (e.g. anything external to previous themes which occur in order to enhance and retain the community - meetings, events, social occasions)

The network maps are visually displayed on the Grains Industry Network Mapping Platform <http://grainsindustrynetworkmapping.net.au/index.php>. This platform contains instructional videos on how to use the maps, reports on Network Mapping and the network maps.



2.0 Process of Network Mapping

Network Mapping is key to analysing and improving the efficiency, effectiveness and innovation within a network. Application of a 'Network Lens' exposes the interactions between people within a system, allowing for the exchange of information and knowledge to surface, and thus, exposing dependencies and gaps within the system.

Using this approach, the effectiveness (capability) of a system is assessed by understanding how individuals apply their competence, and how they interact and collaborate. Using this technique one can measure connectedness between individuals. It has been discovered that outcomes and inter-organisational relationships are enhanced when partnerships are formed in order to meet certain organisational goals. As a result, when partners are selected because they share a common vision this increases effectiveness¹.

3.0 Survey Questions

For the purposes of generating the information for the network maps, the surveys comprised a selection of profile questions and perception questions. The profile questions ascertain details such as location, organisation, category which enables the filtering of the maps. The perception questions produce the results for the network maps as they were used to obtain the nominations from participants. This section of the survey would inform and make up the network maps. The profile and perception questions are recorded in Appendix 1 and 2.

¹<http://www.baruch.cuny.edu/spa/centers-and-institutes/center-for-nonprofit-strategy-and-management/documents/ExploringEffectiveness.pdf>



4.0 Accessing the Network Maps

To access the Network maps, go to: <http://grainsindustryneetworkmapping.net.au/index.php> followed by selection of the Network Maps tab.

When looking at the Network Map, it is necessary to use the 'fly out menu' on the left of the map, in order to filter accordingly. Here is a screen shot of the fly out menu. When the options have been selected, click update map, and then click on the orange triangle to hide the fly out menu.

Select the following for the Farm Production Map:

Update Map

Nodes

Label: (none)

Attribute to colour: Category

Filter: Category

Relationships

Relationship strength*: farmproduction

Show reciprocal ties: Yes

Tie colour: #0000

Attribute to Colour – Category

Filter – Category

Relationship Strength – Farm Production

Turn on only Critical and Important options

Turn off N/A

The reason that it is key to only select the critical and important values is that this refines the map, so that only the key relationships are highlighted. To select 'All' would produce a very busy map, with less valuable information. The critical and important relationships are of interest in this process, rather than those with less value attributed to them. N/A is turned off also, as this refines the process.



5.0 Aspects of Farm Production

For example: Agronomy and Animal Production.

Select the following to access the Farm Production Map:

Attribute to Colour – Category

Filter – Category

Relationship Strength – Farm Production

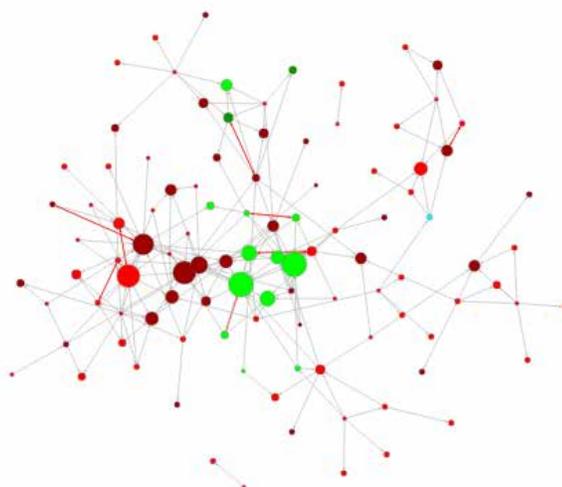
Turn on only Critical and Important options

Turn off N/A

5.1 Network Map – Aspects of Farm Production

Category
 #N/A Consultant/Advisor GRDC Government Agency Grower Group University All

farmproduction
 Critical Important N/A Useful All

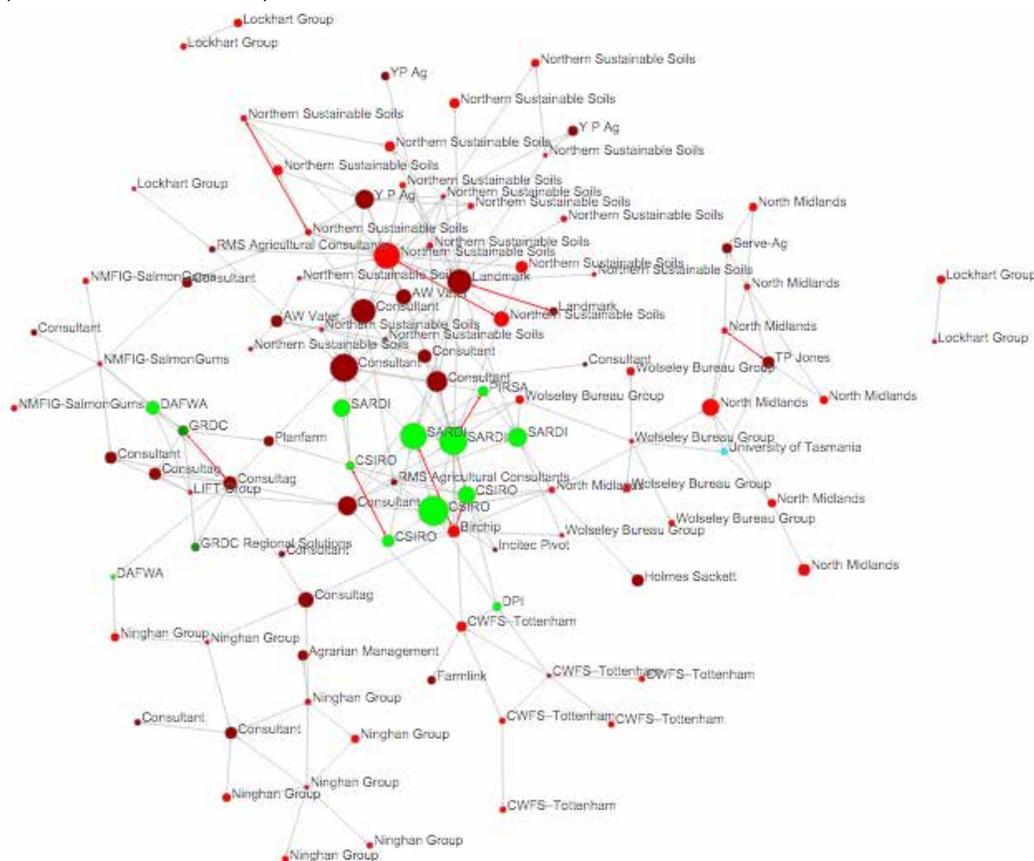




5.2 Observations

Grower Groups and Consultants/Advisors are adequately networked. There is a clear government agency cluster with connections to consultants/advisors. They do not seem to connect so well to the grower groups, however. Some grower groups are working in isolation with regard to Farm Production. University representatives have a minimal role on this network map, as does GRDC.

To look at this in more detail, open the fly out menu and select 'affiliation' under label. This will produce the same map, with the affiliation names attached.



This map shows that there are grower groups working in isolation, with each other, without connection to a consultant/advisor or to the Government Agency groups. CWFS – Tottenham, Lockhart Group and the Ninghan Group to a degree, represent this observation.



6.0 Seasonal Forecasts and Climate

For Example: Projections, Interpretations and use of such forecasts. Climate Interpretation and Change.

Select the following to access the Seasonal Forecasts and Climate Map:

Attribute to Colour - Category

Filter - Category

Relationship Strength - seasonalforecastsclimate

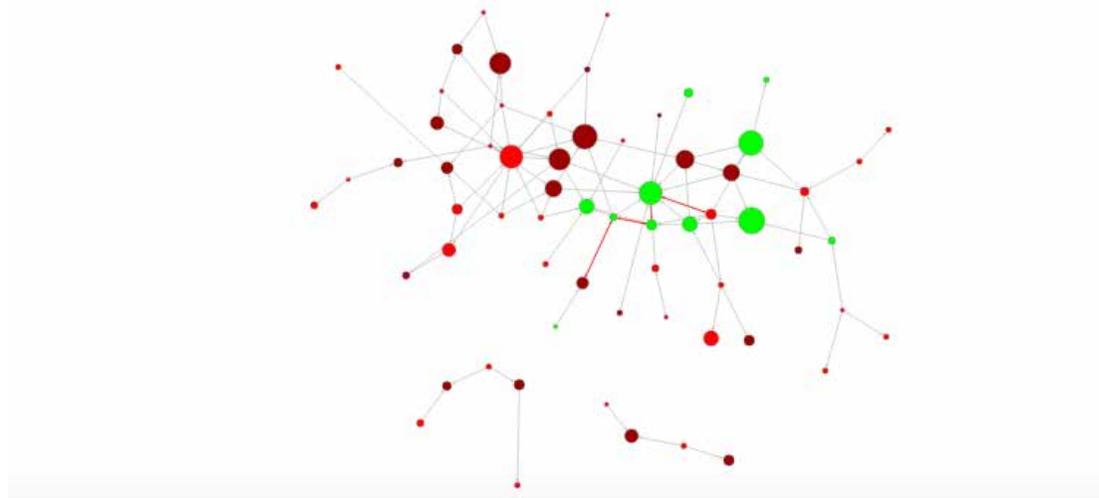
Turn on only Critical and Important options

Turn off N/A

6.1 Network Map – Seasonal Forecasts and Climate Change

Category
 #N/A Consultant/Advisor GRDC Government Agency Grower Group University All

seasonalforecastsclimate
 Critical Important N/A Useful All



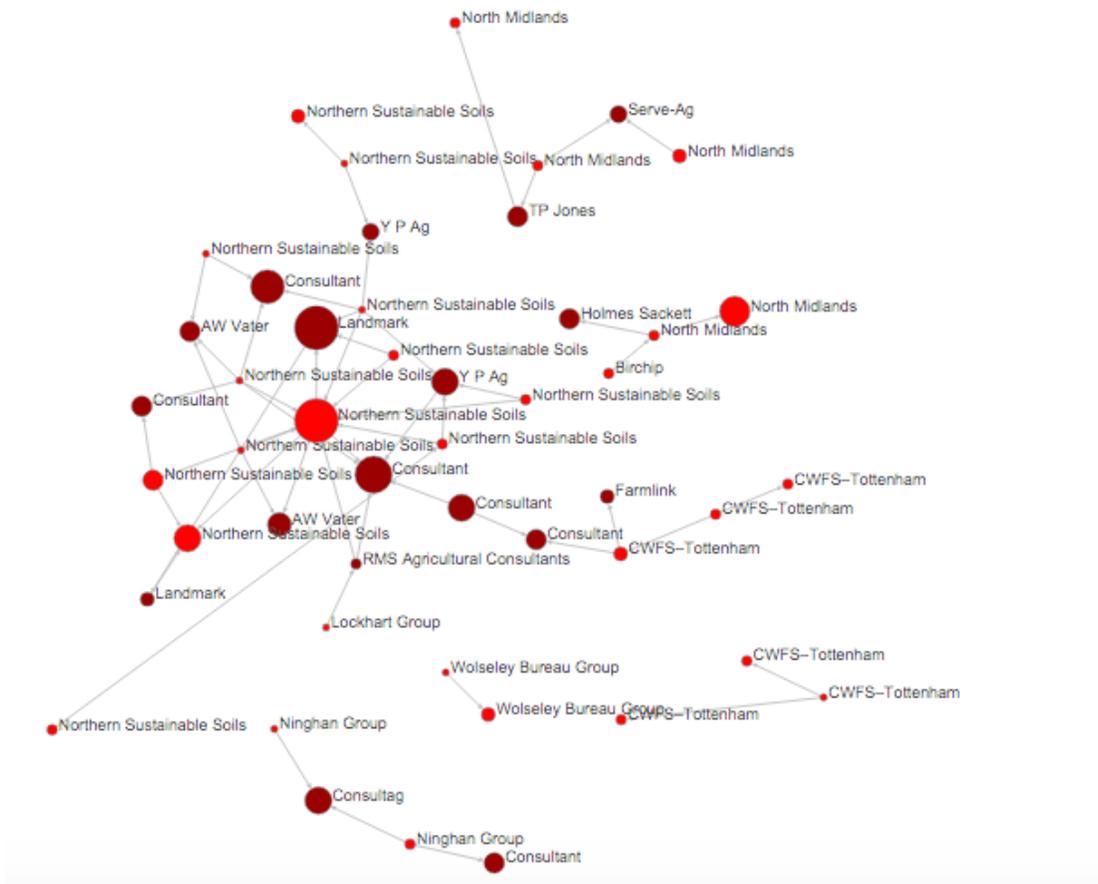


6.2 Observations

The government agency groups are holding this network together. They are strongly connected to consultants/advisors, but only a few government agencies are connected to grower groups.

This could be the desired outcome for seasonal forecasts and climate, as the government agency groups, connect to the consultants/advisors who advise the grower groups around this topic.

It is worth noting that there are some grower groups who connect to each other, but do not connect to Consultants/Advisors. For this purpose, it is useful to remove the Government Agency Groups to see a clearer picture of how some of the grower groups do not connect to Consultants, on the important subject of seasonal forecasts and climate change. The affiliation names will be added on the map below, to highlight this.



CWFS Tottenham and Wolseley Bureau Group are mainly working in isolation, with similar grower groups. Northern Sustainable Soils have a strong network, with strong connections between grower groups and consultants/advisors.



7.0 Farm Diversification

For example: New or alternative enterprises or land use diversification

Select the following to access the Farm Diversification Map:

Attribute to Colour – Category

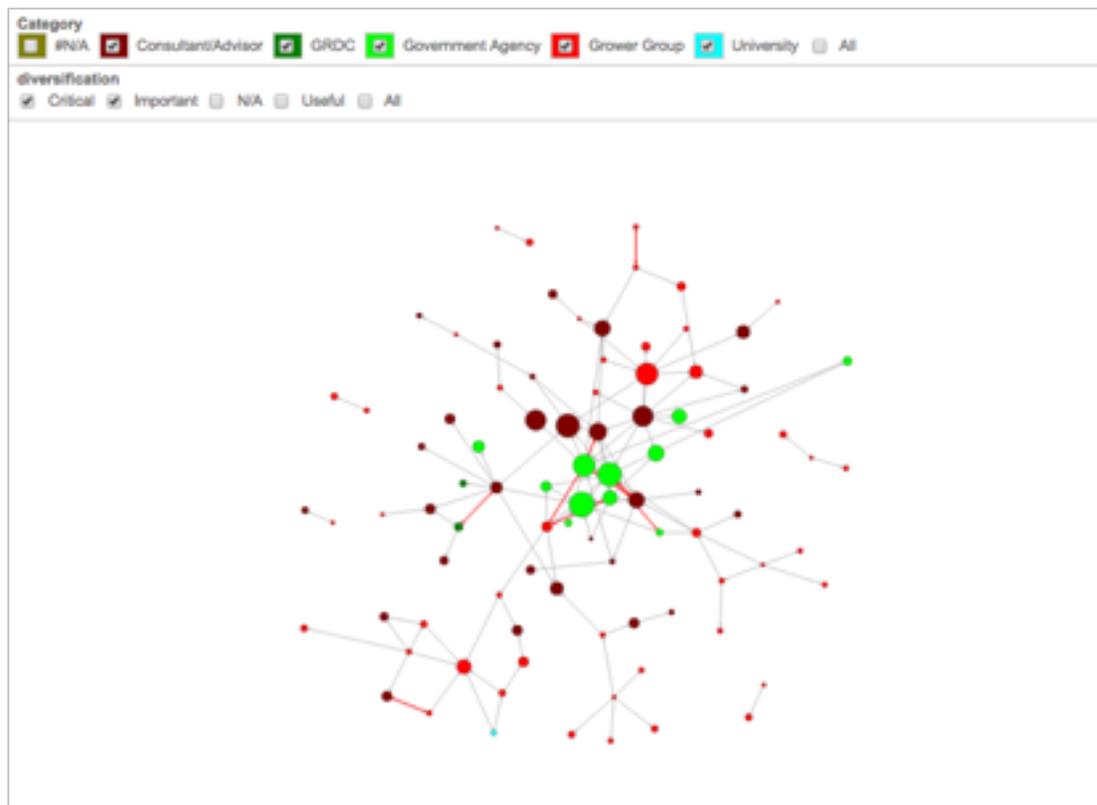
Filter – Category

Relationship Strength – diversification

Turn on only Critical and Important options

Turn off N/A

7.1 Network Map – Farm Diversification





7.2 Observations

The government agency groups are central to the network for Farm Diversification, connecting to the Consultants/Advisors, who then connect to the Growers. However there are some grower groups, who are connecting to each other, without any connections to Consultants/Advisors. There are four grower to grower relationships, on the map, which are not connected to the larger network. There are also some clusters of growers and Consultants/Advisors who are far removed in the network from the Government Agency Groups.

It is useful to remove the Government Agency Groups, to highlight some of the lack of connectivity in the Farm Diversification network. For this purpose, the names of the affiliations will be added, and it can be seen that growers are connecting to growers with the same affiliation.





The map shows that the Lockhart Group connects to the Lockhart Group, CWFS Tottenham to CWFS Tottenham, Northern Sustainable Soils to Northern Sustainable Soils. This may be expected and ideal. The Ningham Group, Wolseley Bureau Group and Lockhart Group are disconnected from Consultants/Advisors to advise them about Farm Diversification.

8.0 Farm Technology

For example: Precision Agriculture, Data Handling and Robotics

Select the following to access the Farm Technology Map:

Attribute to Colour – Category

Filter – Category

Relationship Strength – technology

Turn on only Critical and Important options

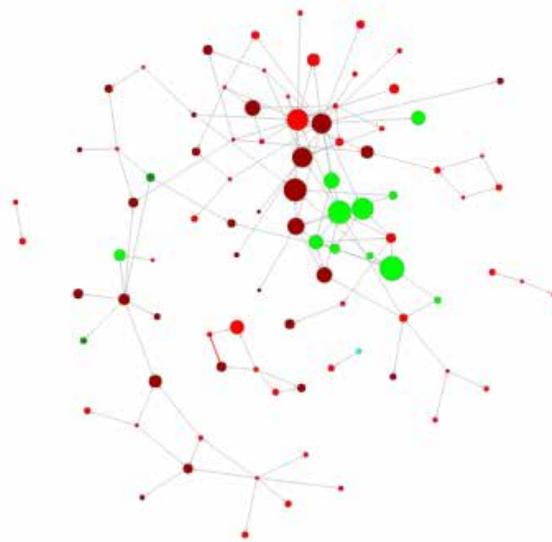
Turn off N/A



8.1 Network Map – Farm Technology

Category #N/A Consultant/Advisor GRDC Government Agency Grower Group University All

Technology Critical Important N/A Useful All



8.2 Observations

The Government Agency Groups are very connected to each other on the Farm Technology network map. The Consultants/Advisors are connected to the Government Agency Groups specifically, although there are clusters of Consultants/Advisors connected to the Grower Groups.



9.0 Farm Financials

For example: Farm Budgets, Economic Planning and Financial Investment)

Select the following to access the Farm Financials Map:

Attribute to Colour – Category

Filter – Category

Relationship Strength – financials

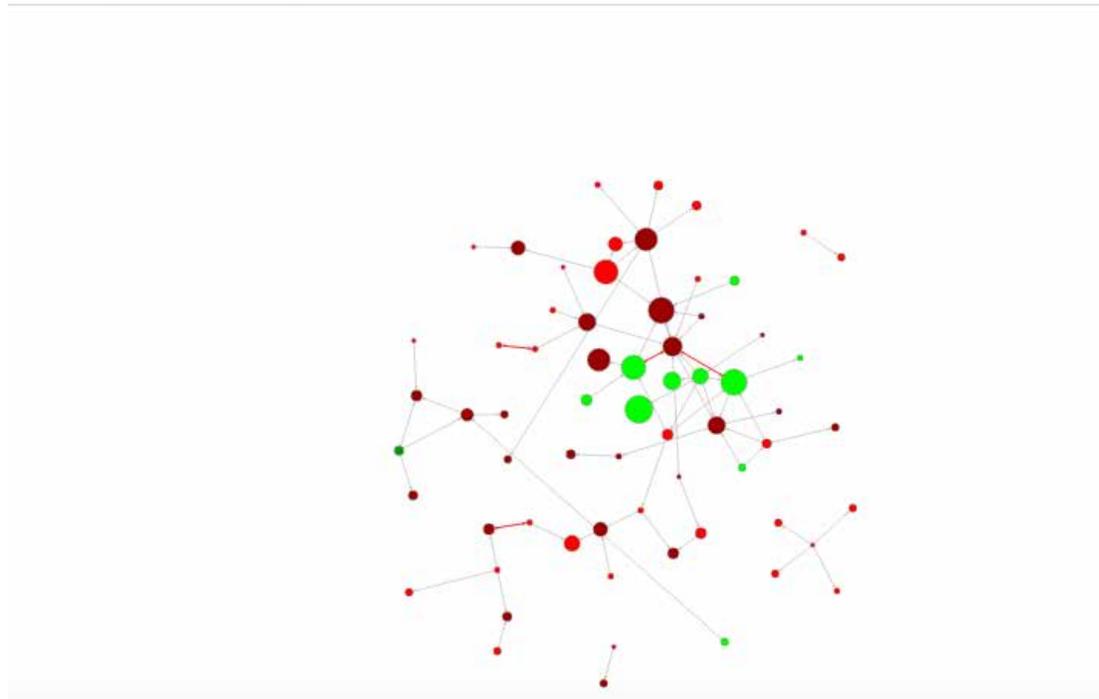
Turn on only Critical and Important options

Turn off N/A

9.1 Network Map – Farm Financials

Category #N/A Consultant/Advisor GRDC Government Agency Grower Group University All

financials Critical Important N/A Useful All





9.2 Observations

While the trend has been for the Government Agency Groups to connect to the Consultants/Advisors in the other areas of expertise and advice, a different pattern emerges in the Farm Financials Network Map. There are clusters of grower groups connected only to each other as well as a consultant/advisor – grower group relationship unconnected to any other organisation. Furthermore, the linkage between Government Agency Group and Grower seems weaker, due to consultants often connecting to other consultants on this topic. It seems that the grower groups do not get as much support in this area, from the map.

To highlight these examples, more details will be shown below.



Wolseley Bureau Group are only connected to each other on this map.

Ningham Group are only connected in two small clusters to one consultant/advisor, with no connection back to the Government Agency Groups such as PIRSA, SARDI, CSIRO.



10.0 Community and Social Matters

For example: Anything outside of farming issues, already highlighted, which would bring the community together. This could include meetings, events and social occasions

Select the following to access the Community and Social Matters Map:

Attribute to Colour - Category

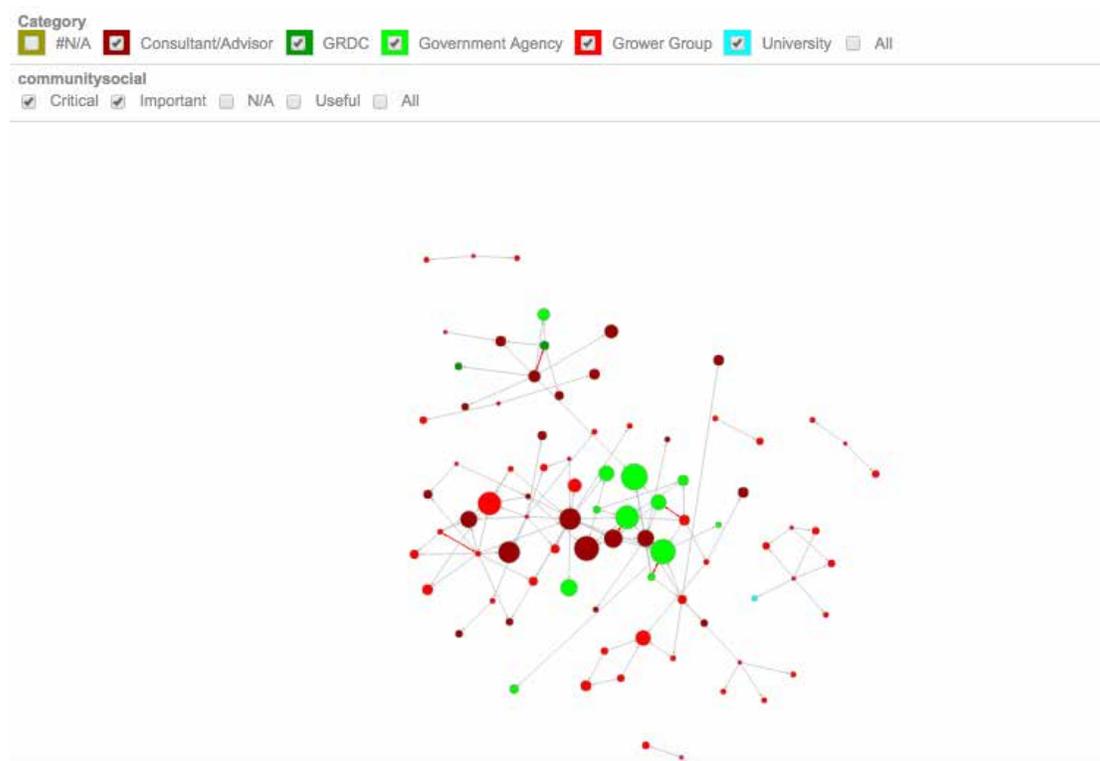
Filter - Category

Relationship Strength - community

Turn on only Critical and Important options

Turn off N/A

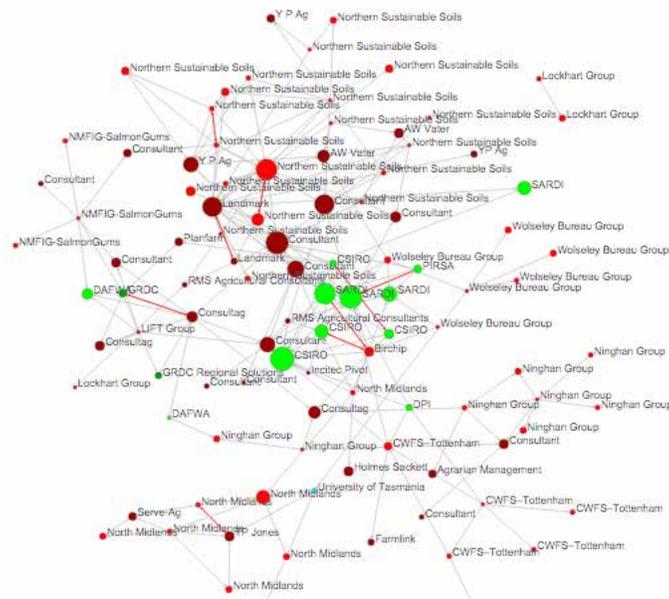
10.1 Network Map - Community and Social Matters





10.2 Observations

There are strong clusters of Grower Groups, connected in this network map, or working together in pairs and threes in relation to community and social matters. The core of Government Agency Groups are fundamentally connected to the Consultants/Advisors or to other Government Agency Groups. This is probably to be expected, as the grower groups/farmers would be expected to be working with each other within their communities on social matters, rather than the Consultants/Advisors or Government Agency Groups.



When the affiliation names are added, it can be seen which grower groups (in red) are only networked with each other; North Midlands, CWSF-Tottenham, Ninghan Group, Wolseley Bureau and the Lockhart group. This would be expected as the grower groups would most likely be working with each other on community and social matters.

An interesting point to note in the Community and Social Matters network map, is the amount of reciprocal relationships (shown by the red lines). These indicate where two people in the survey nominate each other.

As can be expected from the Community and Social Matters subject area, the Consultants/Advisors have less of a role in this network as this is about the Grower Groups/farmers working to enhance their community. The Government Agency Groups have a lessened role in this map also.

11.0 State Representation within the Network

Select the following to access the State Map:

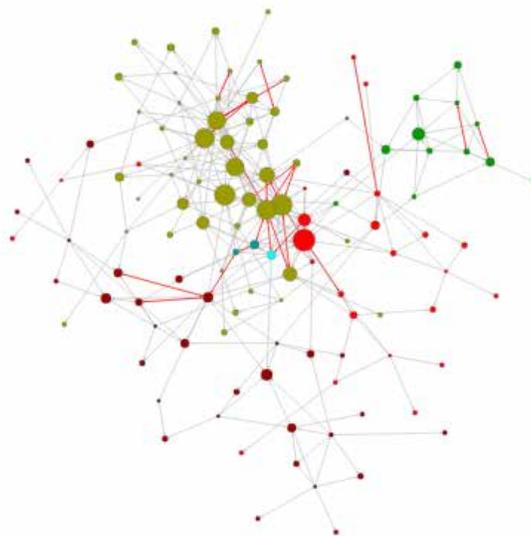
Attribute to Colour – State

Filter – State

Relationship Strength – farmproduction

Turn off N/A

Keep all relationship strengths on – click All



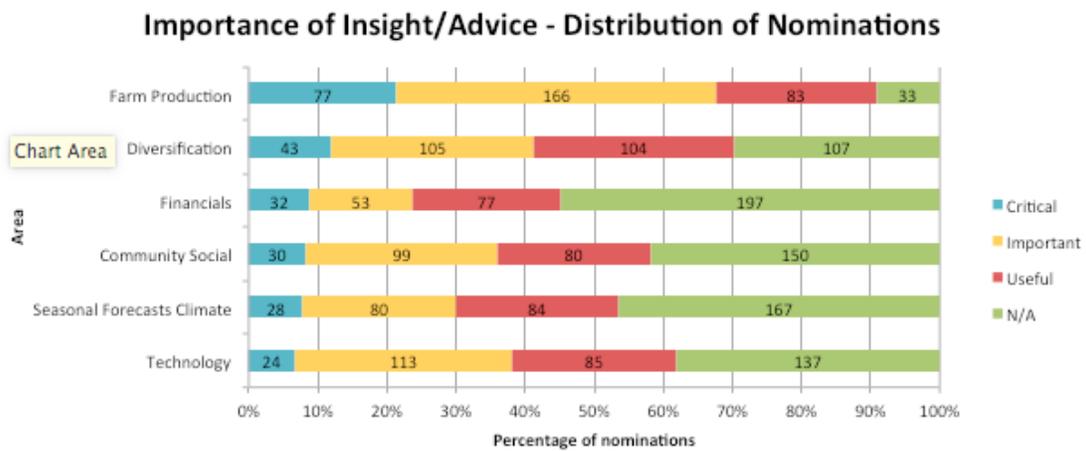
This map shows that there are clear State based clusters, in the network. SA (Southern Australia) has the largest number of nodes/connections and also had many intra-state connections. TAS (Tasmania) had fewer nodes, but is well connected within the cluster. In comparison, NSW (New South Wales) and WA (Western Australia) are much less well connected within the map.



12.0 Distribution of Nominations

An analysis of how the nominations were distributed via the perception questions proves to be interesting. Farm Production was the section with the most nominations under Critical and Important. Farm Financials and Seasonal Forecasts/Climate were the sections which had the least nominations under Critical and Important.

The chart below shows the distribution of nominations, for each theme, and the numbers and overall percentages who viewed it as Critical/Important/Useful/NA.





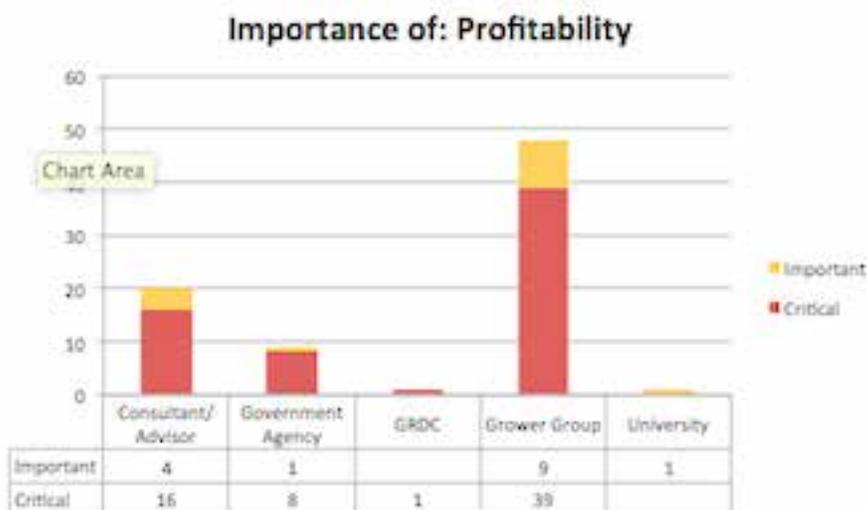
13.0 Driving Farm Adaptation

In the last profile question, each respondent was asked 'How important are the following for you in driving farm adaptation? Profitability, Economic Sustainability, Seasonal Variability, Changing Climate, Weed Management, Income Variability, Succession Planning, Time, Expertise, Lifestyle and Community Considerations'

The results show that all categories of respondents provided very similar responses to the Distribution of Nominations (section 12.0). This demonstrates a high level of agreement on what is important, in the field. The charts have been generated from the ONA survey system, and the direct responses of the individuals.

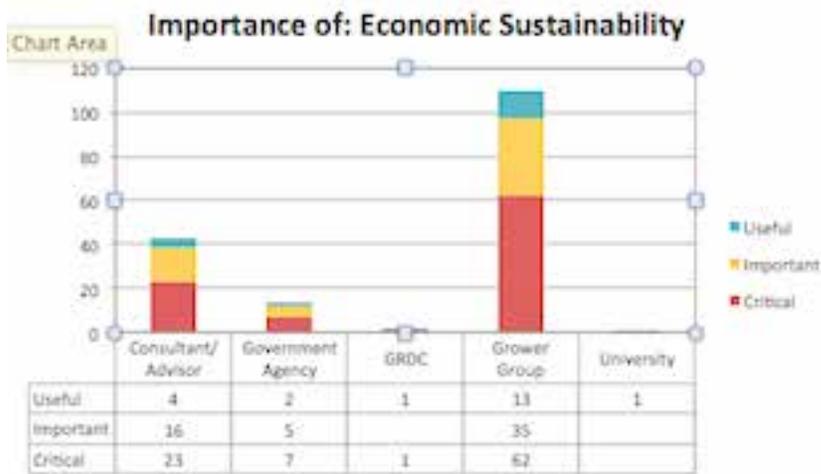
'Bringing in money' was the most important consideration with Profitability and Economic Sustainability receiving the largest number of 'critical' votes. The quite tactical aspect of Weed Management also rated highly. The other areas had varying levels of criticality, but all rated substantially lower than the Profitability, Economic Sustainability and Weed Management. These other areas will be included in Appendix 1.

13.1 Profitability

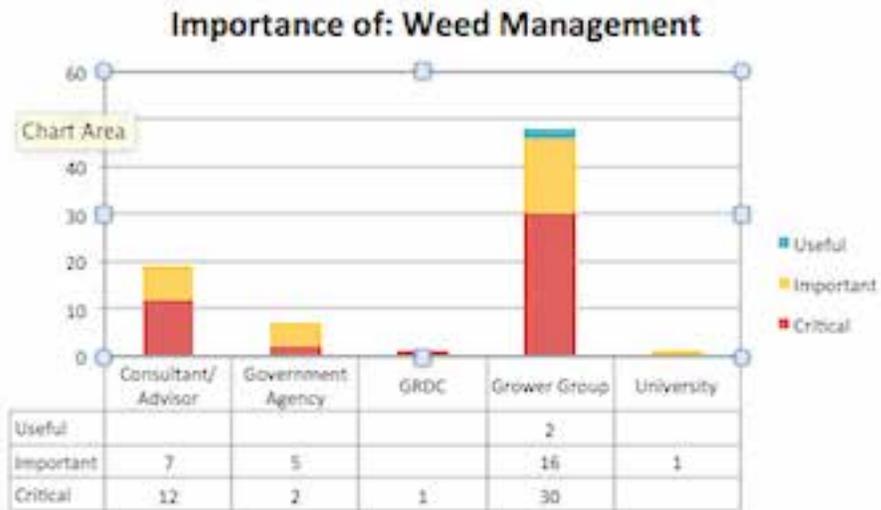




13.2 Economic Sustainability



13.3 Weed Management





14.0 Conclusion

The Grains Industry Network Mapping process, which will feed into the wider GRDC research on “Regional Scenario Analyses for Cropping in Future Climates”, has been useful in identifying the network at a point in time and for highlighting the most critical aspects of farm adaptation, according to those surveyed.

These maps are focused on the individual growers and grower groups involved, as these people were the focus of the survey. Other ‘representatives’ were included, nominated and added by growers as their most important contacts. GRDC as a funder of research and a body that compiles and disseminates the results is unlikely to feature predominantly on these maps, which are drawing the most important, individual, human connections.

There seems to be clear state based clusters, with Southern Australia having the most nodes and largest number of intra-state connections. Consultants/Advisors are connected strongly to the grower groups, as would be expected. There seems to be less connection between the grower groups generally, and only few connections between Government Agency groups and growers. While this seems to mirror what has been happening over the past decades, regarding the removal of direct advice from the Government Agencies to the private sector.

The Consultants/Advisors from the private sector seem to be playing the desired role, and in order to get ‘best practice’ and innovation out to the grower groups, the private sector are an extremely important pathway. As the grower groups are loosely connected, as a whole, there is an opportunity to improve the connection between the grower groups. Teams with high cohesion perform in an enhanced and more effective manner. Improving the connection between the grower groups would be a challenge, due to their remoteness geographically and long working hours. However, connecting the growers to each other presents an opportunity for improving outputs for all of the players.

The strongest connections were around Farm Production. The area of finance is where there were fewest nominations. This is seen, from the maps, as a weak area for growers. With more financial acumen, perhaps Farm Production could be improved even further.



15.0 About Future iQ Partners

Future iQ Partners is a market leader in the development and application of scenario planning; network analysis; industry and regional analysis; and, community engagement and capacity building. The company specialises in applying innovative tools and approaches to assist organisations, regions and industries shape their economic and community futures. Future iQ Partners takes a practical, hands-on approach to working with groups and communities. With over a decade of business experience, the company has grown to have a global clientele spanning three continents.

To learn more about Future iQ Partners, and our recent projects visit www.future-iq.com or by email at info@future-iq.com

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16.0 Appendices

Appendix 1 - Profile Questions

1. What best describes what you do?
Farming/Research/Reseller/Advisor/Industry Association/Grower Group Staff/Other
2. What best describes your farm business?
Cropping only/ Mixed cropping and livestock/Livestock/Not a farmer
3. What area (ha) do you farm?
1000 or less/1001-3000/3001-5000/5001-7000/7001-9000/More than 9000/ NA – I do not have a farm
4. How many years have you been working in the agricultural industry?
0-2 years/3-5 years/6-10 years/11-20 years/21-30 years/ More than 30 years
5. How old are you?
Younger than 20 years/20-30 years/31-40 years/41-50 years/51-60 years/61-70 years/ Older than 70 years
6. How important are the following for you in driving farm adaptation? If you are not a farmer, please answer based on farms in your region:

Profitability	N/A	Critical	Important	Useful
Economic Sustainability	N/A	Critical	Important	Useful
Seasonal Variability	N/A	Critical	Important	Useful
Changing Climate	N/A	Critical	Important	Useful
Weed Management	N/A	Critical	Important	Useful
Income Variability	N/A	Critical	Important	Useful
Succession Planning	N/A	Critical	Important	Useful
Time	N/A	Critical	Important	Useful
Expertise	N/A	Critical	Important	Useful
Lifestyle	N/A	Critical	Important	Useful
Community Considerations	N/A	Critical	Important	Useful



Appendix 2 - Perception Questions

Please select 5-10 people from the list below who have provided you with the most useful advice in one or more of the following areas:

- **Aspects of Farm Production (e.g. Agronomy, Animal Production and other technical information)**
- **Seasonal Forecasts and Climate (e.g. Projections, Interpretation and use of forecasts, climate change)**
- **Farm Financials (e.g. Farm Budgets, Economic Planning, Financial Investments)**
- **Farm Diversification (e.g. New or alternative enterprises or land uses diversification)**
- **Community and Social Matters (e.g. anything outside of the farming issues outlined above, which relates to the wider community)**

For each person you indicate, we will be asking some follow up questions. You are also welcome to add new names to the list. Just use the 'Add' box.

1. How important is the insight/advice that you receive from this person(s) about Aspects of Farm Production? (e.g. Agronomy, Animal Production or other technical information)

Example Name 1	N/A	Critical	Important	Useful
Example Name 2	N/A	Critical	Important	Useful
Example Name 3	N/A	Critical	Important	Useful
Example Name 4	N/A	Critical	Important	Useful
Example Name 5	N/A	Critical	Important	Useful

2. How important is the insight/advice you receive from this person(s) about Seasonal Forecasts (e.g. Projections, Interpretation and use of such forecasts) and Climate (Climate Interpretation and Climate change)?

Example Name 1	N/A	Critical	Important	Useful
Example Name 2	N/A	Critical	Important	Useful
Example Name 3	N/A	Critical	Important	Useful
Example Name 4	N/A	Critical	Important	Useful
Example Name 5	N/A	Critical	Important	Useful



3. How important is the insight/advice you receive from this person(s) about Farm Diversification (e.g.) New or alternative enterprises or land uses diversification)?

Example Name 1	N/A	Critical	Important	Useful
Example Name 2	N/A	Critical	Important	Useful
Example Name 3	N/A	Critical	Important	Useful
Example Name 4	N/A	Critical	Important	Useful
Example Name 5	N/A	Critical	Important	Useful

4. How important is the insight/advice you receive from this person(s) about Farm Technology (Precision agriculture, data handling and robotics)?

Example Name 1	N/A	Critical	Important	Useful
Example Name 2	N/A	Critical	Important	Useful
Example Name 3	N/A	Critical	Important	Useful
Example Name 4	N/A	Critical	Important	Useful
Example Name 5	N/A	Critical	Important	Useful

5. How important is the insight/advice you receive from this person(s) about Farm Financials (e.g. Farm Budgets, Economic Planning, Financial Investments)

Example Name 1	N/A	Critical	Important	Useful
Example Name 2	N/A	Critical	Important	Useful
Example Name 3	N/A	Critical	Important	Useful
Example Name 4	N/A	Critical	Important	Useful
Example Name 5	N/A	Critical	Important	Useful

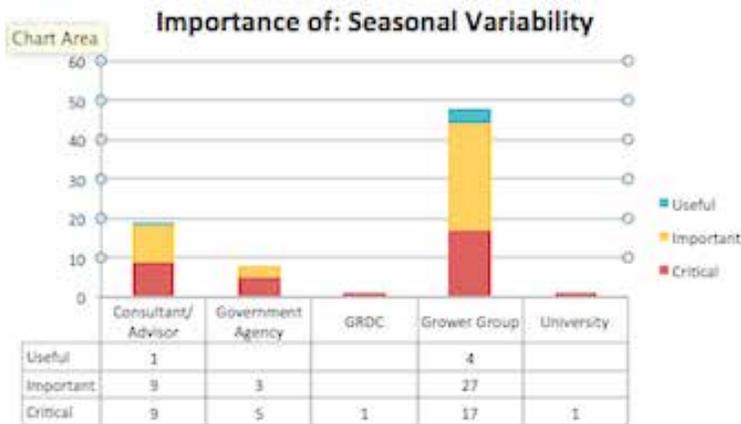
6. How important is the insight/advice you receive from this person about Community and Social Matters (e.g. Anything outside of the farming issues outlined above, which relates to the wider community - this could be via events, meetings, social occasions - anything which will keep a community together/bring it together)?

Example Name 1	N/A	Critical	Important	Useful
Example Name 2	N/A	Critical	Important	Useful
Example Name 3	N/A	Critical	Important	Useful
Example Name 4	N/A	Critical	Important	Useful
Example Name 5	N/A	Critical	Important	Useful

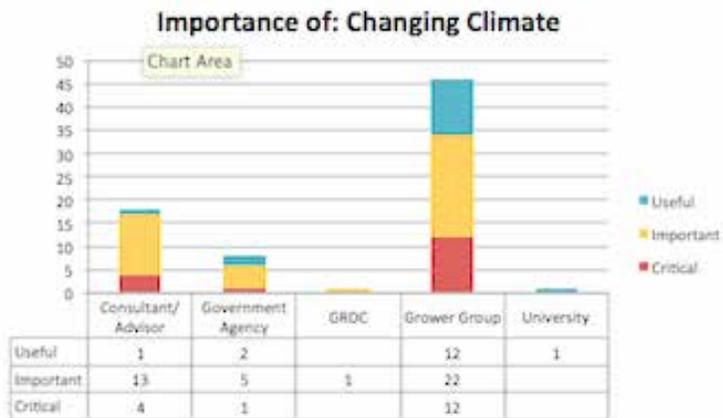


Appendix 3 - Driving Farm Adaptation Charts

1.1 Seasonal Variability

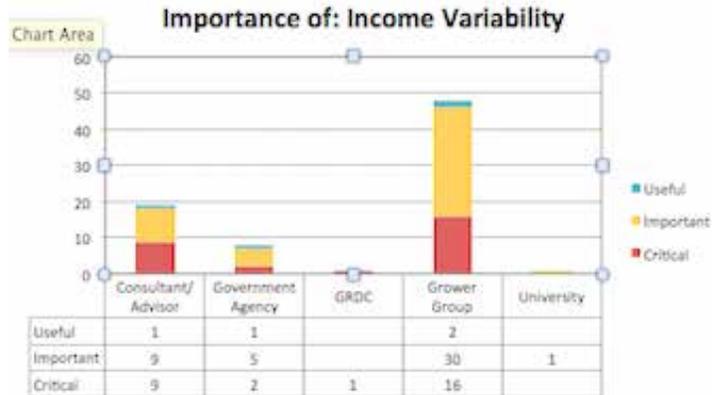


1.2 Changing Climate

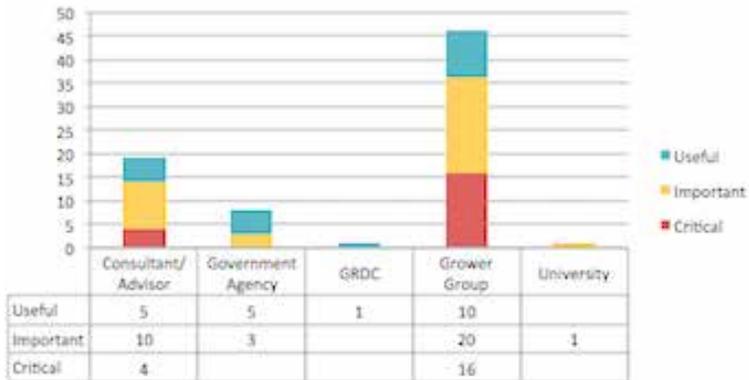




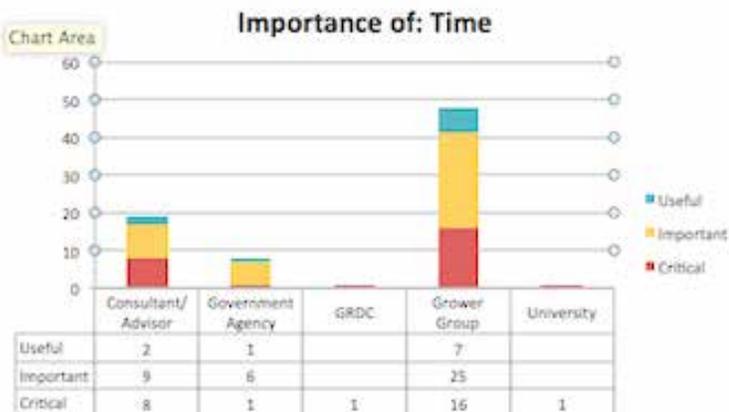
1.3 Income Variability



1.4 Succession Planning

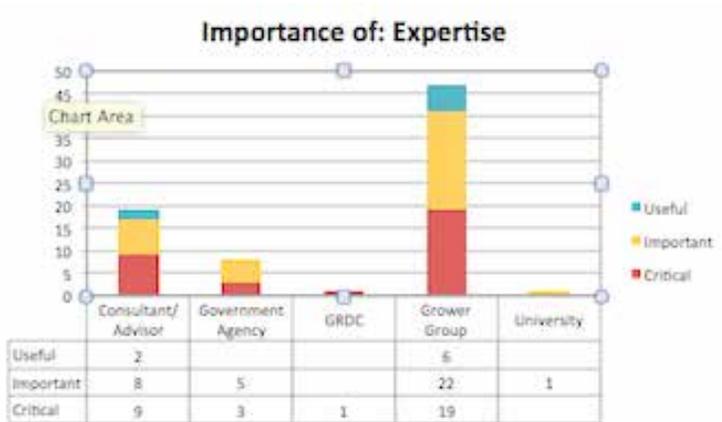


1.5 Time

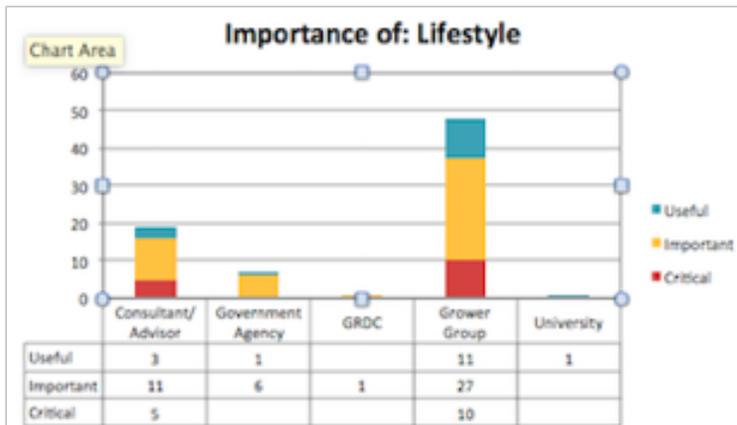




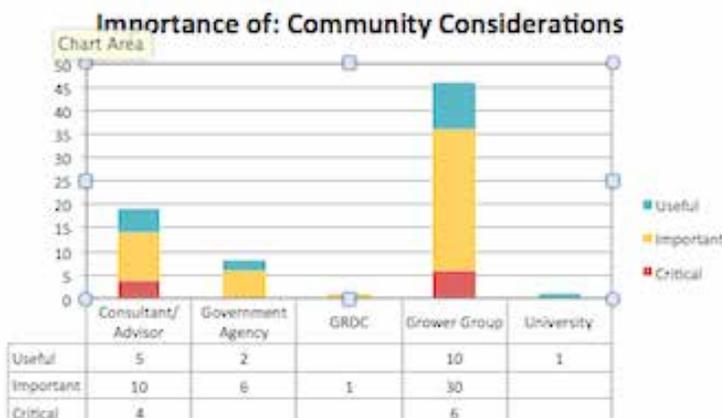
1.6 Expertise



1.7 Lifestyle



1.8 Community Considerations





For More Information

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GRDC Grains Research & Development Corporation
Your GRDC working with you



 **Grain Growers**
Real benefits. Real results.

Desirée
Futures
research and development
towards desirable futures