Cotton Grains Industry Focus Group Consultation in Darling Downs and Border Rivers Regions

A Report to Cotton CRC

August 2009

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1. INTRODUCTION

1.1 Purpose

The Cotton Catchment Communities Cooperative Research Centre (Cotton CRC) has commissioned this review of extension services in the Darling Downs and Border Rivers Regions to better understand the needs of mixed enterprises (cotton, grain, grazing) related to resilient farming, to identify opportunities for farming system collaboration, and to assess the need for specialist extension services.

The review specifically requires evaluation of:

1. The need for extension services.
2. The extension priorities for the mixed farming system.
3. The knowledge needs in the medium to long-term (3-5 years plus).
4. The real demand for specialist services, in lieu of general services.
5. Delivery methods required in various regions.
6. The grower perspective of farm management of climate change issues.
7. The grower perspective of measuring on-farm carbon.
8. The contrast in views of requirements different between growers and consultants.

The study report draws out current priorities for cotton farming systems, identifies their perceived gaps and needs, and compares and contrasts the gaps/ needs for cotton, grains and grazing.

1.2 Regional Context

The study design covers two production regions – the Darling Downs, and the McIntyre Valley (also referred to as the Border Rivers Region).

Each region hosts mixed farming communities, comprising dryland crop farming, irrigated crop farming and livestock (primarily beef cattle). Cotton and grains are the dominant crops used in rotation, and grazing is a complementary land use option for the great majority of mixed cotton and grain farms. The following maps provided by Greenmount Press indicate the production areas in 2009.

Figure 1. Maps of regional production areas

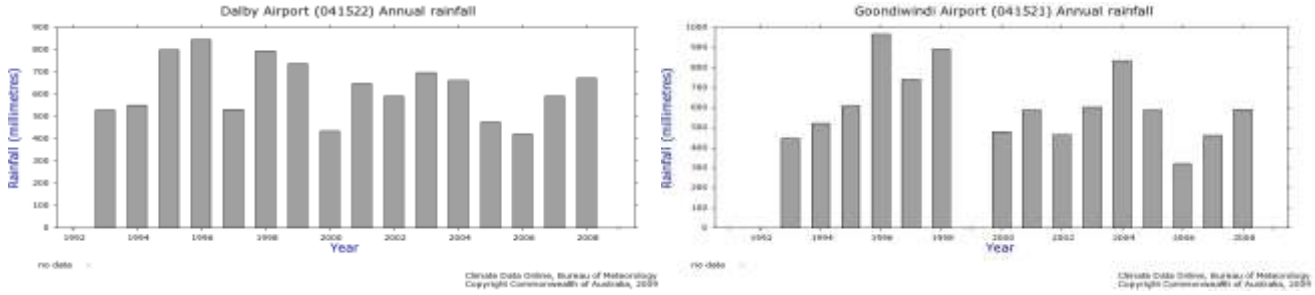
Production regions are shaded in green in the two regional maps.

The Darling Downs Region covers a region approximately 160 klms long from Pittsworth to Chinchilla.

The Border Rivers Region comprises a region approximately 180 klms long from Mungindi to east of Goondiwindi, along the border of Qld and NSW.

Over the last 7 years catchment wide drought has had a dramatic impact on crop returns, and therefore mixed farming system crop choices. Rainfall data presented below, drawn from Bureau of Meteorology weather stations in each of the two region centres (Dalby and Goondiwindi), does not fully reflect the whole of the catchment dynamics for water flow, water harvesting and crop plantings.

Figure 2. Annual regional rainfall records



However the industry data for area cotton plantings and bales produced confirms the severe decline in output over the last decade as a direct result of reduced water availability and reduced cotton returns per bale.

Figure 3. History of regional cotton production

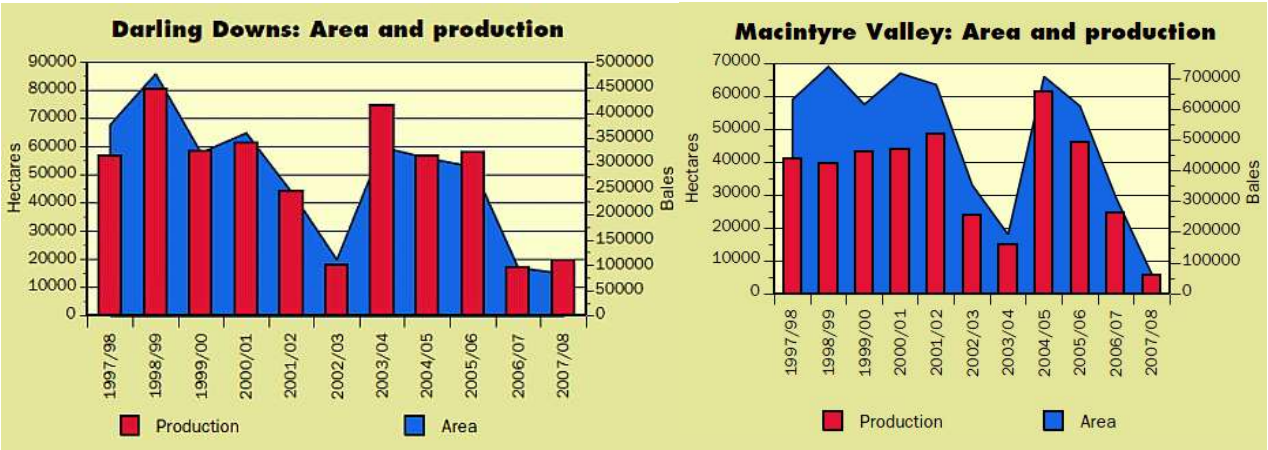


Figure 4. Regional scale, scope and arrangements[1]

Region	Farming Scale and Scope	Existing Farming System Service Arrangements
Darling Downs	• Currently less than 200 mixed cotton/ grain/ grazing enterprises, as distinct from grain growers. Mixed farm holdings range from 600-1000ha, average of ~400ha. • The seasonal cotton area is around 60,000 ha. • In June 2000, the region recorded 350 cotton growers (185 irrigated, 165 dryland) and a total seasonal cotton area of 80,000 to 85,000 ha[2]	• Darling Downs CGA: – Exec. Officer (Duncan Weir) and part time Admin. Officer (Meg Kummerow) based in Dalby. CGA currently has 98 members – estimated 90% of cotton growers are CGA members • Dalby QDPI&F:– Geoff McIntyre provides support services across cotton (70%) and grain (30%) sectors • Grains arrangements – support provided by GRDC and Bede O'Mara, QDPI&F, based in Goondiwindi. • Additional support by Catchment Management Authorities, NRM Agencies, Landcare, etc
Border Rivers	• Currently 50-60 irrigated mixed cotton/ grain/ grazing enterprises, as distinct from grain growers. Mixed farm holdings range from 1200-4000ha, average of ~2000ha • Total dryland cotton area is around 1000-1200ha. Total dryland grain area is around 350,000-400,000ha • Dryland grain is grown from Inglewood to Nindigully, and north from the border to Moonie/ Westmar • Dryland grain crops are wheat, barley, chick peas, grazing oats, forage sorghum, grain sorghum, mung beans, dryland sunflowers. Unlike cotton, wheat grain offers hay for grazing as a risk management option. • In June 2000 the region recorded 46 cotton growers (29 in Goondiwindi area, 17 closer to Mungindi) and a seasonal cotton area of 22,482 ha of irrigated cotton.	• McIntyre Valley CGA: – part time admin support by Bec Smith based in Goondiwindi • Bede O'Mara provides dryland grain support services across the whole Border Rivers grain region. GRDC provides some support for this position • Bede's experience (from previous work as a consultant) is predominantly in dryland grains – there is limited regional support available for irrigated grains growers • Additional support by Catchment Management Authorities, NRM Agencies, Landcare, etc

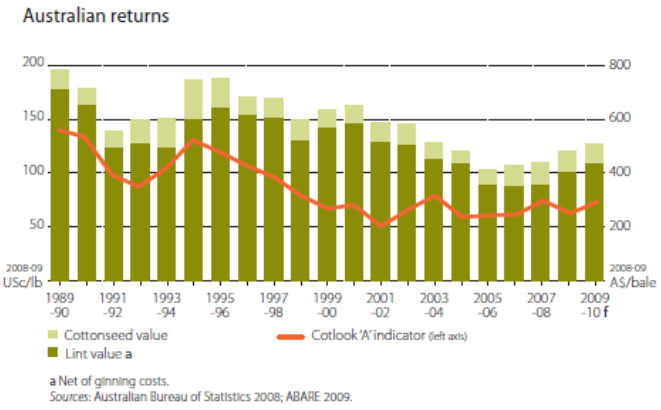
[1] Various advices provided by Geoff McIntyre, Bec Smith, Meg Kummerow, and Bede O'Mara.

[2] Cotton & Grain Industries Stocktake Report, 2000, P.Goyne, G.McIntyre and A.Spragge, QDPI/FSI/Australian Cotton CRC

Clearly the adverse impacts of drought have directly reduced the area planted to cotton and therefore exacerbated the cost effective provision of extension services in the two regions over the last 5 years. But the indirect effect is also critical to this study – i.e. changes in the mix of businesses that each farm undertakes will change enterprise farming systems and therefore the need for information required by that grower proprietor and his/ her agents and affiliates. This impacts on farm viability, employment and therefore the regional community.

Crop choice decisions and therefore mixed farm viability, are also directly driven by movements in and expectations of cotton price.

At 17 June 2009, ABARE (Australian Commodities Report June 2009) reported the cash price for Australian cotton growers was A$350 for a 2008-09 bale of lint (227 kilograms). This is well below the forward price for the 2009-10 crop of $404 a bale. Lint values have been depressed in recent years, and the relative strong A$ has further weakened the choice to plant cotton, relative to cereals and other land uses.



Our task is to look at the design of support and extension service to mixed farms and how well they address the stated, unstated and subliminal needs of mixed enterprise growers and their farming systems, in such a dynamic farming environment. One of the possible manifestations of this potential mismatch of needs and services is the turnover of extension staff in regional farming extension roles. This matter was identified by some Cotton CRC partners in discussions prior to the focus groups.

1.3 Approach

The Cotton CRC seeks to better understand specific issues, opportunities and risks associated with farming system extension in the two cotton growing regions. This review and previous studies[3] undertaken on related cotton industry issues, confirm the ongoing desire of the Cotton CRC to optimise industry outcomes from their joint investment in extension services in the regions.

This review therefore requires advice on specific questions addressed by industry respondents in specific locations. We have combined the responses from the Darling Downs north (Dalby) and south (Cecil Plains) growers' meetings, as growers chose their meeting based on availability not only location. A consultants' focus group meeting was not conducted in the Cecil Plains region.

The responses, evaluation, advice and conclusions provided in this report have therefore been presented in as much detail as possible to draw out the more comprehensive understanding (by region, cohort, location and issue) sought by the Cotton CRC Partners. This has been achieved using commentary and summary tables to present source data, without compromising the integrity and confidentiality of individual responses. As a result the conclusions and recommendations at the end of the report focus on the major issues and do not repeat the detail of the report.

1.4 Consultation

The review methodology set by the Cotton CRC prescribed a series of targeted focus group meetings with operators of mixed farm enterprises and related farm consultants. Focus group consultations of 3-4 hours duration were based on confidential, independent face to face meetings conducted in regional centres in late June-July 2009.

[3] a). *Review of Extension and Education in the Australian Cotton Industry*, Report to CRDC and Cotton CRC, J. McKenzie et al, no date provided. b) *Adoption Program Discussion of Extension & Education Review in relation to the Extension Team*, Letitia Cross, July2006. c) *2008 Cotton Consultant Report*, Cotton Consultants Australia and Western Research Institute, 6 August 2008.

Growers and consultants invited to the discussions were from mixed farming enterprises; specifically cotton, with grain or grazing activities. Cotton CRC Partner, QDPI&F Dalby, identified and issued invitations directly to growers and consultants to attend these informal meetings. Each discussion was facilitated and recorded by Ewan Colquhoun, a facilitator with experience in the cotton industry, and regional NRM issues.

Five focus group meetings were run in three locations across the Northern Downs, Southern Downs and McIntyre Valley. Attendances at all meetings were satisfactory, except for the grower meeting held in Goondiwindi. After discussion with the Cotton CRC Participants, (Geoff McIntyre and Bruce Pyke) additional phone consultations were held by the facilitator with selected growers in the McIntyre Valley.

Consultations are summarised as follows:

Figure 5. Consultation schedule

Region	Cohort	Meeting Location	Meeting Attendees	Phone Consultations	Total Consultations
Darling Downs	Growers	Dalby	8	0	8
		Cecil Plains	4	0	4
	Consultants	Dalby	5	0	5
Border Rivers	Growers	Goondiwindi	1	4	5
	Consultants	Goondiwindi	6	0	6
Total	Growers		13	4	17
	Consultants		11	0	11
	All		**24**	**4**	**28**

2. SERVICE EVALUATION

Tables of comments included in this section of the report are from each focus group and record key points agreed by participants to the meeting. Words in quotation marks are verbatim comments from workshop attendees. The report also draws from summary points from general discussion not recorded in these tables.

2.1 The need for extension services

This question is central to the study, however the answer is not straight forward. Experience shows that any farmer or business operator will always encourage increased service provision to themselves when such a service is funded from capped private or public funds. The question needs to be teased out to understand the dynamics of the farming systems in the target regions. Extension services must also be considered as one of the solutions to a broader suite of services and information that growers need and use –an information pathway.

The Art of Risk Management

Responses (Figure 6) confirm what is already well known - that growers want and need information to manage business risk associated with their enterprise farming system. However it is agreed by all respondents that modern mixed farming systems are quite complex and dynamic, driven by changes in water availability, crop selection, increasing size of the enterprise, management capability and its modern or traditional perspective of farming systems, lack of skilled labour and advice, need to increase labour productivity to maintain enterprise viability, capital intensity, etc. Knowledge will never be enough to completely offset the farming system risk – as one respondent said *"farming is an art, not a perfect science"*. All responses agree benchmarking is a good tool to monitor performance against known risks.

The brief summary of the two regions (see Figure 4) confirms that the farming systems in each of the regions share many attributes, but also exhibit unique characteristics e.g. in enterprise scope and crop choices.

We should take from this that any extension framework we design, build or maintain must be flexible to deal with changing risks, and regionally suited to the needs of those regional and subregional enterprises. One extension size does not fit all regions or farming systems. Figure 6 presents focus group responses regarding the broad need for knowledge in mixed farming systems.

Figure 6. How do you know when farming system knowledge is adequate?

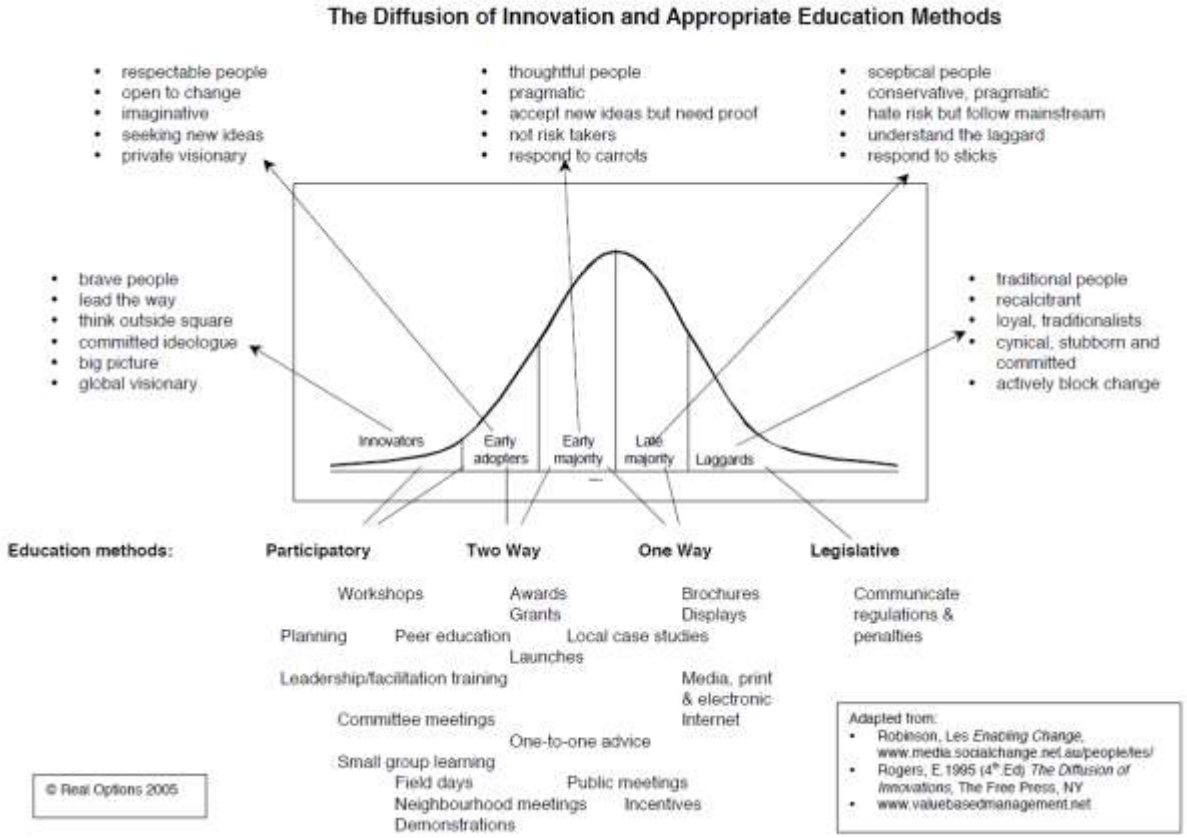
Darling Downs	Growers	○ Knowledge is a continually moving requirement – to make best use of available resources at that point and against the risk you accept ○ Need enough knowledge to offset the known risks – water to cover crop demand etc ○ New needs – e.g. to manage staff and employees critical to a bigger operation – need for team approach ○ Information search is different for classes of growers ○ Good grain growers are same as good cotton growers but there are more top cotton growers in the top tier than top grain growers – risk management ○ Perception that not all grains knowledge is getting out there ○ Grain has to deal with more products from more grain types ○ People who joined cotton 25 years ago were those growers who were keen to improve and seek greater productivity ○ Capital intensity/ machinery for grain is less
	Consultants	○ More about risk management now – less and less of the way Dad used to do it.
Border Rivers	Growers	○ You don't know. You can build a framework to keep and nurture but never tell when it is enough. You never have enough knowledge as farming is an art, not a perfect science
	Consultants	○ Growers want to achieve their personal potential as farmers ○ Sustaining a profit margin relies on continual improvement – costs of production are volatile (e.g. drought) and increasing ○ As a consultant – when the client's needs are satisfied ○ When grower benchmarking verifies their relative performance – knowledge and application of knowledge

The Changing Need for Knowledge

Changing risks on mixed farms means changing knowledge requirements on farms – "*absolutely, daily, constantly*". The needs are driven by the need for enterprise viability (a more difficult prospect with less water and lower gross margins), and the more stringent legislation arising from NRM issues and rural and urban community expectations.

The literature regarding innovation and subsequent knowledge diffusion is well established in the social sciences[4], so they are amongst the most reliable. At its core is the variable behaviour of humans regarding knowledge to resolve risks. The segmentation of behaviour and appropriate education and knowledge treatments for each behaviour are considered in Figure 7.

Figure 7. Diffusion of Innovation Knowledge



In a similar way mixed cotton/ grain/ livestock farm consultants and advisors, both as private advisors or staff of reseller enterprises, identify segments in the culture, motivation and capacity of their farming client community. Consultant responses during the focus groups suggest they informally segment mixed farmer clients by percentages broadly as follows:

- the **top 5%** of mixed farmers are switched on to multiple information pathways that they receive directly (e.g. radio, web, email) or via advisors and other farmers,
- the **next 50%** of mixed farmers will capture seventy percent of the information that is available regarding the farming system,
- the **next 20%** of mixed farmers will only capture and apply the potential of the information pathway if the information therein is taken to them, free of charge; and
- the **last 10%** of mixed farmers will manage their enterprise the same as they or their forbears did yesterday.

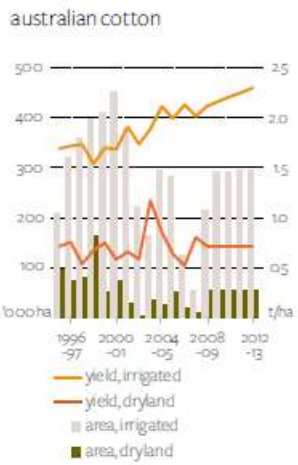
This maths suggests a further 15% or so of farmers do not seek advice from consultants or resellers. Overall the consultants are clearly endorsing what the broader social science literature describes in Figure 7.

While recognising there is a risk that it was the members of the top 5 % who attended the focus groups, this segmentation reinforces the need for information and extension pathways that are flexible over time and recognise the needs of the audience being targeted.

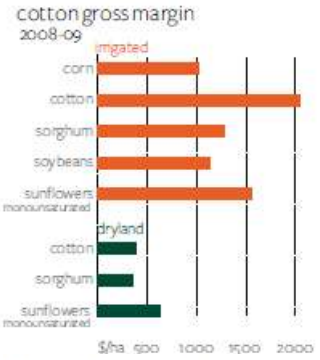
[4] A summary of Diffusion of Innovations, L Robinson 2009

Informal networks are critical

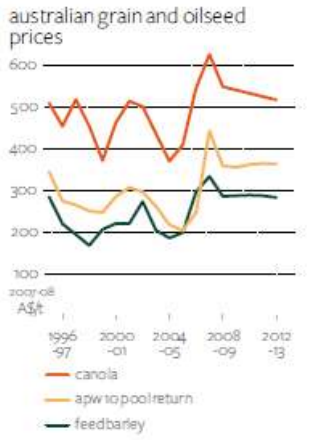
As in other rural and marine fishing industries, the focus groups suggest that innovation in industries is lead by the best practitioners who learn from many sources, and the bottom laggard 30% of enterprises learn primarily from their fellow operators. The literature particularly highlights that impersonal "push" methods (like advertising and media stories) may spread information about new innovations, but it is conversations and social networks that cause them to be adopted. Why? Because the adoption of new products or behaviours involves the management of risk and uncertainty. It's usually only people we personally know and trust – and who we know have successfully adopted the innovation themselves – who can give us credible reassurances that our attempts to change won't result in embarrassment, humiliation, financial loss or wasted time. This explains the adoptive power in informal networks. If extension resources are limited, the Cotton CRC needs to determine who the cotton extension strategy is to target and what networks they use, for maximum return for the whole mixed farming industry. This suggests better targeting of the cotton extension spend and increased alliances with grains to reduce extension overhead costs per ha.



Group responses below in Figures 8 and 9 confirm the need for knowledge also varies between cotton and grain farming systems. **Cotton farming** systems are considered more advanced in both the level and use of technology, the sophistication of management practices required, and in the skill of farm managers and employees. Respondents also believe cotton returns a higher gross margin per hectare and per megalitre of water. Mixed farmers consider there to be greater risk and reward in cotton as a crop choice. After 20 odd years of cotton growing in both regions most growers have progressed from *"playing catch up"* with the science and systems to now knowing how to grow cotton well (including knowing where to access the information readily) – *"we are now fine tuning to optimise profit"*. Going forward, mixed farmers believe this fine tuning must also integrate the uncertainties of such emerging issues as climate change. The strong well targeted investment in R&D over the last 20 years is considered to be the driver for the ongoing yield gains in cotton (especially in irrigated cotton as demonstrated by the ABARE research shown at right – Australian Commodities March 2008), and the withdrawal of chemical costs from the gross margin. Cotton information, both the quality and availability, are generally considered to be superior, when compared to information sources for other cropping systems. *"Over the last decade cotton has done knowledge much better than grain has"*.



Grain farming is seen as a less risky fall back land use choice - "*if you have the water you will grow cotton*" was a frequent comment. ABARE research (Australian Commodities, March 2008) attached suggests that mixed farm gross margins are at least $500/ ha better for irrigated cotton over other cereal crops. But grain prices have also spiked due to the drought and are forecast to remain high. They will attract more cotton acres into grain plantings across mixed farming regions. It is expected and also evident then that smaller cotton growers have swung their farming system mix back to grains due to drought. In general grain brings more complexity in the greater number of grain crop choices to secure market advantage. Farmers believe the grains industry generally is becoming more sophisticated in the way it manages farming systems and issues – becoming more like cotton. Increasing overlap in the technology (e.g. precision farming) and practice of these two farming systems means that the crop choices between "*cotton and grains are increasingly overlapping as prices/ margins and water become the critical drivers."* Many cotton consultants echo this sentiment saying they have had to pick up the grain skills in the last few years to make a living from more acreage.



Cattle grazing as part of the mixed cotton/ grain farming system is considered a sideline support activity, a "*land use for lower quality country*", even a *"bit of fun"* for some growers. Crop consultants typically see livestock as a separate sector or faming system requiring specialist knowledge which they do not have, and do not profess to have.

From this discussion we can conclude that:

1. the information needs of mixed farmers are constantly changing and dynamic in response to risk management, but more so for some enterprises than others, and
2. the needs of each of the mixed farm land uses (cotton, grains, livestock) are different, but cotton and grains are increasingly overlapping due to legislation and narrowing farm gross margins.

Figure 8. Is the need for farming knowledge changing?

Darling Downs	Growers	○ Climate variation requires crop cycle changes, therefore management skills ○ Crop diversity needs flexible knowledge about technologies ○ Increased farm size means a need for more professional advice; more management and paperwork, but less limits on capital availability ○ We used to play catch-up (perhaps less catch-up now) - now trying to get ahead of problems ○ Basics are still the same – we are finetuning to optimize profit
	Consultants	○ If you want knowledge – you need to go to the computer. ○ There is no independent point of reference since QDPI left the extension business ○ Farmer classes: 5% switched on multiple pathways; 50% will get 70% of available info; 20% will only progress if the info is taken to them free; 10% will not seek information and will farm the same way as they did yesterday. ○ Consultants can only help people who want to go forward
Border Rivers	Growers	○ Absolutely, daily, constantly ○ Change in response to NRM/ green issues and legislation together with the push for commercial returns in tight markets ○ E.g. need for understanding of climate variability; changes in technology ○ Knowledge value and search is driven by risk ○ Now more driven by legislation, farm technology and crop practices to optimise profitability
	Consultants	○ Greater need for knowledge now – need to know more now to farm successfully ○ There are more buttons to push ……but which ones? ○ Livestock farmers are coming from a lower base, but have the same needs for new knowledge – different cultures

Figure 9. Is the need different for cotton, grains, and livestock farms?

Darling Downs	Growers	○ No difference between cotton and grain, but grains are multi species – more complexity ○ More weed management issues in grains ○ Livestock is a support activity to lesser quality country ○ Cotton info is usually pretty accessible; grains less so ○ Cotton profit has come back to the pack. Cotton yield gains are still very strong ○ Bollgard eliminated chemical use and now we can concentrate on other farming issues ○ The R&D pipeline investment made 10 years ago is now pushing cotton productivity along – e.g. GMOs ○ Grains potential is huge but market is still rejecting GMOs ○ Change in livestock sector is slower – culture and market dynamics are different in cattle
	Consultants	○ Grain is a multi crop choice: cotton is a single crop choice ○ Specialist knowledge is required for livestock ○ Over the last decade, cotton has done "knowledge" much better than grain has
Border Rivers	Growers	○ Cotton and grain are different. Risks are different. ○ Cotton data is much more accessible to growers ○ Cotton oversold its potential a little in the last decade, but deep down we are still the same in rural Australia ○ Cotton information is more available to solve specific issues (e.g. Boyce & Co benchmark reports, CSD services) ○ Grain is more volatile and becoming more intense
	Consultants	○ Cotton and grains are increasingly overlapping, as price/ margins and water become the critical drivers ○ Livestock is essentially in a separate segment with little shared impact

The Knowledge Pathway

All respondents recognise the need for a "knowledge pathway" to service their farming system risk management needs. Summarising the responses, this pathway is comprised of *"a series of pathways that lead to existing knowledge outcomes, and new pathways that are more risky and lead to new discovery and knowledge".*

Each mixed farmer uses the pathway in different ways and for different things, depending on his/ her farming system, the nature of the risk, their motivation, the costs of the pathway service, the strength of their links to advisors and other farmers, etc. There is so much information readily available now (e.g. via internet) that there is a cost associated with prioritising to ensure quality information is applied to the enterprise. Drawing

from focus group responses regarding farming risk management, mixed farmers broadly need three types of information in their pathway:

1. **information to run the mixed farm day to day** e.g. a weather report from the radio, a price report from their merchant web site or fax service, daily advice on water requirements and bug infestation,
2. **information to enable innovation** that applies the knowledge available to their specific farm system (e.g. best practice water management, crop management and agronomic services), and also provides a greater depth of understanding that will lead to new innovations on farm (e.g. efficiencies in human capacity management and machinery operations). This information will be considered against risks, prioritised, with solutions developed or acquired, and applied over a period of weeks or months.
3. **information to provide solutions to problems that are emerging** but are not yet fully factored into the farm risk management system. These include new scientific innovation and related practices, new fibre quality initiatives to improve market outturns, and climate change – things that impact farming risks over the horizon.

Responses (Figures 10 & 11) confirm what all extension pathways must have – both spoken and written information, private and public information, direct and indirect delivery to growers recipients, and be timely and accurate. Selected websites, trade and industry magazines, farm walks, and field days were the preferred top-of-mind information activities cited by many growers. But there are some key aspects that pathway design should recognise, and where possible build on.

Human Linkages

Trust between people (between farmers, and between farmers and others) is a central element of regional farming systems in both target regions. Focus group responses from farmers confirm that farmers like to talk personally with other farmers and universally state this as one of their top two (i.e. other growers, and consultants as discussed later in Figures 16 and 17.) opportunities for gaining trusted information and building their farming system knowledge. Area Wide Management discussions between farmers and consultants are seen as a good initiative that has fallen away since the drought, especially in the McIntyre Valley. The reasons for this reduced engagement are not clear.

The reduced availability of water across the region and the squeeze on gross margins has meant that many farmers, especially medium sized and small farms, have had to reduce employed staff and now do more of the manual farm work themselves. Corporate farms will deal with this issue differently to family farms, but it is clear all farmers are increasingly time poor, especially those in the McIntyre Valley, a point evidenced by the low level of attendance by farmers at that focus group meeting. Limited time means some older farmers (and those with less affinity for information technology) opt out of some information search processes e.g. web based information.

Farmers and consultants say that outsourcing of information is more cost effective for most farmers. It enables access to trusted advice at a charge rate that does not bring with it all the costs associated with retaining full time employees. The contribution to improved farming systems by private consultants (especially in cotton growing) is well regarded by all farmers, clearly speaking from experience. Apart from farmer to farmer networks, farm consultants or advisors are the other top opportunity farmers identify to gain trusted information. A facilitators' estimate of 90% of farmers responded that they retain some level of consultant advice and actively encourage their consultant to build and develop farming system networks that will better service them across both their cotton and grain farming activities. It is clear that these networks have been more cotton focussed in the past, but are now expanding to encompass grain farming systems also. This trend reflects the changing mixed farming dynamics discussed previously.

Area Focus and Logistics

Farmers and consultants recognise the potential cost savings available where a single centralised extension service is provided across a wider geographic area (e.g. a combined Downs and Border Rivers region). But this cost saving is far outweighed by grower desires to have farming system advice readily available and specific to their region (e.g. micro climate, soils, logistics area, etc). The physical, economic and social limits on travel by advisors across such a large aggregated area are key constraints on extension efficiency and productivity. Mixed farmers all believe it is better for growers and for consultants to expand the knowledge pathway

horizontally in their local extension region to include grains, rather than to try to expand vertically to other regions along strict cotton extension lines.

Growers see the need for an extension service to *"facilitate"* the knowledge pathway so that it is coordinated across growers, consultants, resellers, and relevant community groups; it is cost effectively targeted for the local region; and it captures opportunities for linkages where advantageous (e.g. building farming system knowledge on the back of local crop competitions).

As cotton acreage has decreased with drought, many private cotton consultants have been rendered unviable and have either acquired new skills in the grain industry as part of their service, taken employment with rural supply and grower service resellers, or left the industry. Growers value reseller services, but recognise the nature of their business is to sell product wrapped in information that predisposes the reseller's specific products and terms of sale. There were very few disparaging comments from growers about this potential conflict of interest for resellers, and most growers recognise it is the reality of growing high tech or niche crops (cotton and grain) in a valley with less water. Greater corporate participation in the advisory services knowledge pathway (including CSD and other extension teams) is seen by all respondents as a positive for cotton and grain farms, so long as mixed farm operators know what they are dealing with. Where cotton growers, in particular, have the financial capacity to retain the services of a private consultant, they will do so, in order to better access the local regional advisory knowledge network and bring those benefits to their farm.

Emergency Response

Farmers also cite the ad hoc need for prompt action to contain regional crop disease outbreaks (e.g. whitefly, biosecurity matters) as motivation for them to retain a solid farming system advisory capacity in their region.

Agency Role

The role of government agencies in the knowledge pathway received a wide range of responses from growers and consultants. Most growers recognise the value of agencies is the independent view they bring to discussion on any matter and their role as part of regional industry facilitation e.g. via the Cotton CRC. Few if any growers says they contact agencies for day to day on-farm knowledge (an extension role agencies withdrew from years ago), but they are just a little more inclined to contact an agency where the issue relates to an innovation or solution to a future farming system problem. There seems to be little difference in this response between cotton and grain growers (the limits of small consultation samples make further inference here tenuous). Frequent responses suggest that as greater corporatisation occurs in the knowledge/ extension service pathway, the "*traditional agency extension service and dated approaches agencies use, will have to morph to meet the new needs of the grower"*. Alternatively agencies should seek a new role in offering solutions to longer term innovation issues, possibly community driven, or over the horizon problems for industry. This is already an evident trend.

Regional Extension Oversight

The Border Rivers consultants had a firmly expressed view that the resourcing of and experience retained in the Extension Coordination Role was critical to retaining good people in regional IDO roles and delivering good on-ground outcomes. They had a view that this was not evident at present.

Figure 10. Is there need for an information service pathway to mixed farms? What should it look like?

Darling Downs	Growers	○ Yes, but there is a problem – so much info available at minimum cost. Internet is great but slow – last 5 years we have all not seen significant change in our access efficiency ○ Structure should have net access, expert advisors, industry mags, farm walks and field days for practical knowledge, private firms (e.g. CSD) on commercial terms ○ Corporate farms may be different to family farms ○ Generational change means new people must start going to meetings and taking leadership roles ○ Farmers are increasingly time poor – less time than 5 years ago. Increased crop diversity now so there is always a crop in the ground ○ Some farms outsource development of all options and information – across grains and cotton ○ Greater private/ corporate participation has driven the knowledge ○ Growers use their agronomists to access knowledge - they use their networks ○ Time management for larger farm businesses means growers have to outsource ○ Bollgard has reduced the risk so the relationship has changed – less frequent farm inspections – resellers have increased at expense of private consultants – resellers are now looking to charge based on rate/ time etc ○ Small cotton growers have departed the industry and gone back to grains ○ Biosecurity has been slack so grain/ cotton growers are now at greater risk ○ Agronomists have strong networks and links (20 visits/ wk each) to each other and therefore farmers benefit from that. This is a major advantage for growers – trust levels are very high in regions – "cowboy" agronomists are soon identified ○ Growers need agencies/ IDOs at the next tier to manage and facilitate info transfer efficiently
	Consultants	○ Yes, must be flexible, including female farmers ○ Farmers like 1 on 1 human rapport ○ Most growers still use cotton consultants the same, but decrease in acreage due to drought has changed the viability of both and the relationship. More consultants now are employed by resellers of commercial farm products.
Border Rivers	Growers	○ Yes, it is a series of pathways that lead to existing knowledge outcomes and new pathways that are more risky and lead to new discovery and knowledge ○ Knowledge pathway needs to include meetings (growers, consultants), newsletters, emails, internet, etc ○ Need pathway to be via the growers, but with regular contact with consultants who serve both cotton and grain enterprises ○ Local QDPI&F role is unclear – needs to be focussed better (e.g. should extend knowledge off the back of the local best practice/ crop competitions in each region) ○ Need to bring back regional grower/ consultant meetings to discuss issues and learn latest information – Area Wide Management process is good ○ Traditional extension brings existing dated approaches to this new industry content, and will have to morph to meet the new needs of the grower. ○ Technology/ internet dramatically increases the scope and reduces the cost of new knowledge, but causes grief if the searcher is not skilled at identifying specific sources and nodes of knowledge. ○ Consultants are the critical link they are the nodes about which knowledge is assessed and distributed. ○ Many farmers are now unable to employ people due to reduced profitability, and therefore have to do more of the manual work, and don't have time to attend meetings. Trust between farmer and consultant is critical as many don't have a comprehensive contract for services. ○ Communities also use this knowledge system to view and assess the industry's impact on and beyond the farm. ○ New extension systems are emerging in the hands of corporates seeking to push new knowledge, and also traditional extension sources (e.g. CSD) where individuals have mature skills in communication. ○ Overall trend in move from non face-to-face skills to screen and document based transfers. ○ Funded jointly by cotton and grains industries, via levies. If more funds required, grower users should contribute ○ Executive Officer jobs are currently poorly managed, with incumbents just filling the role –need career motivators
	Consultants	○ Yes, we need a mature person – 10 years in the field, an understanding of cotton/ grain farming systems and profitability, Must be a career position with a job description not just milestone targets. ○ Prompt response issues (e.g. whitefly) would benefit from having a single person to coordinate and manage action response ○ The previous agency model is not effective – loss of mature skills, cost of educating new people, loss of support from industry next time. ○ Located locally, to develop relations and service immediate needs, ○ Best to have person not in a department – contract of employment with private/ CRC party, collaborative between grains and cotton, for all of cotton and only irrigated grains only in the McIntyre ○ A joint funded CRC/ CRDC/ GRDC project for 3-5 years. May need a bigger salary. ○ McIntyre + Gwydir would be too big an area for a single person ○ Not required to be on farm daily. Needs to coordinate consultants who actively support the role. ○ Problem - we are trying to fix the on-ground positions, but there is a need to also beef up the national coordination role.

A Person in the Pathway

The Focus Groups are agreed that cotton and grain farms need a knowledge pathway, and a dedicated person to facilitate regional delivery of the pathway. The specific structure of the pathway in each of the two regions needs to be individually built around the following key points:

- Cotton and grains to share in a complementary knowledge pathway to mixed farmers, with joint equitable investment by respective R&D Corporations, CRCs, etc
- Local valley focus where each of the Darling Downs and McIntyre Valley maintain their own individual extension arrangements for mixed farms, with shared regional resources only where mutually attractive.

- Each region to maintain its own regional facilitators/ extension officers/ IDOs, on a fulltime or part time basis subject to the scale and scope of farming community investment, and mix of issues. The roles would be designed to build the regional farming system knowledge capacity of growers, their networks with each other, and their network links to consultants, scientists, experts and industry bodies. Only a limited amount of time would be spent by a facilitator on-farm.
- Regional facilitator roles would be based on more permanent (minimum 3 years) career positions, in order to attract mature skills, and reduce the loss of expertise and turnover in the roles. Salary packages offered may have to increase or better reflect a longer term contract commitment.
- Employment of regional facilitators to be based on individual commercial contracts by joint cotton and grain RDC or CRC, or external third party proxy. Employment via traditional state agency lines is seen as too restrictive and bureaucratic. However mixed growers agree the facilitator role may be housed or co-located with other farming system or regional extension resources in a regional agency office.
- Regional facilitator employment contracts would be embedded within a joint cotton - grains project over a 3-5 year commitment, with role performance KPIs and reporting requirements to Cotton CRC/ CRDC/ GRDC. Local reporting would be to a defined grower/ consultant committee within the region encompassing the CGA and the equivalent regional grains body.
- The role would likely be part time in the short term and move to full time once the linkages were established and working. The opportunity for a part time consultant or other full time local resident on a part time basis should be considered.
- In the McIntyre Valley, the existing grains industry executive officer (Bede O'Mara) services only dry land grain clients. He is well disposed to working with another experienced person from a proximate Goondiwindi office who services irrigated cotton and/ or grain farms, and dryland cotton farms.

Figure 11. Is there a need for a dedicated person in this knowledge pathway?

Darling Downs	Growers	○ Uncertain, but a 75% majority say "yes". All are not sure how and where this resource person should be retained. ○ Need people to facilitate the yearly crises that come along ○ Not for direct contact , but certainly for the experts/ agronomists to go to for district wide info OR Rarely used ○ Some of this role is performed by GRDC and CRDC ○ Best outcome is a person in this valley, but possible for a role to be across 2 neighbouring valleys ○ Sharing a person across valleys will work but needs to have higher salary and specific role ○ Roles should be jointly supported by CRDC and GRDC, and retention of a more mature person on a long term contract. This person may be a private operator who cannot be restructured in drought times or at the whim of government. ○ Need to have a valley/ catchment focus to know and solve the real problems ○ We should tender out our regional info management role ○ We almost need an extension type person for the role to bring growers to focus on new initiatives, and provide some local leadership on timely issues
	Consultants	○ For cotton: yes - you still have a lot of risk so need to retain a person to help manage information profitably ○ For grains: yes - you can muck your way through and still survive, but the large gap between good and bad grain farm performance means more and more grain farmers realise the value of better information and advice locally. The large gap in grain knowledge results in adverse outcomes for non grain crops e.g. 24D use in grain ○ For livestock: - not sure
Border Rivers	Growers	○ Yes definitely! Because human face to face is and will remain the basis for truth, interpretation and trust in managing risk ○ Yes, there should be a joint person shared by cotton and grains industry in the region. ○ We need someone who will lead and facilitate information that is valuable to consultants and growers in the region ○ If there is no person, relevant information does not get distributed or gets lost ○ Person does not need to be fulltime (acreage is now too low) – but they need to spread their facilitation work across other issues (e.g. water, carbon emissions) and sectors (grains). This person should report to local cotton and grain Growers Ass'n, but have formal employment contract with joint cotton and grain CRCs.
	Consultants	○ Yes (80% majority support). Extension is about relationships and communication skills ○ There is a need for a single person to coordinate/ facilitate communications to and with growers and consultants - key point ○ Appointed person to report quarterly to a mixed farm grower's reference group

2.2 Extension priorities for the mixed farming system

Focus Group responses confirm that farming in the target regions is dynamic. Going forward, growers clearly see the need to outsource much of their knowledge to extension experts, related networks, and specialists.

Many farmers are so time-poor they outsource totally their communication to a private consultant. Corporates selling products, processes, systems and services are tending to target consultants as the principal client, rather than as the agent of the farmer client. As technologies become more advanced, many farmers don't now have the mental capacity or industry and scientific experience to challenge and test the recommendations of their consultants. They are therefore unable to cross check advice unless they can have ready reference to farmer networks. The relative maturity of the regional industry is a key determinant for the way information/ extension occurs and therefore the choice of extension model used.

The trends noted by focus groups include:

- Volatility of gross margins and water availability for each of cotton and grains will mean that mixed farms will continue to trade-off competing gross margins and crop choices.
- Greater technology on farm, (e.g. precision farming and guidance systems) requiring specialised and expert inputs. Farms will be managed by leadership teams, encompassing external experts.
- Young farmers may have a different view of the knowledge pathway requirements but how this manifests through to farm management practices is not expected to lead to rapid or dramatic change.
- Social change as family farms become larger or are corporatised, and generational change means much of the existing mature farming system expertise and knowledge will depart the industry within 10 years.
- Evolution of technologies/ issues/ legislation surrounding water and NRM
- Greater focus on enterprise profit, now that the farming practices and science are reasonably well understood across farms
- Communities (local and urban) will seek greater assurance from farmers that their use of natural resources is economically and socially beneficial and sustainable.
- Information service tools and networks will become more sophisticated to enable better service and delivery of appropriate information for day to day requirements, for innovation requirements, and for long term issues.

The extension priorities must be framed to respond to these dynamic trends. These priorities are:

1. Define IDO roles more clearly and comprehensively, so they respond to KPIs for the specific regions to which they are dedicated
2. Develop closer formal and informal relationships with the grains industry investors and extension systems, and look for ways to build the joint capability. Consider shared investment between industries based on the pull of the farm enterprise mix, not the push of the product science and industry organisation.
3. Consider strengthening/ establishing combined cotton and grain Area Wide Management Groups in each region for mixed cotton and grain growers
4. Target people with joint grains and cotton experience for key roles and invest in career development and training programs and career development pathways where both sectors share the costs and benefits
5. Encourage corporate extension and support services that service mixed farming enterprises
6. Identify and seek to eliminate any legislative anomalies (e.g. use of biowastes) impacting farming systems used on mixed farms, especially those with cotton and grain
7. Develop or encourage use of more sophisticated farm profit and management tools, that will assist mixed farmers (especially those in the lower 20% of performance) make better crop choice decisions and assess mixed farm risks
8. Invest in people to boost extension capacity that will better engage cotton and grains industry with regional and community networks
9. Create career and financial incentives for cotton and grain consultants and experts and related networks to partner with cotton and grain investors.
10. Initiate joint agency projects to target mixed farming system outcomes and improved profitability
11. Reassess the structure and efficiency of the extension coordination roles (Extension Management) and possibly beef it up as it now has a wider charter across cotton and grains.

Figure 12. How will this knowledge pathway change over the next 5-10 years? What are the trends?

Darling Downs	Growers	○ Communication technologies ○ Generational change in family farming on the Darling Downs ○ Need for older people who can do skilled search for relevant farming system knowledge ○ Larger family farms become more corporatised in their approach – e.g. PrimeAg ○ We will continue to outsource our knowledge to hired specialists ○ Many current farmers will retire in the next decade so there will be a change in the way young farmers use/ access ○ There are very few young farmers in this region – not sure what will happen as they move on from industry - change is a social issue, and there may be greater corporate investment ○ Corporates will have a different risk profile which rebalances toward grains/ low risk
	Consultants	○ Farms are getting bigger due to industry consolidation and generational transitions, and more young people are coming back to firms as they see opportunity to run bigger enterprises ○ Greater demand for technical services in the drought years ○ Grain: growers looking for the last 2 % of yield will focus on planter selections, spray management, moisture management ○ Generally: guidance systems (40% use now; 80% in 5 years; more grain farmers now moving to guidance systems), greater efficiency of employees
Border Rivers	Growers	○ It will evolve towards each industry sector determining and creating systems/ pathways best able to meet its needs. ○ The pathway will depend on the evolution of technologies/ issues/ legislation surrounding water and NRM ○ Grains and cotton will evolve differently as the risks are different. But they are sufficiently different to complement each other. If water was available, growers would max out on cotton. ○ Communities are becoming more adept at assessing the direct and indirect benefits and impacts on them from their contributing industries e.g. management of water for the best outcomes. ○ Trend is to get back to profit using all knowledge available, and not just knowledge about crop science ○ Green movement keeps getting more powerful with communities and governments, so extension needs to service this changing need for farmers
	Consultants	○ Price cost pressures will be greater – narrowing margins for cotton. Risk of water availability makes the choice between cotton and grain difficult. Farmers are having to manage their profit more carefully and need the information to do that. ○ People are time poor and therefore electronic information is more attractive. Most growers have now developed the knowledge to grow a sophisticated crop and therefore don't need to go to big field days. Agronomists and consultants are becoming the target for extension. Therefore we need a higher level of information and service delivery. Farmers are time poor – they have fewer resources and have to spend more time doing operational work themselves. Growers just don't want to go to more meetings. ○ Experienced farm managers are leaving so consultants are required to provide greater input ○ CSD model is great – emails journals, web access, fact sheets, expert face to face contact

2.3 Knowledge Needs in the Medium to Long Term

Within this broad extension future described by the trends above, the focus groups considered the highest knowledge priorities for mixed farming systems for current farming practices (Figure 13), and for future farming practices (Figure 14):

Figure 13. What are the highest knowledge needs for the mixed farming system today?

		Cotton Farms	Grain Farms
Darling Downs	Growers	○ **Water** availability and efficiency, stored moisture, **seed potentials, rotations**, coal seam gas waste water, ○ **Soil carbon**, and how we can get paid, not pay – carbon accounting rules ○ **Soil health/ biology** – what bugs, how to increase good bugs and defeat bad ones ○ Efficiencies that drive farm **profit** ○ Sources and efficiencies of **fertiliser** ○ **Integrating irrigated and dryland** farming logistics – row spacings, etc ○ **Precision agriculture** ○ **Compliance costs** for meeting agency demands – NRM, tax, etc ○ **Staff access** comes and goes, cotton farms need more mid level skills not cotton chippers ○ Darling Downs is lucky that it has **flexibility** to can choose across a number of crops – others (e.g. St George) have no choice but cotton. ○ Further falls in cotton acreage will seriously threaten the **critical mass of infrastructure and skills** across a number of cotton valleys. Burdekin offers hope, but lots of unknowns	○ **Same as for cotton** ○ Effective **rotations** ○ Grain use that reduces **livestock methane** ○ Profitability, driven by **lack of yield gains in grains** ○ **Compliance** costs for meeting agency demands – NRM, tax, etc ○ **Infrastructure to get grain out to market** – silos, roads and rail services, ports
	Consultants	○ **Water efficiency** ○ **Nutrition** ○ **Whole farm systems/ farm design** ○ **Precision farming**	○ **Genetics** for barley / wheat ○ **Nutrition** ○ **Water efficiency** ○ **Zero tillage** in irrigated areas
Border Rivers	Growers	○ Irrigation **WUE** and access to that resource, ○ Water use and reduction of runoff on sloping ground ○ Increased **yields** to become more engaged in and achieve traction for agriculture in political national decisions ○ To be careful not to specialise in farm crop choices – optimum **conversion of water or moisture profile into profit** ○ **Precision farming**	○ **Water use efficiency** – ML into profit. ○ **Disease** control ○ **Resistance to herbicides** ○ Good **technical knowledge** about varieties for intensive cereal production ○ **Transport infrastructure** is dated or non existent

		○ **Horizontal integration** of groups of farmers to collaborate in improved farming systems.	○ Increased **yields**
	Consultants	○ Most **yield from farm water** - Which crop, how to agronomically generate max profit per ML ○ **Readiness for new threats and risks** – e.g. white fly	○ Management of **nutrition** ○ **Breeding to increase productivity** – poor to date compared to cotton

Figure 14. What are the highest knowledge needs for the mixed farming system over the next 5 years?

Darling Downs	**Growers**	○ **Same as now + new robotics** ○ **Profit** ○ **Water availability, reductions in allocations, therefore efficiency, coal seam gas waste water,** ○ **Compliance costs** for meeting agency demands – NRM, tax, etc ○ **Staff access** comes and goes, cotton farms need more mid level skills not cotton chippers ○ **Emission Trading Scheme/ carbon impact** is potentially large but unknown ○ **Profitability,** driven by lack of yield gains in grains ○ **Infrastructure** to get grain out to market – silos, roads and rail services, ports
	Consultants	○ **Evaporation** control in water storages, ○ **Grain** genetics to improve yield ○ **Disease resistance**
Border Rivers	Growers	○ **Political engagement** by grower bodies to achieve long term traction ○ Free and open **access to innovative markets for products**, carbon, energy, etc ○ Find **ways to be less reliant on fossil fuels** ○ Use **of satellite remote sensing** ○ Less destructive **ground engaging equipment** ○ Greater capture of **intelligence from farming operations about our resource and environment** ○ **Precision farming systems** to track, and quickly interpret and profit from change in climate ○ Develop systems and supporting economic imperatives that **work with our biological farming system**. Sometimes in agriculture we hang on too long to non viable traditional systems and build prejudices to protect our historical understanding
	Consultants	○ **Readiness for over the horizon risks** – e.g. carbon ○ **Water access** ○ **Skilled knowledge in human capacity** – if there is no career or $, location is not attractive ○ **Long term grain genetic manipulation** ○ **Agronomic knowledge** to capitalise on new grain genetics

2.4 Specialist services for mixed farming systems

Relative Value of Information and Sources

Growers will determine the quality of extension information drawn from the knowledge pathway, based on that information's applied utility and potential to generate gross margin. Does the knowledge available improve my farming systems capacity?

As we have previously discussed there are broadly three types of information used by cotton and grain growers – day to day, innovation, and future issues. Focus group responses are detailed in Figure 15

Figure 15. What is it about the service that makes it valued by farmers?

		For Day to Day Farming Knowledge	For Knowledge that Drives Farming Innovation	For Knowledge to Solve Future Issues
Darling Downs	Growers	○ **Instant access** ○ **Prompt action to regional risks** – (e.g. whitefly) ○ **Low cost**, ready access, weather, - guides the activity for the next week	○ Being able to **track an idea** and build a case to pursue the innovation ○ Having **access to practical people** who are trying innovations on farm – farmer networks are critical ○ **Farmers are culturally and keenly tuned to learn from our neighbours** about trials, varieties, etc. No other source has the capacity to provide this info. e.g. 80" cotton row spacing ○ **Growers have lost the opportunity to control many resources** (e.g. water) and therefore are looking to gains in other areas (e.g. soil health and using biowastes from cities, pupae busting without losing moisture). This requires innovation outside their immediate knowledge.	○ Having the **experts resident in the industry** who have good direct links and partnerships with growers ○ E.g. water and carbon – cotton and grains should do this together via **new ACGRA approach** ○ Grain industry has become more like the cotton industry in last decade ○ Farmers are good at looking over the horizon, but **need experts to see/ create these future solutions**.
	Consultants	○ **Reliability and ready access** ○ Resellers use new knowledge to **build trust** that makes the repeat sales.	○ Consultants are retained to be the **listening posts/ meeting "attenders"** for growers seeking new knowledge. ○ Resellers **cannot find specialist employees**, so have to hire people who have farming cross-sectoral skills	○ **Scientists and industry bodies**
Border	Growers	○ Risk must be managed daily –	○ CSD, CSIRO, GRDC, USDA – **integrity and value**	○ Long term competitiveness

Rivers		therefore **time and cost** are critical. Bureau of Meteorology, consultant, marketing/ trading agents, financial costs/ interest changes.	**of data from key organisations** ○ **websites and watch approach, journals and field days.**	is driven by **investment in knowledge long term.**
	Consultants	○ **Timely accurate readily accessible, trusted**. ○ Consultants now asked to **manage multiyear profitability**. 100% of this risk controllable on farm now.	○ Ability to **lift to the next level** for the farm. Comes from advice of consultants and other farmers. ○ Consultants are one of the **sources for ideas, and a sounding board** for new ideas.	○ Industry driven structures **outsourced to experts**. ○ Quality of your **RDC and affiliated experts is critical.** ○ There is **minimal control** of this risk on farm

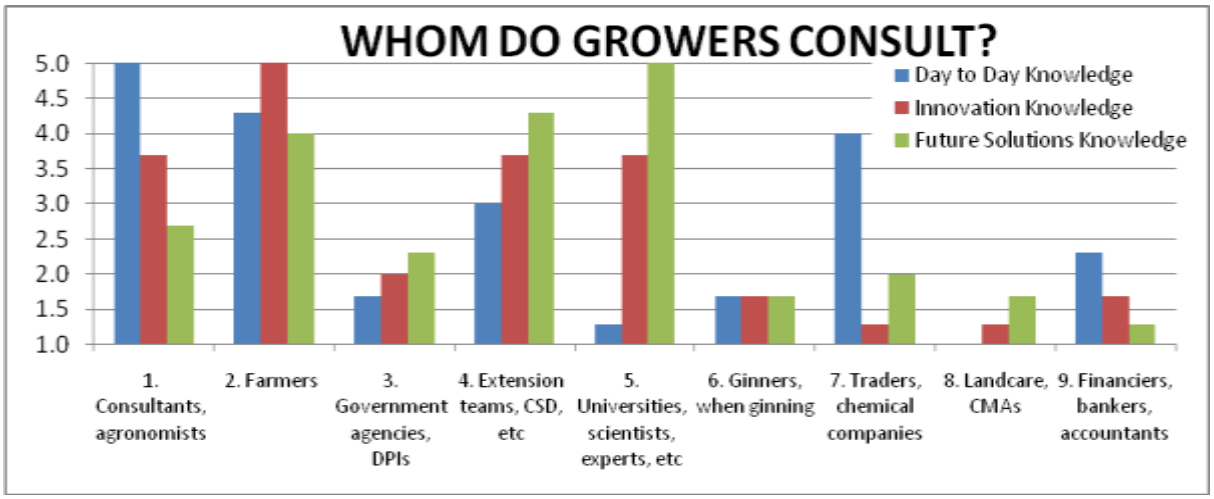
Additional data collated from the 5 focus groups is presented in Figures 16 and 17. Responses confirm that growers in the target regions seek information primarily from other growers, consultants, and traders/ resellers especially for day to day and on-farm innovations. As the issues become more risky and beyond farmer control (either as the issue is off-farm or the solution is out in the future), growers will seek more information from extension teams, universities, experts and specialists. The small sample sizes suggest these data should be used with caution. (The vertical scale records the frequency of response.)

The Groups were asked about their sources for information they use to manage their mixed farming enterprises. While the small sample size is quite limiting, the results from growers suggest some relevant trends and insights:

- For day-to-day knowledge, growers rely on consultants as a primary source, and other farmers and cotton traders.
- For innovation knowledge, farmers rely on other farmers in their networks, consultants, extension teams and experts and specialists from universities.
- For future solutions knowledge, farmers primarily approach institutional experts and specialists in universities, and then specialists in extension teams, other farmers and consultants.

In aggregate terms the data suggests growers consult four main sources - other growers most often (18%), followed by consultants (16%), extension teams (15%) and institutional and university experts (14%). There is a clear trend in the data – as the issues become more intractable and longer term, growers seek more of their knowledge from external experts in extension teams and institutions.

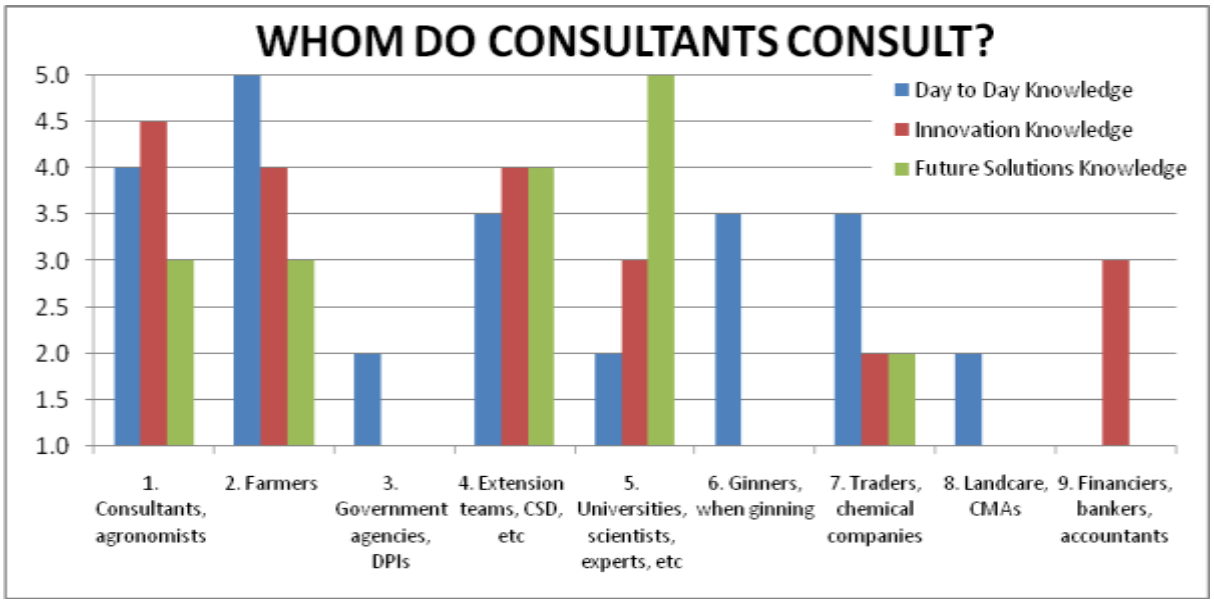
Figure 16. From whom do growers seek farming system information?



The respective responses from consultants show a similar pattern of reliance on external experts and advisers as the issues become more intractable. Consultants/ resellers employ a wider range of sources of information and often to a higher degree than farmers (e.g. ginners and financiers), but still use their client farmer networks as a significant source of information. In aggregate terms the consultant response data suggests

consultants consult the same four main sources used by growers - growers most often (17%), followed by other consultants (16%), extension teams (16%) and institutional and university experts (14%).

Figure 17. From whom do consultants seek farming system information?



Research undertaken in 2008 (Cotton Consultants Australia, Western Research Institute) assessed the sources used by consultants to access information regarding insects and weeds, water use, plant nutrition and physiology, soils and diseases and NRM issues. In aggregate terms that analysis found consultants seek information from: industry publications 79% of the time, meetings (72%), field days (63%), researchers (59%), websites (59%), extension teams (47%), and journals (39%). Focus group responses from consultants confirm these findings, especially the high person to person networking undertaken at meetings and field days.

The focus group responses suggest there is very strong alignment between knowledge sources used by growers and sources used by consultants. Importantly it is the formal and informal networks supported by and maintained by growers and consultants themselves that are the dominant sources of all farming systems knowledge. One implication is that consultants, as the trusted, flexible, cost effective specialist advisors to growers, could expand their services and play a greater role in managing grower information and knowledge pathways for mutual advantage.

Specialist Services

As knowledge is shared across an industry or region, specialist skills are adapted and adopted into the farming systems. The skills become endemic and finetuned to mixed farming in that location and farming system. Some specialist knowledge (e.g. water management) moves quickly to become general knowledge if commercial incentives or drought drive rapid adoption over 3-5 years, while knowledge about other issues (agronomic impacts on yield) may take 10-20 years to mature and become general knowledge across all farms in a region.

Responses confirmed (in Figure 18) that today there is a real "requirement" for specialist services wherever farming system risk exists (water, climate change, carbon, remote sensing, community engagement, engaging government), but there is no "demand" from growers for these skills. The demand is depressed as the bulk of farmers are not prepared to pay directly for experts to be nurtured and retained by the industry, and so they do so indirectly through payment of their R&D levies to industry bodies who retain and build these skills on industry's behalf. This enables the costs of specialisation to be spread more cost effectively across all user growers. Of course any farmer can pay privately to build and retain specialist services as required, but he/ she will be aware that specialist may leave taking their skills with them.

The response from focus groups is that industry organisations need to encourage and invest in specialisation in key issues and locations to support regional farming systems. But it would be wise to use shared investments

to achieve this (i.e. levy funds), and collaborate with industry resellers and other service providers to ensure these specialisations are correctly targeted and market priced. Where there is market failure and privately sponsored specialist skills do not emerge for issues considered to be key risks, then shared investment from industry bodies must be made to fill this gap. Where this joint investment in specialisations can be shared across cotton and grains sectors, it will benefit both industries and avoid duplication.

Figure 18. Is there a real demand for service specialisation, in lieu of general services?

Darling Downs	Growers	○ There is **real demand for specialists**, but depends on industry willingness to pay for the risks of specialists ○ **Specialist knowledge tends to become general over time**. Transition is subject to agency requirements and compliance, costs of knowledge transfer to broader famer market, etc. Some transitions take decades (e.g. agronomy); others 3-5yrs ○ Robotics to manage **water efficiency**, etc ○ A local extension person needs to focus on a local area and therefore increase their worth as a specialist ○ Good to have an **independent opinion** not tied to a commercial sale outcome ○ Yes, growers often reassess the risk in using the same consultant when they move to a specialist reseller ○ Some cotton consultants have had to learn about grains to expand their role e.g. CSD ○ There is reasonably good sharing of info between advisors and crop sectors ○ Need for more **grain marketing experts**/ consultants as the single desk are gone ○ Grain growers are more dependent on their GRDC than cotton growers are on CRDC ○ Cotton farmers had more free investment surpluses to use for service experimentation
	Consultants	○ **There is a real demand**, subject to the rate of technology increase, but where that specialist is located is not yet clear. Specialisation will imply sectoral (e.g. cotton, or grain, or livestock) specialisation ○ There is a demand for specialists, but **grain is more complex** than cotton as there are many more grain varieties. When farmers are deciding on the crop (incl. cotton) and will use specialist expertise as necessary
Border Rivers	Growers	○ **There will always be a need for specialist services in industries of high risk,** and diminishing resource access. ○ **There is a real demand for specialist services, but primarily by consultants.** ○ The **cost of specialist services can be reduced where growers collaborate** and share knowledge and access to specialists ○ There will be pressure to squeeze more food from water MLs and acreage in northern Australia. ○ **Where is the risk? That is where the specialists will be - water, climate change, carbon, remote sensing, community engagement, engaging government** ○ The **transition from specialist to generalist** takes around 3-5 years
	Consultants	○ There is a **demand for generalists, but who have some specialist areas of expertise** ○ There is a **requirement for specialists, but no demand for them** – i.e. farmers want them but are not prepared to pay for them to be retained in the industry. ○ **Consultants will seek specialist advice** when they are at the extent of their professional capacity. ○ **Growers do not want to pay any more** for an additional consulting advice e.g. agencies continue to service water service demand for a very low price – no private operators (general providers) will emerge when this is the case ○ After four decades, cotton risks are sorted out. So yield gain is now going to be more reliant on specialist knowledge ○ Grain industry is not as used to the consulting service as are cotton growers ○ There is an **emerging need for specialist grain service** e.g. nutrition. Grain has a lot further to go; starting from lower base ○ **Managing grain and cotton farm business profit is becoming** more relevant and therefore specialists will be required more in future

2.5 Delivery service methods required in various regions

Best Service Delivery

Focus Groups suggest there is no single best service delivery method. Service delivery varies subject to many factors in the knowledge pathway, including: regional logistics, the risk to be addressed and the level at or timeframe over which the information is to be applied to the farming system, cost, the strength of regional linkages and networks, the age and motivation of farmers and their regional industry leaders, etc. For the grower it *"depends on your personal disposition and the stage of maturity of your enterprise and personal development journey*".

But it is clear that growers and consultants across both regions seek a wide range of information delivery techniques, both direct and indirectly via their networks. Again we find that the delivery techniques for day to day knowledge have a different driver to that of the information used for over the horizon problems.

The emergence of corporate extension teams across the grain –cotton sectors by Cotton Seed Distributors and Cotton Growers Services is seen as a good outcome for both industries. Their viability suggests that even in hard times growers are prepared to commercially value an extension model that precisely targets their needs. It is in the interests of all stakeholders to have a range of service delivery arrangements that meet the diverse needs of growers in each region.

Farmers and consultants agree that developing a strong regional consultant/ reseller/ advisory network provides a comprehensive and responsive local knowledge platform upon can be based a suite of delivery

methods to suit all cotton and grain growers. Today there is only limited support for incorporating livestock skills into this arrangement.

Figure 19. What service delivery methods are best?

		For Day to Day Farming Knowledge	For Knowledge that Drives Farming Innovation	For Knowledge to Solve Future Issues
Darling Downs	Growers	○ Cotton Grower and Grain Grower **magazines** ○ **Trade publications** – Cottontales ○ Retained **advisors and consultants** ○ **Web** – for weather and referred websites from trade and industry publications ○ **Other farmers** ○ ABC **radio and web sites** that carry specific data updated regularly e.g. CSD	○ Face to face **discussion** with other farmers and consultants ○ **Field walks, farm walks and local trials** ○ **Trade publications** ○ **Other farmers** ○ **Industry magazines and journals**	○ **Industry brainstorming** ○ Investment in **CRC/ CRDC** etc ○ Some **websites** but often are limited access and require passwords ○ Depends on the **grower's motivation and keenness** ○ **Corporates, merchants and traders** will push new science, technologies at us as part of a product ○ Dealers will bring **lead farmers** together to raise awareness of new problems and solutions – e.g. precision farming, baling, etc
	Consultants	○ Local **trials**, support to Area Wide Management groups, **one-on-one visits, field days & farm walks, crop competitions, cotton tales, trade publications, newspapers, internet,** etc ○ **Delivery is 70% people contact and 30% written advice or on screen**	○ More from **specialist sources**, but then proof against other personal advice	○ **External advice and expertise**
Border Rivers	Growers	○ **Cost effective, readily accessible sources** ○ **Web, radio, print media, SMS, specialist advisors** often in-house	○ **Farmer meetings, seminars, conferences, discussion groups, journals** ○ All farmers get info from all sources, **depends on your personal disposition and the stage of maturity of your enterprise and personal development journey**.	○
	Consultants	○ **Fax, email, Cotton Australia** announcements on radio about spray drift ○ **Daily text messages** ○ **Team management** in the farm business	○ **Demonstration trials** or similar initiatives ○ There is often a **gap** in the lack of economic ground truthing of practices and initiatives on farm	○ More **direct engagement** of experts with farmers ○ There is often a **gap** in the lack of economic ground truthing of practices and initiatives on farm

Regional Variability in Delivery

Figure 20 responses confirm that growers and consultants in both regions believe that service delivery needs to be flexible and enable variability region to region. Principle drivers are the quality of staff retained, the level of demand for services, the intensity of farming, the level of support provided to the IDO, the leadership provided by industry, regional soil types, the structure of employment arrangements for key people in the knowledge pathway, age of farmers and cheque book controllers, whether farms are predominantly irrigated or dryland, social networks, travel logistics, variable farm sizes and related capacities, cultural differences, corporate vs. family farm ownership, and regional locations.

Figure 20. Does service delivery vary region to region? Why?

Darling Downs	Growers	○ Yes it probably does vary region to region, from the indicators ○ Depends on: quality of staff retained, the level of demand, intensity of farming, support provided to the person, leadership provided by industry ○ Service demand and therefore delivery tends to come in waves – e.g. introduction of Bollgard, adoption of lateral moves, introduction of precisions farming ○ Extension officers may provide engagement for key Cotton Australia strategies e.g. BMP, but we don't see them directly. But we need someone to drive this type of initiative and to be readily accessible. ○ There are no clear advantages for good farmers in improving the engagement of the bottom 20% of farm performers ○ Social reasons will often drive the level of service – where do consultants like to live; Bourke, Hilston, etc ○ It is hard to get people to return to the region once the drought passes ○ Currently career paths are not readily available for IDOs ○ 25-30 year olds don't want to do the lower level labour roles ○ Older people are more settled and have a lot more experience in dealing with people, some of whom can be difficult ○ Long standing agency staff provide a solid base to build skills and build the confidence of industry ○ Mature corporate representatives in the region are also valuable
	Consultants	○ Yes, but varies subject to soil types, social networks.

		○ Some farmers do not value good advice, so the method of delivery is irrelevant
Border Rivers	Growers	○ Knowledge delivery will need to be enterprise specific to be most useful to industry/ growers. (cotton/ grain/ other) ○ Plus the local demographics will impact, e.g. age of farmers, age of cheque book controllers, irrigated v dryland
	Consultants	○ It does vary now region to region because of social networks, travel logistics, variable farm sizes and related capacities, cultural differences, corporate vs. family farm ownership, regional locations, etc ○ Opinion leaders in regions/ valleys ○ Delivery will continue to vary region to region, valley to valley.

Collaboration

Responses from growers and consultants confirm that greater collaboration improves service delivery. Figure 21 responses cite opportunities for increased collaboration between:

- CRDC and GRDC and related CRCs and industry bodies, communities and government agencies,
- cotton and grains industries
- corporate suppliers and chemical companies,
- production regions,
- State agencies (DERM) and local councils on resource access,
- growers and grower, and
- growers and consultants.

The scope of collaborations cited include chemical trials; water and resource access; common weeds, fertilisers, and pests; farming systems; innovations and trails; community endorsements for farming and trials; disease management; nutrition; irrigation; career, and generally a more positive whole of farm management approach.

Surprisingly, neither growers nor consultants have a sufficient grasp of the collaboration opportunities off farm to enable them to comment on other regional or remote collaborative opportunities. Specific reference by the facilitator to CMAs and regional government supported NRM programs, Caring for Country projects, and community interest groups did not prompt any significant response regarding potential collaborations with these groups or programs.

Figure 21. Does collaboration improve service delivery? With Whom?

Darling Downs	Growers	○ Yes, for farm variety trials where risk is higher, chemical company trials and tests, and with grains industry organisations/ GRDC. ○ With GRDC in the Darling Downs regarding water, weeds, fertilisers, pests etc common to both RDCs ○ Could collaborate more across Darling Downs and Border Rivers, and maybe Burdekin ○ We should promote greater collaboration within and across family farming units, commercially focussed firms (e.g. CSD, Monsanto), private agronomist, GRDC. ○ Potential problem in collaboration where Plant Breeder Rights are locked up especially in grains ○ CRDC and GRDC need to be separate but should collaborate as much as their farmers clients require ○ Greater collaboration between DERM, Mines & Energy and local Councils on Coal Seam Gas water, and mining in general regarding access to and use of land
	Consultants	○ Yes, particularly researchers and consultants who speak directly with growers about farming system matters.
Border Rivers	Growers	○ Yes, at the day to day farming level; farmers with farmers ○ Yes, at the innovation level; variety trials, and with Governments and private corporates ○ Yes, for longer term solutions at the organisational level; CRCs, ACGRA, GRDC, etc ○ Attractive collaboration opportunities exist for many players wherever risk is – with others, communities and governments to enable our right to farm ○ Greater collaboration required re our ability to justify and maintain access to water and other resources; and our access to markets – consumers endorsing cotton farmers' rights to access the resource.
	Consultants	○ Yes, especially regarding how new products work e.g. "steward" insecticide for both cotton and grain ○ Collaboration from grower to grower and grower to consultant is basis for much of the learning required ○ Yes for the bigger long term problems e.g. CRDC & GRDC - cotton with grains especially where they are grown in same rotations ○ Collaboration required especially on disease management, nutrition and irrigation, ○ Adopt a scientist approach – career, trials, more positive whole of farm management approach, etc

While the responses above confirm that growers and consultants believe it is desirable to have available sufficient regional variability in extension services, their comments confirm that a local IDO/ facilitator role is the key to driving the appropriate response independently for each region. It is the solid and stable experience platform knowledge that IDOs/ facilitators bring to a region that enables the growers and consultants to then build on their requirements for local issues.

Growers in the Northern and Southern Downs currently enjoy a more stable IDO/ facilitator experience base than McIntyre growers. Downs growers make few comments about the need to change their structural

arrangements. Their discussion is more about how the information and extension pathway can be improved by joining with the grains sector. By contrast responses from the Border Rivers Region confirm there has been considerable challenge in hiring and retaining experienced IDOs facilitators in their region. These Border Rivers stakeholders are much more focussed on structuring an arrangement between grains and cotton sectors to attract and retain a mature person, as soon as possible.

2.6 The grower perspective of farm management of climate change issues

More than 90% of focus group participants remain sceptical regarding the linkage between climate change and human induced global activity. A similar percentage believes observed climate variability is within the long term global variability in the climatic record.

Most farmers believe they have and will continue to have a low carbon footprint, but see a need to be involved and actively seeking investment opportunities to reduce carbon emissions. Opportunities for sequestration and creating revenue streams seem not to be investigated yet.

2.7 The grower perspective of measuring on-farm carbon

There is a very low level of knowledge in the grower or consultant community regarding this issue. A few informed responses cite the apparent bias in the currently proposed carbon accounting rules toward non agricultural industries. There is also comment that consumers need to be prepared to pay for the costs of agricultural farming practices that are developed to ameliorate or otherwise sequester farm carbon. This view coincides with recent advice by the National Farmers Federation to global farming groups.

2.8 The view of requirements different between growers and consultants

Figure 22 summarises the views of growers and consultants for each objective identified in the Terms of Reference, and contrasts the outcomes.

The summary finds limited variation and contrast between grower and consultants views. Differences in views can often be explained by the viewer's perspective: growers have an enterprise based profit view while consultants mostly have a narrower commercial view related to their contractual client service arrangements.

Figure 22. Contrast between grower and consultant responses

	Grower Views	Consultant Views	Contrast of the Views
1. Is there need for extension services	○ Yes ○ Top farmers are aware of the need to address farming system risks; bottom farmers likely not aware ○ Want information services however they can get them for both cotton and grain crops ○ Most farmers want to cross check advice within own networks ○ Their lack of available time means operational manual tasks come ahead of knowledge/ information based planning tasks ○ Growers inclined to cite the additional information and regulatory imposts of government agencies	○ Yes ○ All are aware of the need for and value of good information to resolve farming system risks ○ More selective in their information sources and uses ○ By their nature they are more focussed on the commercial value of information and making that deliver client benefits ○ Like to use their consultant networks frequently ○ Aware there is significant variability in grower capability, motivation and need for information. Consultants only work for farmers who can afford their services and are so motivated	○ There is difference in approach to information but there is little difference in farming system objectives. ○ Growers see an enterprise profit perspective; consultants see a client service perspective bounded by their own skills. Consultants see that they are increasingly being used to manage farm profit, not just farming and operational practices. This moves them more toward the centre of cost effective extension design/ delivery for mixed farming systems. ○ As expected consultants are more focussed on the commercial value of information, and skilled at prioritising it for each client ○ Drought has meant growers have changed crop choices; consultants have adapted their services and livelihoods ○ Each group has a regard for the worth and contribution of the other. But the other/ negative comments from some cotton and many grain farmers who don't use consultants are not recorded. ○ Both see the need for a knowledge pathway which is closely and directly linked to grower networks and consultant networks ○ Both growers and consultants agree there is a need and broadly how to implement and manage joint services for grain and cotton
2. Is there need for a dedicated person	○ Yes ○ Border Rivers growers are focussed on how to	○ Yes ○ Border Rivers consultants are on how to structure	○ There is no disagreement on the core need for a person in each region and the management and employment structures they work within.

		structure/ fill this role.	and fill this role.	○ There are some local refinements as to the design of the arrangement in each region.
3.	**Extension priorities for mixed farming**	○ Extension priorities reflect growers perception of risks ○ Social changes/ farm succession are important as well as the farming systems issues.	○ Technologies and servicing farming system needs are the core elements	○ There is limited contrast between growers and consultant views ○ Growers tend to look more broadly across the enterprise issues that can be serviced by better extension, and consultants tend to focus on the narrower services within their commercial advisory relationship
4.	**Knowledge needs in the medium to long term**	○ Specific needs are detailed for grower and consultants in Figures 13 and 14. They are not repeated here.		○ There is limited variation between growers and consultants that cannot be explained by their perspective on the issues (as noted above).
5.	**Specialist services for mixed farming systems**	○ Specific needs are detailed for grower and consultants in Figures 18. They are not repeated here. Both groups see opportunity to share specialisation development costs across mixed farms.		○ There is limited contrast between growers and consultant views. However consultants include the insight that specialist services will only emerge and respond to commercial terms.
6.	**Delivery service methods required in various regions**	○ Specific needs are detailed for grower and consultants in Figures 19 and 20. They are not repeated here. ○ There were no negative comments about existing service delivery methods, rather that the structures supporting them in the McIntyre Valley were deficient.		○ There is limited contrast between growers and consultant views. ○ Both growers and consultants see mutually attractive opportunities in collaborating with the grains industry to improve farming systems on mixed farms. ○ Neither group has a strong understanding of collaborative opportunities beyond their sectors.
7.	**The grower perspective of farm management of climate change issues**	○ There are very few growers who exhibit understanding of climate change issues and impacts. As a result there is significant scepticism about the issues and impacts.		○ There is limited contrast between growers and consultant views.
8.	**The grower perspective on measuring on-farm carbon**	○ There are very few growers or consultants who have any substantial understanding of on-farm carbon issues and impacts. There is a shared perception that the current accounting frameworks are not appropriate not beneficially to farming.		○ There is limited contrast between growers and consultant views.

3. CONCLUSIONS

Focus Group responses from mixed enterprises in the two regions suggest a number of conclusions drawn from analysis of the service gaps and needs of the mixed farming community.

3.1 Collaboration between Cotton – Grain Sectors

Cotton and Grain industries currently maintain their own grower service arrangements, with some collaboration on a limited range of common farming system issues. Reduced water access and crop choice dynamics have resulted in the current situation where the knowledge pathway for mixed farmers in the two regions is disjointed and fragmented. This primary gap leads to a range of unmet needs across the resident mixed farming community. In response good farmers are able to fill the gap from their own motivation and resources, but most (estimated at >50% by facilitator) mixed growers are having to make do depending on their original perspective and capacity. Consultants have responded to commercial reality and changed their service offer to include grains, or left the industry.

The recommended solution is for greater formal and informal collaboration between cotton and grains bodies at the organisational level, and between cotton and grains industry networks at the valley level. Importantly closer formal and visible collaboration between the cotton and grain sectors and organisations will give confidence to all stakeholders. The benefits from collaboration will accrue to mixed farmers, regional farmers' networks, consultants servicing the irrigated grains industry and the cotton industry, consultant networks and local communities.

The recommended basis for such an arrangement would be a formal agreement between cotton and grains industries to collaborate and co-invest on a number of specific mixed farming projects over a 2-3 year timeframe in each of the Darling Downs and McIntyre Valley farming regions. These projects should address high priority shared risks.

Assessment of the scope and resources of the Extension Management Role across cotton and grains should be undertaken as part of the process.

The opportunity exists to collaborate more closely with the livestock industry on mixed farm projects. However this opportunity has received limited support from this round of focus groups and should be considered a lower order priority.

3.2 McIntyre Valley Extension Structures

There is a gap in the extension service performance in the McIntyre Valley. The need is for greater structure in the knowledge pathways supporting mixed growers in the valley. Existing networks in the grower and consultant community are active but their effectiveness is limited for a number of reasons - growers are time poor, grains acreage is increasing but resident facilitation/ extension services only support dryland grains, cotton staffing has been problematic, etc.

A number of solutions have been offered and discussed, including reinvesting in area wide management structures, part time consultants retained in the position, greater investment in grower and consultant networks, and collaboration with existing local GRDC officers. These are potentially attractive options.

Regardless of the option (or combination of options) chosen it is recommended:

1. An IDO be appointed for the region as soon as possible
2. The appointment be established initially as a relationship and network building initiative for growers and consultants
3. The appointee be for a mature and experienced person dedicated to facilitating the knowledge pathway in the valley, possibly part time
4. The appointment be contract based on a career progression, role specifications and outputs that link to project joint CRDC/ Cotton CRC-GRDC KPIs over 2-3 years
5. The appointee report to joint cotton – grains industry bodies, and local mixed farm grower groups.

3.3 Knowledge Pathway Engagement

As innovation uptake assumes the primary role driving mixed farm viability, it is the level of engagement of the mixed farm enterprise with industry knowledge pathways and networks that becomes critical. As knowledge diffuses from specialists, experts and early adopters to majority audiences, face-to-face communication therefore becomes more essential to the decision to adopt. This principle illustrates how face-to-face communication and informal networks become more influential over time, and mass media and other "push" approaches less influential.

In the target cotton and grain regions there are potentially significant numbers of mixed growers who have limited engagement in the knowledge pathways currently used by the cotton and grains industries. Consultant responses suggest the numbers may be as high as 30% of mixed growers. While this proportion of laggards is typical in the literature[5] and for most rural and marine industries, the impact on industry and regional productivity and output is significant. A number of grower responses noted the risk to regional infrastructure maintenance and retention if tonnages shipped slipped even further.

Opportunity exists to generate greater regional productivity from mixed enterprises by a collaborative cotton – grains initiative to all mixed farmers.

It is recommended that regional IDOs/ facilitators be given greater support and resources to engage with these so called laggard enterprises and enable them to target and establish social and farming practice links to networks maintained by local farmers and consultants. This is then the primary gateway to their increased awareness of and uptake of improved farming practices.

We suggest a framework and possible actions to develop specific extension approaches to target farmer subgroups, in Figure 23. It is beyond the responses and scope of this project to make further assumptions without more comprehensive knowledge of farmer needs.

Figure 23. Farmer Engagement Matrix

Farmer Cohort	Extension Approach	For Day to Day Knowledge	For Innovation Knowledge	For Future Solutions Knowledge
1. Innovators	Participative communication	• These farmers will have already mastered these day-to-day issues • Small group learning	• These farmers may have already mastered these innovation issues,: if not ensure they are offered brain stretching workshops and small group networking opportunities	• Enable and promote close working relations between these farmers in small groups/ workshops and with experts/ specialists
2. Early Adopters	2 way communication	• These farmers will likely have already mastered these day-to-day issues; if not ensure they are aware of and accessing full value from consultants and farmer networks	• Provide these farmers with small group people based events and learning/ education/ field day opportunities for self improvement and farm improvement	• Create genuine opportunities for these farmers to read about future issues and engage face to face in small and medium sized groups with experts and specialists
3. Early Majority	Both 2 way & 1 way communication	• Ensure these farmers have the awareness and skills to access web/ computer data and consultant services • Ensure they are networked with *Innovators* and *Early Adopters*	• Maximize the opportunity for these farmers to meet and network (small and large groups) with trusted farmer peers/ *Innovators/ Early Adopters* and networks of consultants	• Maximize the opportunity for these farmers to meet with trusted farmer peers/ *Innovators/ Early Adopters* and network with industry experts and specialists about big issues
4. Late Majority	Primarily 1 way communication, with enticements to 2 way communication	• Develop local case studies to demonstrate benefits of better engagement • Provide incentives that will enable these farmers to join in networks with farmers and consultants and overcome their scepticism	• Provide opportunity for these farmers to access local case studies/ straight forward brochures/ displays/ facts that prove the worth of key data • Overcome their scepticism through initial one-to-one communications that offer broader network engagement	• Pick an issue that these farmers agree is critical to their long term viability and engage experts and specialists to work with them on the solution on a local farm • Offer the opportunity for these farmers to meet with *Early Majority* farmers
5. Laggards	Legislative	• It may not be cost effective to try to change the behaviour of these farmers. • Go for the low hanging fruit – demonstrate one-on-one that their rejection of a major change is damaging their business	• Stick: Communicate regulations and penalties • Carrot: Ensure these farmers have opportunity to engage with farmer networks on their terms and relevant printed case study material	• These farmers may not believe there are any real ways to manage future risk. • They may actively reject opportunities to engage with experts and specialists, and their proxies (CRDC/ CRC/ GRDC)

[5] Source: Mahajan, Muller and Bass (1990) as reproduced in Rogers, E.M. (2003) p210.

The support provided would enable the creation and or rejuvenation of Area Wide Management Groups (or similar) which would target day-to-day information sources and on-farm innovation. These groups would then subsequently be the forums for seminars to increase awareness of issues and impacts flowing from carbon emissions and trading for lower performing farms.

3.4 Role of Consultants

Analysis of focus group responses has highlighted the importance of consultants and their professional networks to mixed farming enterprises.

Individual consultants are often seen by growers as trusted and valuable contributors to their client's farm management team. Consultants also have noted that they are increasingly being drawn by farming clients into the management of farm profitability, a role beyond taking them beyond typical day-to-day operational advice. But it is not clear that this greater role for consultants is being driven by an increase in their professionalism and capacity, or whether it is simply time-poor mixed farmers seeking to handoff part of their day-to-day profit management role so they themselves can do more manual operating roles (rather than employ other farm workers). A greater sample size is required to clarify such a conclusion. Either way the need is evident – farmers want greater access to consultants and their networks.

The gap related to this need is that many growers are not easily able to access grower or consultant networks. From the focus group responses this engagement gap appears most obvious in the Border Rivers Region where responses indicate the grower networks have weakened, partly as a result of churn and skills leakage in the region's IDO employment arrangements. This gap in grower engagement is not so evident in the northern or southern Downs Regions.

It is recommended that the primary purpose of a newly appointed IDO/ facilitator in the McIntyre Region is to rebuild and extend regional consultant contributions and networks, and mixed cotton and grain grower engagement to those networks. The finer detail as to the priority issues taken up by the networks should then be discussed and confirmed locally by a broader engaged cohort of mixed farmers, consultants and Extension Managers.

3.5 Cross Sectoral Specialists

Focus groups believe the need for specialists will continue in the cotton and grains industries in response to new scientific discovery and technologies.

There are a number extension issues that growers believe will become increasingly important to the viability of mixed farms, including; water access and management through to profit, precision farming; and soil carbon and health. Currently each industry invests in and supports its own specialists in farming systems, with some limited sharing of expertise. However there are many farming system risks common to mixed cotton and grain farms.

A further important cross-over issue for joint consideration is the extent to which the roles of consultants becomes more specialised. It is clear from responses that this trend is emerging, but within the limits of private commercial arrangements between a grower and a consultant. The emergence and popularity of corporatised mixed farm extension teams is further evidence of this grower need for specialisation in services.

It is recommended that cotton and grain organisations jointly assess the emerging needs for shared specialised knowledge more broadly and consider industry capacity, both public and private, to service these needs costs effectively in the future.

For example joint projects could be more cost effectively undertaken on:

- Grower network extension and support
- Water management tools on mixed farms that link directly to enterprise profitability
- Precision farming tools on mixed farms that also link directly to enterprise profitability
- Climate change impacts and on-farm carbon issues and impacts, and understanding of climate change impacts and carbon accounting for growers and consultants – an over the horizon perspective. Such a project would also benefit from significant input from state agencies.

3.6 Community Awareness

Cotton and grains industries have invested heavily in recent years in engaging with their regional communities and constituencies. They each maintain independent media and community advisory services. These services will become increasingly valuable in assuring communities (local and urban) that farmer use of the rural land and water resource is viable and sustainable. This should be continued and supported, together with other joint cross industry projects and related media initiatives.

However with an increase in the proportion of mixed farms in some communities opportunity exists for greater regional media collaboration to deliver messages that are more targeted to the mixed enterprise and cost effective for the ultimate levy payer.

It is recommended that cotton and grains industry bodies consider joint newsletters and media releases targeted to mixed farming enterprises.

Appendix 1.

TERMS OF REFERENCE

COTTON GRAINS INDUSTRY FOCUS GROUP CONSULTATION
DARLING DOWNS & BORDER RIVERS
Terms of Reference

Background
The partners that have been contributing to extension services in the Darling Downs and Border Rivers are interested in the following:

- Understanding how best to assist growers with aspects related to the resilient farming systems including the adaption to climate change issues.
- What opportunities do these positions present for collaborating in farming systems, resource management, climate change and on-farm carbon management (as linked to Greenhouse Gas emissions).
- If there is a need to specialise in one area of particular relevance to the local region or industry.
- Potential collaboration within this space could involve:
    - QPIF, CRDC, Cotton CRC, GRDC, federal agencies and Catchment Bodies.

Objectives
The partners in this shared space would like to have the following evaluated:

1. Is there a need for extension services (not just a want for a physical person).
2. The mixed farming system (including cotton, grains or grazing) highest priorities associated with the Darling Downs and Border Rivers regions.
3. The needs in the medium to long-term (3-5 years plus).
4. Is there a real demand for specialist services, in lieu of general services.
5. What delivery methods are required in various regions.
6. What is the grower perspective of farm management of climate change issues.
7. What is the grower perspective of measuring on-farm carbon.
8. Is the view of requirements different between growers and consultants.

Required participants
Growers and consultants involved in mixed enterprises (including Cotton, Grain and Grazing).

Proposed Facilitators

- An independent with understanding of mixed cotton farming systems, with particular regards to cotton and grains industries.
- Suggested: Ewan Colquhoun

Format
Facilitated grower and consultant meetings
Proposed:

- Darling Downs – 2 grower groups (north & south), 1 consultant group.,
- Border Rivers – 1 grower group, 1 consultant group
- 4 hours per meeting.

Reporting
A report on the outcomes and feedback from all meetings is required. The report should attempt to

- Draw out current priorities for cotton farming systems.
- Where the perceived gaps and needs are for these farming systems.
- What is similar or differs from the gaps/ needs for grains and grazing.