

# Towards an Innovative Cotton Workforce

Measuring and Reporting the Value of  
Capacity Building to Improve Cotton  
Industry Personnel Outcomes / ROI

Project CRDC 1701



Jeff Coutts and Gordon Stone  
**June 2019 Final Report**

# ACKNOWLEDGEMENTS

This project has evolved over the last 3-years to address a range of increasingly complex social factors emerging in the Australian Cotton industry. Quite apart from evolving technological changes, there has been an increasingly adverse affect of worsening climatic conditions.

A comprehensive suite of projects is being undertaken in the social research genre by range of researchers under the auspices of the (former) CRDC People Program. During the life of the project, the new CRDC Strategic Plan (2018-2023) was launched and its priorities took effect from July 2018.

Likewise, increasingly focused work by Cotton Australia (and supported by programs such as the Cotton myBMP Program) has occurred in the 'people space', encompassing education and training. There has been an increasing effort directed to ensuring that there is definable impact from the work and value for money is being delivered (and reported) to cotton growers (and the wider industry).

During life of the project, the People Program Coordinator, Rachel Holloway moved to the USA; changes were implemented in the Cotton Info Program, plus increased interest in and focus on the impact of people issues was demonstrated by other organisations (including Queensland Farmers' Federation and Cotton Australia).

A People Program Steering Committee oversaw the People Program from beginning to end, with a particular focus on the integration of all the projects being undertaken under the People Program.

In some respects, this project proved to be of significant interest to researchers and members of the People Program Steering Committee because of this focus on impact and the development of metrics to allow measurement of success and impact (of investments) around social issues.

The project's focus on the needs of farmers and the agribusiness sector (to acquire, manage and retain high performing personnel); demonstrating a methodology for determining an ROI for professional development and training of personnel in industry; plus developing a monitoring, evaluation and reporting framework with definable metrics to be able to demonstrably support the level of success; was quite innovative.

As a result, the evolution of the project proved to be relatively challenging. And yet, there was significant goodwill amongst all those closely engaged in the project. There was a desire to support evolution of the project as was required to achieve a valuable result in measuring and supporting industry change.

Accordingly, the Directors of QualDATA particularly acknowledge the support of Rachel Holloway, Ian Taylor, Angela Bradburn, Warwick Waters, Rick Kowitz and members of the People Program Steering Committee as this project evolved over time.

We particularly hope that the results of this work can support the establishment of key benchmarks to measure the success (in an objective manner) of the value of training and professional development on-farm and in the wider industry; plus to evaluate in a more objective manner the success of people related and social research work for the cotton industry.

## **QualDATA Team**

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*June 2019*

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# REPORT SNAPSHOT

## Purpose

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The Cotton Research and Development Corporation (CRDC) Strategic Plan 2018-2023 Goal 3 calls for 'building the adaptive capacity of the Australian cotton industry to enable the industry to achieve its future vision'. It is noted that ... *in addition, we will provide our industry stakeholders with opportunities to develop and advance innovation skills. CRDC RD&E investments will prepare Australian cotton growers for our changing environment and provide them with the skills to adapt to those changes.*

In 2015/16, it was recognised that significant technological advances were unfolding in an expanding Australian Cotton industry. Likewise, previous research had identified a nexus between an available skilled, capable, competent and professional workforce to meet these emerging needs. Thus, the rationale for this project was based on the premise that a skilled and capable workforce is known to contribute to the industry's profitability, sustainability and competitiveness.

However, the extent of availability of such a workforce to the range of cotton growers (from small to more corporate enterprises) as well as to the support sector (in particular the agribusiness advisory sector) and its capacity for, and methods of, professional development were largely unknown. Equally, ways of measuring the return on investment (ROI) and impact of undertaking forms of training, education, skill development and professional development were somewhat rudimentary.

Through the CRDC managed People Program (also representing Cotton Australia or CA), there was a demonstrated need to understand more about how skill development and professional development was undertaken. Similarly, ways of measuring impact and value for money of these initiatives, to provide objective measures of success (on-farm, in businesses and for research work) was also required. As result, a Monitoring, Evaluation and Reporting (MER) process was developed to measure the impact sought.

## Project Objectives

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### **The objectives of this project were to undertake research to enable:**

1. Cotton businesses to understand the value of improving the capability of their workforce.
2. CRDC to assess and report on the impacts of its investments via defined metrics in developing human capacity through investments in its People Program, while aligned to the new Strategic Plan.
3. The Australian cotton industry to make informed investment decisions to produce the skilled knowledgeable and progressive workforce it requires to continue being a profitable, sustainable and competitive industry.

### **The Project Outputs were:**

- An Instrument to support cotton industry employers in measuring the return on investment/value of putting time, effort and money into skill development or professional development of their personnel (now proposed to be incorporated into the Cotton my BMP Program), and
- A MER framework on which a Return on Investment (ROI) or a Benefit: Cost Analysis (BCA) could be undertaken to measure the success of social research funded by the industry.

### **The expected Project Outcomes were:**

- The capacity for employers to make more informed judgements about the value of skill development, training, education and professional development being undertaken in both formal and informal modes by their personnel and paid for by business owners,
- A simple framework for Cotton growers (and agribusiness) employers to assess the value of staff development and professional development; and
- A series of metrics (measures of success) and methods of evaluating success, against the updated cotton industry MER Framework, resulting from this project.

In turn these outputs and outcomes allow the cotton industry to make more informed judgements about assessing the return on investment or impact of projects and activities against the levels of success sought in the CRDC Strategic Plan or other plans / strategies.

## Methodology

The methodology used in this research was guided by a People Program Steering Committee and was modified as the research progressed to meet evolving needs informed by the research and industry factors affecting the project evolution.

### **The approach used followed a research pathway of:**

- Review of past People Program projects funded by CRDC (establishes metrics).
- Exploratory interviews with growers and agribusiness in the Namoi Valley (refines metrics).
- Insights sought from other industry personnel / workers such as those from/managing the Cotton myBMP program; Cotton Australia, Qld Farmers Federation, etc (refines metrics, scale and scope of RD&E work being undertaken and proposed) and applied programs.
- Literature Review (refines metrics, in context of scale and scope of RD&E work previously undertaken).
- Review of the pre-project and initial Monitoring, Evaluation and Reporting (MER) Framework used as the basis for the 2013-2018 CRDC Strategic Plan Workforce Capacity Program (insight into previous metrics, understanding the basis for assessing the success of previous capacity building RD&E work).
- Further development of a MER framework (based on development of metrics, key success factors, impact measures and benefit: cost analysis parameters to inform development of the framework).
- Interviews/case studies with more advanced (in terms of personnel management) cotton growers and agribusinesses across a range of enterprise types and regions (in order to test the efficacy of the unfolding MER framework, against its application by more thoughtful, 'people focused' employers). (This subsequently included insights into more advanced holistic business management).
- Insertion of research questions into the workforce section of the Cotton Grower Survey 2018 (246 responses) in order to expand the reach and understanding of key factors affecting the employment of cotton industry personnel by employers.
- Regular engagement of the QualDATA team with the People Program Steering Committee (to ensure the emerging process and results were fit for purpose).
- Undertake work-shopping of the emerging results with a final group of users – in the research community, amongst employers and CRDC and CA personnel (to ensure ultimate fit for purpose and fine tuning of the emerging measurement tool, metrics and MER framework).

# Key Findings

To achieve the project outcomes, a number of key tasks were undertaken, over time, during the course of the project. Collectively, they create the somewhat complex picture required to understand how the management of personnel and their capacity building is best reported to demonstrate value for money from training, skill development and professional development.

Further detail is reported in the body of, and attachments to, this report. Summary Key Findings are:

## Industry Metrics

Industry workforce metrics developed from secondary report analysis and endorsed from interviewed stakeholders are shown in the following Table.

Level	Performance Area	Potential Metrics
<b>Individual</b> <b>[all levels]</b>	<ul style="list-style-type: none"> <li>Confidence in work</li> <li>Career pathway</li> <li>Satisfaction</li> <li>Loyalty/commitment</li> <li>Longevity / health</li> </ul>	<ul style="list-style-type: none"> <li>Rating of job satisfaction, confidence, competence and career opportunity</li> <li>Supervisor satisfaction</li> <li>% of personnel x demographic staying in the industry for 5, 10, 15 years +</li> </ul>
<b>Farm or organisation</b>	<ul style="list-style-type: none"> <li>Improved workplace loyalty, satisfaction, culture</li> <li>Improved work efficiency</li> <li>Improved work safety</li> <li>Reduced turnover and staff replacement costs</li> <li>Improved productivity</li> <li>Improved profitability</li> <li>Taking a business interest</li> <li>Initiatives used</li> <li>Employer professional development</li> </ul>	<ul style="list-style-type: none"> <li>% staff turnover x demographic</li> <li>\$ staff turnover cost</li> <li>% contribution x change in work efficiency and safety</li> <li>% contribution to increased productivity and profitability</li> <li>Return on Investment</li> <li>Productivity per employee</li> <li>Profit per employee</li> <li>Rating of culture at work</li> <li>Number of reported incidents</li> <li>Number of innovations introduced at work</li> <li>Degree of skill mismatch?</li> <li>Right people for the required tasks?</li> <li>Capacity of business owner/employer to anticipate future industry changes and plan accordingly</li> </ul>
<b>Industry</b>	<ul style="list-style-type: none"> <li>Development of leaders</li> <li>Pool of skilled and professional workforce</li> <li>Industry of choice</li> <li>Improved strategic decisions</li> <li>Culturally identify as a cotton grower / adviser</li> <li>Have capital investment in the industry</li> </ul>	<ul style="list-style-type: none"> <li>Numbers of industry personnel on boards, committees</li> <li>Changes in pool of skilled and professional staff working in industry x demographic x role type</li> <li>Degree of skills mismatch (do we have the right skilled people?)</li> <li>Educational attainment increased</li> <li>Technology uptake increased</li> <li>Level of industry business growth – at farm and agribusiness level – to meet future needs.</li> </ul>

In this context it is noted that the CA AgSkills project is also seeking alignment with these metrics.

## Metrics for Funded People-related (Workforce) Projects

Proposed metrics for evaluating clusters of projects funded to improve workforce capacity are summarised in the Table below (a full M&E Logframe is included in the Attachments).

Clusters		Performance Measures
1	Projects designed to educate, interest and attract students, graduates and other workers into the cotton industry and workforce.	<ul style="list-style-type: none"> <li>Number and type of students, graduates and/or targeted and engaged workers showing a gain in understanding about the industry, an (increased) interest in working in the industry and who enter the industry as a result of the project intervention.</li> </ul>
2	Projects designed to develop the professional and leadership skills of those already in the industry and its workforce.	<ul style="list-style-type: none"> <li>Number and type of professional staff, owners and managers who undertake higher level strategic management and leadership training across the industry and indicate gains in outlook and skills and take actions to implement new approaches in their area of expertise and role.</li> </ul>
3	Projects designed to provide specific planning and operational skills and abilities of managers and workers in the industry and its workforce	<ul style="list-style-type: none"> <li>Number and type of owners, managers, staff and workers (and their locations) who undertake different levels of training and indicate gains in their knowledge and skills and who take actions to implement improvements in their approach to farm advice or operational decision-making on-farm – and the impact of those changes on efficiency and productivity.</li> </ul>
4	Projects designed to impact on policy and strategic approaches to supporting the required mix and capacity of the industry workforce	<ul style="list-style-type: none"> <li>The extent of influence and use project outputs have on policies, decision-frameworks and funding decisions and the impact on project effectiveness.</li> </ul>

## Farm and (Agri-) Business Level Metrics

Metrics relevant to assessing potential farm and agribusiness benefits from training, skill development, etc identified from developing staff capacity during this research are shown below.

Targeted Benefit		Performance metric
1	<b>Met legal requirements</b>	<ul style="list-style-type: none"> <li>Number/percentage of staff having relevant required certificates to undertake tasks they are required to do (goal – 100%);</li> <li>Inspections demonstrating full compliance (goal – 100%).</li> </ul>
2	<b>Reduced accidents and time off</b>	<ul style="list-style-type: none"> <li>Number and type of accidents and damage (goal – 0%);</li> <li>Number of workdays lost as a result of accidents (goal – 0%);</li> <li>Cost of machinery and equipment repairs required due to avoidable damage (goal – 0%).</li> </ul>
3	<b>Reduced employee turnover and succession</b>	<ul style="list-style-type: none"> <li>Number/percentage of staff that left the enterprise in the year prior to expectations/initial understanding (goal – 0);</li> <li>Number of years that permanent full-time staff stay in the enterprise and take on increasing levels of responsibility (goal – all of those seen as capable);</li> <li>Number/percentage of staff who left the enterprise in the year to move to another (higher level) role in the industry (goal – all who leave).</li> </ul>
4	<b>Reduced time to</b>	<ul style="list-style-type: none"> <li>Extent to which managers and supervisors are confident that a staff member</li> </ul>

	<b>complete jobs</b>	<p>can efficiently and effectively undertake a given task with no or minimal supervision (goal – 100% once training provided);</p> <ul style="list-style-type: none"> <li>• Expectations/deadlines are met in terms of completing tasks on time or more quickly (goal – 100%).</li> </ul>
<b>5</b>	<b>Improved quality of work and crop</b>	<ul style="list-style-type: none"> <li>• Extent to which staff demonstrate understanding and take initiatives related to on-farm/business operations (goal – high level of demonstration);</li> <li>• The extent to which staff skills and initiatives are seen as having positively contributed to an improved crop or business outcome (goal – perceived to be greater than 10% impact).</li> </ul>
<b>6</b>	<b>Ability to introduce new technologies</b>	<ul style="list-style-type: none"> <li>• Extent of confidence of manager in introducing new automation and technology with existing staff (goal – very high);</li> <li>• Extent to which new automation/ technologies have been introduced largely relying on staff capacity (goal – very high).</li> </ul>
<b>7</b>	<b>Hastening innovation/change</b>	<ul style="list-style-type: none"> <li>• Evidence of increasing efficiency and entrepreneurial changes within the business (goal – change happens on an annual basis);</li> <li>• The extent to which employees have contributed to significant strategic and systems changes to the business. (goal – high).</li> </ul>
<b>8</b>	<b>Improved productivity/profit</b>	<ul style="list-style-type: none"> <li>• Farm/business productivity and profitability increases over time relative to regional and seasonal benchmarks (goal – steady improvement).</li> </ul>

During this project it became apparent that professional development of business owners themselves, particularly in wider business management, is a missing consideration.

## Applying these Metrics at a Higher Level

The project sought to consider what the implications of applying these metrics on-farm and within agribusinesses were. While it proved difficult to establish quantitative (in particular financial) benefits, a suite of readily definable qualitative benefits emerged. It became apparent that leading businesses look for both quantitative and qualitative benefits.

Owners/managers of cotton farms and agribusinesses recognised as being more advanced in developing the capacity of their workforce reported strong benefits as being:

- *‘Beyond the certification requirements, on-farm training is (more) important than formal courses’.*
- *‘There is a need to recognise that staff capacity development takes time and needs support and direction – and for them to see a career pathway ahead of them’.*
- *‘Going beyond the statutory training is important to deal with new technologies and challenges’.*
- *‘Senior staff need to see their role as developing and supporting less skilled staff’.*
- *‘(It is important to) Support individual staff interests with training and mentoring to develop their capacity to better contribute to the business and advance them in the business as they are ready’.*
- *‘Employing personnel on ‘attitude’, meaning when the soft skills are in place, the hard skills can be added more readily’.*

# Conclusions from these Key Findings

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The work emerging from this project is reported in considerable detail in the body of this report. Reflecting on the project objectives and in order to make sense of these findings, a number of key conclusions can be drawn; namely:

1. **The evidence for the ‘value proposition’ of supporting ‘staff development’ (including skills development, capacity building and wider professional development) is fundamentally positive, even though the data acquired from this project is largely qualitative, based on logical arguments and quite intuitive.** Even though this is a mainly qualitative outcome, there was consensus from the project findings that the value proposition around active ‘staff development’ it is particularly compelling. This consensus provides a strong basis for managers across all cotton sectors to give the matter of ‘staff development’ serious and focused attention.
2. **While the quantitative evidence to support the value proposition regarding ‘staff development’ is more anecdotal (and varies widely) as calculated from this project, several datasets do exist that provide robust quantitative data to support this case.** Specifically data from the 2018 Cotton Growers’ Survey reveals that 72% of growers who responded to the survey considered that skilled employees had greater than 10% impact on the yield and quality of the 2018 cotton crop (especially in the medium and larger farms) – with a weighted average between 40-50% impact.
3. **There is considerable complexity when considering the value from the ‘staff development’ / training / support reported from the project.** This is due to the different types and levels of skills, each with their own contribution to the enterprise needs at the time. Furthermore, there are different ways of providing skills ranging from: on-the-job training; competency certificates; delivered information and activities; mentoring; interactive staff reflection sessions; and formal education / extension.

To add to the complexity, a combination of these methods of staff development can be used at any one time or over time, often due to circumstances unfolding in the business operation. In this case, the intuitive element and so-called ‘on-demand’ (as requested or determined at the time, may be a combined decision between personnel and employer determining a more immediate need) as opposed to ‘structured’ (planned and organised well in advance) staff development adds to this complexity.

4. **The enterprise’s management (or leadership) philosophy has a significant impact on staff development.** The ability of business owners, farm managers and managers in general, (in terms of how staff are viewed as a resource and human beings, including their interpretation of the value proposition), influence the steps taken and implemented (including on-demand and structured staff development) and has a significant impact on how staff development is viewed and implemented.

For the purposes of this project the philosophy of management in staff development was regarded as being one of three possibilities, namely: People As Components; People As a Production Team; or People As an Innovation System. Likewise, insights gained from more advanced cotton grower and advisor business owners show how the effect of a wider understanding of the business side of managing the enterprise could contribute to managing personnel more effectively. This is expected to facilitate how best to address expected industry technological and other changes as they unfold over time.

5. **Recruiting and managing the right staff for the enterprise is a key concern of managers and is a fundamental to have in place to permit effective staff development.** During the project, a logical (and simplistic) personnel management sequencing and flow was identified, namely: Plan, Get, Manage and Retain (called the Personnel Sequence). While simplistic, this was a somewhat profound realisation for some of the even more advanced business owners and managers.
6. **There is a strongly perceived need for a Cotton Industry-Wide Approach to addressing skilled workforce needs.** This concept of an orderly, industry-wide, collaborative, collective and innovative approach to The Personal Sequence emerged early in the project. The proposal was to initiate a Cotton Industry Personnel Roundtable to discuss how best to collectively create access to and manage appropriate personnel well into the future.

While initially dismissed as being outside the scope of this project, the concept of a collaborative collective industrywide approach continued to emerge during the remainder of the project. As result, it must be bought to the attention of cotton industry decision-makers.

Such an Approach ought to also consider how best to implement a culture of continuous learning, professional development and implementing business best practice. This is particularly appropriate, especially in context of the expected emergence of the enterprise management philosophies of People As A Production Team and People As an Innovation System as they become the industry norms over time.

Key project outputs include the: *Map of Workforce Capacity Building Steps and Benefits* – also captured on-line as a separate training tool ([view it here](#)); the proposed extra Level 3 personnel management practices, checklists and resources to be added to Cotton myBMP; metrics for use at industry, project and enterprise levels and evaluation frameworks. These outputs are included in the transition from this Report Snapshot to the body of this report. Likewise, a schematic of *The Personnel Sequence* is also included.

The project outcomes represent significant industry value in being able to consider how capacity building initiatives can be assessed more effectively to consider their return on investment or impact against a series of objective measures.

Finally the increased industry awareness regarding personnel management (to the extent of seeking some form of 'roundtable discussion') represents a strong positive move to address what appears to be an emerging industry limitation.

## Recommendations

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This project sought to understand the value (and consider the ROI or benefit: cost) of improving the capability of the wider cotton industry workforce. It also sought to establish relevant metrics so that business owners and managers (cotton managers) can make informed investment decisions about how to improve the capability, knowledge and capacity of their workforce now and into the future.

Furthermore, it sought to support CRDC (and the wider industry) to assess and report on the impact of its investments in the People Program. This principally aligns with Goal 3 of the CRDC Strategic RD&E Plan, 2018-2023.

A range of Key Take-Home Messages were identified from the research – covering accessing adequately skilled personnel (for growers and advisers), considering types of enterprises and their particular needs (looking to the future), performance metrics, factors affecting future industry trends, cultural change is required, supporting business expansion, how skill development/professional

development can best occur, implementing appropriate personal management practices and managing industry change.

It appears critical for the wider industry to have some understanding of how best to address the necessary change emerging from this project and the key findings – and for an integrated approach to be taken to support future skill and professional development of key industry personnel.

#### Recommendation

1. *That mechanisms are created to encourage further discussion, resource development, training and skill development to develop cotton manager's understanding of the requirements to develop a more innovative and entrepreneurial workforce; to recognise the skills required to manage personnel in a more empowering and interactive manner and bring in outside (the cotton industry) expertise to support this process.*

The research identified a Personnel Sequence which it expects will inform different types of Enterprise Management Philosophies resulting in either On-Demand or Structured personnel development processes. It also identified a need to provide training in the 'higher-level' personnel management skills such as better involving staff in planning (based on their skills and experience), mentoring approaches, providing rewards and leadership.

#### Recommendation

2. *That advanced personnel management skills and training is developed and piloted (and hence evaluated) for owners/managers of cotton farms and for agribusiness.*
3. *That strong consideration is given to educating cotton managers on the implementation of The Personnel Sequence in context of having/developing an appropriate Enterprise Management Philosophy (to support personnel management and skill development).*
4. *That these advanced personnel management skills are developed with appropriate checklists and support resources for inclusion in myBMP (mostly Level 3).*

A range of Performance Metrics were identified to inform development of a MER Framework (see Attachments). Its purpose is to support ROI and benefit: cost assessments. A range of M&E methods were also identified to support data acquisition. This includes proposed future use of industry wide data gathering methods.

#### Recommendations

5. *That the CRDC Cotton Grower Survey is used as a vehicle to benchmark progress on key industry personnel management issues.*
6. *That a parallel wider cotton industry survey process is investigated and implemented to continue to benchmark key workforce management metrics elsewhere in the value chain – which can build on the Crop Consultants of Australia annual survey.*

Concurrently, establishing a culture of monitoring and evaluation and reporting is proposed to be embedded in industry RD&E processes and also the Cotton my BMP program.

## Recommendations

- 7. That a further project step of implementing the M&E methods outlined in the MER framework is rapidly embedded in appropriate industry organisations, including CRDC.*

During the project, a significant number of industry respondents sought wider discussion around how best to adopt key project findings and make changes to their businesses, including adoption of a stronger focus on business best practice and more robust professional development (the subject of this report/project) which supports capacity building.

## Recommendation

- 8. That the underlying theme of understanding and implementing business best practice becomes more overtly addressed due to its emergence as an unseen industry limitation.*

They called for a Cotton Industry Personnel Roundtable to be held as a way of expanding communication, thinking strategically about issues and maintaining future momentum.

## Recommendation

- 9. That a Cotton Industry Personnel Roundtable is held as a way of ensuring significant industry wide discussion is undertaken on the key issues emerging from this project – both within and outside the scope of the project brief.*

It is now apparent that the Cotton Industry Personnel Roundtable assumes increasingly higher importance in driving the industry's futuristic thinking about personnel than first considered in this project. This particularly relates to attracting sufficient quality and quantity of young people, of supporting appropriate best practice business management (as opposed to production) of business owners and managers and of the other matters that emerged in this project (and across other current and relevant industry work).

In summary, this project sought to provide insights around capacity building initiatives relevant to current and expected future personnel required to service unfolding cotton industry needs. While primarily focused on cotton growers, it also included agribusiness advisors to appreciate limitations in the value chain which might adversely affect future development of cotton grower businesses (noting the recent development of the Ag Institute Australia professional advisor accreditation process).

To quantify the value and benefits of capacity building initiatives (from specific skill development to wider professional development for higher performing personnel), a MER framework was developed based on a range of metrics acquired as result of industry consultation and access to industry data.

The next steps are to embed methods of data collection and reporting on levels of success in capacity building initiatives (in industry organisations, particularly CRDC and amongst cotton managers).

# Industry response

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Members of the People Program – and a group of Informed Persons (contributed to the project) – reviewed the draft report on 30 May 2019 and provided insights (see Attachment 4) on the following issues as being critical for consideration in a wider industry context:

- Implementation of the Tables of Metrics, the Map of Workforce Capacity Building Steps and Benefits; the Philosophy of Management in Staff Development and The Personnel Sequence – all represent critical key findings/project outcomes worthy of wider and continuing industry consideration (to better understand personnel management issues which will prove pivotal to the future of the industry).
- Develop an industry wide strategic thinking mechanism such as the Cotton Industry Personnel Roundtable – which has the purpose of addressing how to access and manage increasing numbers of technologically adept, appropriate personnel round the ages of 35 years (a proposed Brains Trust), implementing the soft skills (changed business management and business culture), supporting business owner/managers in the change process (consider experiences in other sectors; such as the ABDI business coaching and mentoring process) and other matters emerging from this/other projects.
- Ensure critical synergies between industry projects – to ensure futuristic personnel management, business management/development and industry development remains on track in the rapidly changing global and domestic marketplace.
- Support the evolution of the Cotton my BMP program – and recognise the importance of professional development and professional accreditation required for the industry (including the advisory sector and elsewhere in the value chain – see Recommendation 6).

They encouraged rapid industry consideration and implementation of these matters, including structured and tailored skill development of key industry personnel segments (on farm staff, advisers and business owners / managers).

This included the soft skills of business culture, remuneration, personnel acquisition and retention; etc as being pivotal as the industry looks forward to a more technologically focussed setting.

# Indicative extra my BMP Level 3 Practices for the HR&WHS Module

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Cotton myBMP is currently being revised and there is an opportunity to include extra Level 3 HR practices in the revised Module. The *indicative* additional practices that come out of this research relevant to the Module are as follows:

- i. Employees are viewed as key contributors to decision-making and planning in the farming system and a process is in place to include them in line with their roles and experience.

## Checklist

- Managers provide an overview of the farm enterprise to new employees which includes the 'vision' for the farm in the future;
- Staff have a clear understanding of their roles and that of other employees as well as clarifying where there is scope for proactive input;
- Managers provide a regular update on issues, opportunities and decisions needed in relation to farm operations;
- A system is in place for regular discussion and feedback from staff;
- Experienced staff are offered opportunity to comment on consultant recommendations in line with their understanding of specific farm/paddock needs.

- ii. Owners/managers have the training and/or acquired skills in leadership and ('higher-level') personnel management to ensure that staff are efficiently and effectively deployed, clearly understand their roles, are provided with the necessary skills and support they feel valued and rewarded.

## Checklist

- Managers undertake professional development in higher level personnel management skills and/or have competence in these skills through experience and practice;
- There is a personnel plan in place for the farm specific to the current staff which shows their roles, experience and responsibilities;
- There is a mentoring system in place where new staff are formally linked with a more experienced staff member and/or the manager to guide capacity development and contribution to the farm;
- A reward system is in place which acknowledges those staff who contribute positively to the farm.

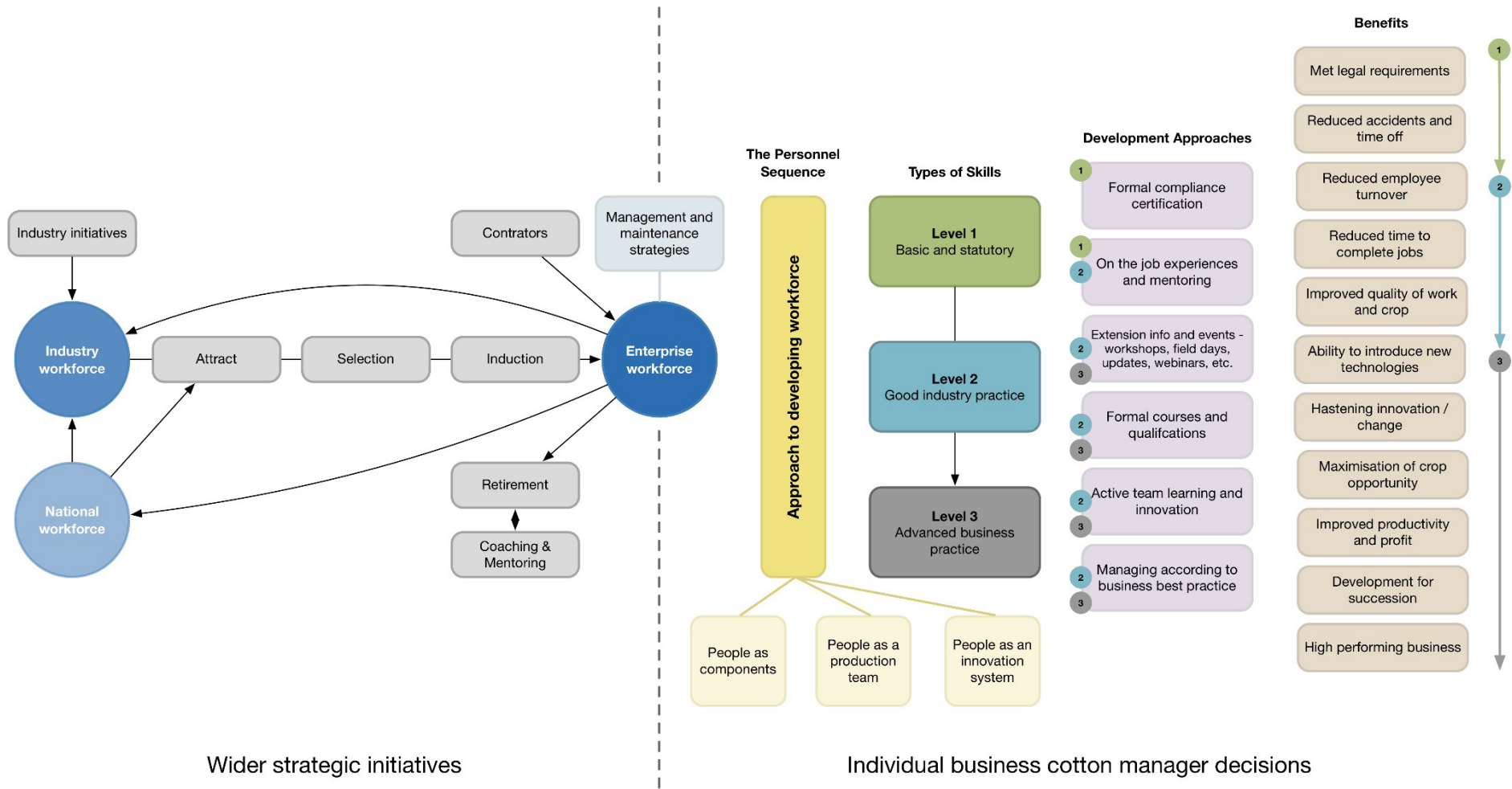
- iii. The Owner/Manager uses a set of personnel performance metrics to gauge improvements over time and, where possible, where the farm fits within industry performance.

## Checklist

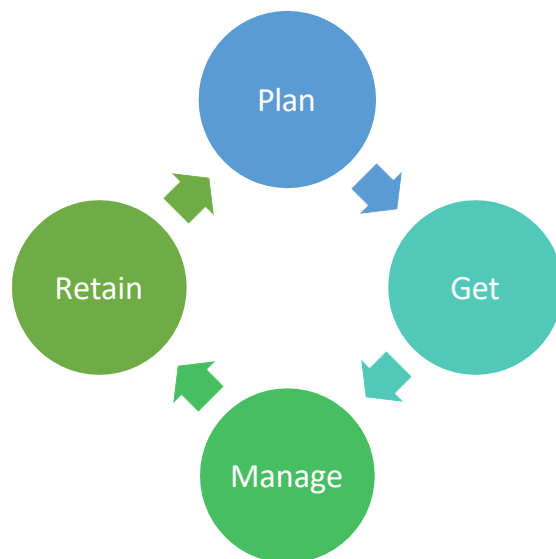
- Farms have a list of monitoring/evaluation metrics for this purpose [included in this report] and collect data against these metrics;
- The metrics are reviewed annually to measure changes/trends and inform future personnel management planning.

- iv. Farm owners have the strategic business skills required to be able to react and adapt in a changing and challenging market and climatic environment.

# Map of Workforce Capacity Building Steps and Benefits



## The Personnel Sequence



This simplistic Sequence\* creates a logic around personnel management.

Firstly, the development of an Organisational Chart to determine the types of people needed (skills, personalities, behaviours, family situation, connection with local community, desire to stay and work long term in the business, etc) and reporting relationships (to support others in the business) creates context for the first step which is to Plan what personnel are required (hard and soft skills).

Second, an orderly approach to acquiring personnel, to Get, and to meet those needs is necessary. Implicit in this is use of best practice in recruiting.

Third, the more normal HR procedures, which is to Manage, are more widely known in the industry (in particular within Cotton myBMP) must be implemented in a rigorous manner within the context of Fair Work Australia guidelines (to ensure complete industry best practice – and minimise problems that may result in IR processes – which are to be avoided at all costs).

Fourth, arguably the more complex part of the process is how to ensure retention (Retain) of personnel over time, including adequate career paths, transitions more widely in the industry, professional development, progression and so on.

*(Please note: The elements sometimes neglected are the professional development and Personnel Sequence of business owners (and family members) themselves.*

*\* This Sequence of Plan, Get, Manage and Retain is a Framework used by a report co-author in conducting the [ABDI](#) Business Management Programs).*

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# 1. VALUE PROPOSITION

The rationale for this project was based on the premise that a .... *Skilled and capable workforce is known to contribute to the industry's profitability, sustainability and competitiveness.*

Furthermore, it is recognised that significant global forces are at work, including an increasingly technologically sophisticated work environment. These changes show no sign of slowing – therefore their continuation at this pace will result in a significant influence on the Australian cotton industry in the short and medium-term future.

This move towards a more competent and professional workforce is expected to result in higher value personnel with different wants, needs and desires from former on-farm cotton employees (and others in the service sector, in this report called 'agribusiness').

Therefore... *a key challenge is identifying and establishing metrics through which the industry can assess the value derived from investing in the upskilling and further development of labour (farm-workers, agribusiness advisors, others in the value chain including researchers and business owners) and the benefits obtained through increased capacity. Industry is seeking to understand how development programs contribute to attracting and retaining people on farm and the value that employees place on having good working conditions.*

## Industry Frameworks

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The CRDC Strategic Plan 2018-2023 Goal 3 calls for ... *'building the adaptive capacity of the Australian cotton industry to enable the industry to achieve its future vision'*. It is noted that in addition... *we will provide our industry stakeholders with opportunities to develop and advance innovation skills. CRDC RD&E investments will prepare Australian cotton growers for our changing environment and provide them with the skills to adapt to those changes.*

Another key framework for helping cotton farming businesses to develop their skills is Cotton Australia's myBMP<sup>1</sup> which is described as a voluntary farm and environmental management system which provides self-assessment mechanisms, practical tools and auditing processes to ensure that Australian cotton is produced according to best practice.

One of the myBMP modules is 'Human Resources and Workplace health and Safety' (HR&WHS). This focuses on all aspects of employing staff, whether they are family members, employees or contractors, and... *it offers practical ways to improve your ability to attract, retain, manage and protect your team.*

## myBMP System

The CA myBMP system is built around 3 levels:

**Level 1** – Identified legal requirements (what you must do)

**Level 2** – Industry identified best practice standards (what you should do)

**Level 3** – Innovative practices (new cutting-edge practices).

This research, funded by CRDC, contributes to Levels 2 and 3 of the HR&WHS myBMP Module.

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<sup>1</sup> <https://www.mybmp.com.au>



# Further Context

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The project commenced with a focus on cotton growers and supporting their thinking around the Return on Investment (ROI) and Benefit: Cost Analysis (BCA) of up skilling their on-farm personnel. Also, it focused on determining how to make an ROI assessment of the value of social research commissioned and paid for by the cotton industry (CRDC and CA).

As the project evolved, it became apparent that skills/professional development of other personnel in the industry – namely researchers, advisers, others in the value chain and ultimately business owners themselves – were key elements of the project considerations.

Also, during the course of project it became apparent that these questions have wider industry implications than simply on-farm and RD&E ROI/BCA calculations.

## Focus of the Project Research Work

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### Key Research Questions

**Key Research Questions** informing this study were:

- “Why would a grower invest in their people?” (The bigger corporates have a HR team and can measure impact of personnel management issues – whereas the backbone of the industry, the family farm, needs simple metrics to make an assessment on that question)
- “How can a family farm operator calculate the benefit: cost to assess the effectiveness and benefit to their enterprise around skills development?”
- “How can this benefit flow onto the wider industry?” – particularly around an industry with expected different skills required to meet future unfolding (to some extent unknown) needs.

### Outputs

**Outputs** that were expected from the research were:

1. An instrument/calculator (now called a Tool/Guide) – so growers can assess the value of investing in building capacity of on-farm staff, including financial (ROI/BCA) and social aspects of skill development.

(Note: As this research will show, the rationale for investing in building capacity is not always based on *direct* measurable financial benefits to the business owner – qualitative and experiential elements also underpin the rationale for building staff capacity.)

2. Additional MER framework components and metrics – to create a system that can readily guide higher impact future investments in the People Program (scholarships, leadership programs, etc), to become CRDC’s current MER framework to support assessments of long term benefit/impact of investing in People Program activities across cotton (and potentially broadacre agriculture).

(Note: The CRDC Strategic Plan changed through the course of this research with a greater emphasis on adaptive capacity. This research developed an MER framework for ‘people’ goals under both frameworks. This research did not directly explore impacts of scholarship and leadership programs – this was undertaken in related research.)

# Outcomes

The **Outcomes** sought from this research were:

1. Cotton businesses understand the value of improving the capability of their workforce.
2. CRDC is able to assess and report on the impacts of its investments in developing human capacity through investments in its People Program.
3. The Australian cotton industry can make informed investment decisions to produce the skilled knowledgeable and progressive workforce it requires to continue being a profitable, sustainable and competitive industry.

This research sought to answer these questions through a mixed method approach. This report draws from the literature and primary data collected during the project, including grower and industry interviews, to present the findings around the key themes and outcome areas. It informs and links with work undertaken by Cotton Australia.

## 2. METHODOLOGY

The methodology used in this research was guided by a People Program Steering Committee and was modified as the research progressed to meet evolving needs informed by this research, industry factors affected by this research and other industry research including via the People Program.

The approach used followed the following pathway:

- **Review of past ‘people’ projects** funded by CRDC (and others), their focus, outcomes and metrics used – to inform this research, learn from prior research and capture metrics that were used or developed prior to this project.
- **Exploratory interviews with 10 growers and agribusinesses** in the Namoi Valley to understand the issues around people and capacity building and assist in designing interview and case study questions. Interviews with key industry stakeholders were also undertaken.
- **Insights sought from other industry personnel / workers** such as myBMP; Cotton Australia, Queensland Farmers Federation (QFF) and other project work being undertaken including QualDATA directors’ independent work outside of this task.
- **Literature Review** focusing on the value proposition and metrics around capacity building of people in business and specifically agriculture. This included looking at labour costs in cotton production.
- **MER Framework for the 2013-2018 CRDC Strategic Plan Workforce Capacity Program** – which considered performance measures and evaluation approaches based on the type of projects being funded. These projects were seen to be clustered around four key areas:
  - Projects designed to *educate, interest and attract students, graduates and other workers* into the cotton industry and workforce.
  - Projects designed to *develop the professional and leadership skills of those already in the industry* and its workforce.
  - Projects designed to *provide specific planning and operational skills and abilities to managers and workers* in the industry and its workforce.
  - Projects designed to *impact on policy and strategic approaches* supporting the required mix and capacity of the industry workforce.
- **Interviews/case studies with another 9 cotton growers** across a range of enterprise types and regions. These covered key areas of: staff/labour used; staff/labour issues; feedback on the myBMP module on staff management; training and personnel development they have undertaken or supported – and how they assessed benefits; and their thoughts on industry initiatives in ‘people capacity building’.
- **Insertion of research questions into the workforce section of the Cotton Grower Survey 2018** in consultation with other researchers who had in interest in responses to workforce related questions (246 responses). Note, originally, a broad phone survey specific to this research was planned but this did not occur because of conventions around the number of surveys permitted to be taken of cotton growers – the questions in the Grower Survey replaced this. Questions used specific to this research are included in this report.
  - It was reported that the survey was initially to be conducted via an online survey using contact lists provided by CRDC.
  - Midway through the project research period, the methodology was modified to a phone call encouraging growers to complete the survey online, or were given the option to complete the survey over the phone at a time that suited them.

- In total, a sample of n = 1,144 growers was provided by CRDC, with n = 246 starting the survey and n = 171 surveys completed (completion rate of 14.9%). A breakdown of the number of surveys completed by Region is located below.
- Of note is that, through the phone call process, 15.4% of those contacted stated they were not in the farming business. This then provides an effective sample size of those still within business of n = 968, and an effective completion rate (of those still within business) of 17.7%<sup>2</sup>.
- **Review of the new CRDC Strategic Plan 2018-2023** (released during the project) and therefore the re-development of a MER Framework for Goal 3 – Building an Adaptive Workforce.
- **Review of literature** around the concept of '*Building an Innovative Workforce*' – based on the intent of Goal 3 of the CRDC Strategic Plan 2018-2023.
- **Case studies of Cotton Growers and Agribusiness known for their more advanced staff management** – 7 cotton growers and 6 agribusiness managers were interviewed to gain insights, principles and guidelines on how to approach workforce capacity development and how this benefited the people and the business.
- **Development of a Tool/Guide for considering workforce development on-farm and in the agribusiness sector** – based on the findings, that was considered to be helpful in thinking about, and making decisions around the value and practice of actively developing workforce skills and personal capacity (to support future cotton farming and agribusiness business planning).
- **Considering the implications for the broader industry of the project findings** – particularly, the implications beyond the farm gate or agribusiness – why and how the cotton industry would (could or should) actively support the development of the wider industry workforce skills and capacity (in a wider professional development context).
- **Recognising the Main Limitation** faced in the research was directly accessing a suitable and expansive cross-representation of respondents across the regions – the project team was limited (to some extent) by those in the industry who were invited to provide contact details and introductions to suitable persons. This key limitation was a consequence of the number, scope and scale of surveys undertaken annually of personnel within the cotton industry, thus the project team had to work within those constraints. However, the ability to include key questions in the 2018 Cotton Grower Survey provided data from across all regions and farm types which complemented the more detailed interviews and case studies undertaken.
- **An industry-wide workshop** designed to test, then ground-truth the relevance of the findings, including the Tool/Guide.

This project was associated with other industry research include a longitudinal survey of industry funded capacity building recipients. Furthermore input from other research managed by the People Program and supported by the common People Program Steering Committee provided valuable insights to ensure an integrated approach.

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<sup>2</sup> Intuitive (2018) Grower Survey Interim Report, CRDC September 2018

# 3. REPORT STRUCTURE

This following Key Findings section (Section 4) of the report draws on data from all sources accessed during the research to address the key research questions through the following structure:

1. Current context of workforce
2. Issues raised
3. Workforce skills needs
4. Attitudes and approaches to staff and training
5. The value of developing staff capacity – individual, enterprise and industry
6. Business best practice – aligned with higher-level personnel management
7. Pathways and performance metrics – and their measurement
8. Benefits (and their Performance Metrics) expected from training/capacity building.

Section 5 addresses the Implications emerging from the data regarding principles and processes that might address the Key Findings. It considers:

- The application of the Table of Metrics and MER Framework – to CRDC, Cotton Australia and to cotton managers
- The potential for a broader industry approach to be taken
- The application of the Tool / Guide
- The potential of its integration into Cotton myBMP
- Recommendations on the application of the data and other matters emerging from the report.

Further, this section considers the implications of the data and key findings in terms of the project brief, unintended consequences from the research and linkages to the CRDC Strategic Plan as well as to emerging ‘people capacity building issues’ now and into the future.

It also canvasses the emerging importance of an industry-wide cotton personnel roundtable initiative which emerged strongly as a necessary proposed project final step (to be integrated into the remaining project industry consultation process).

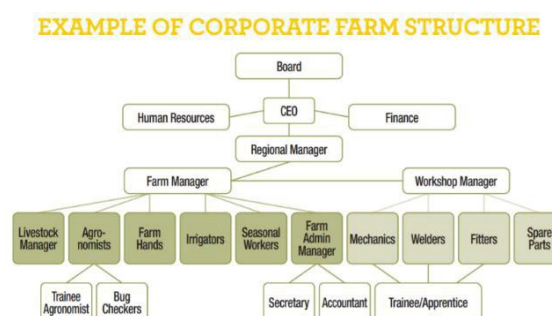
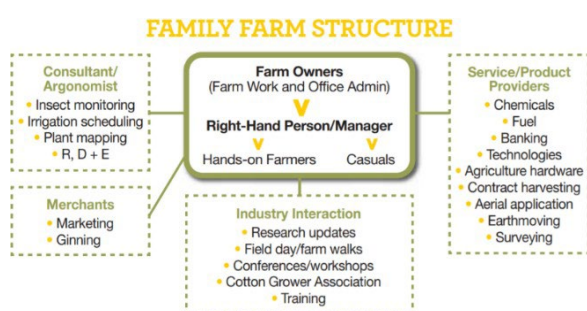
# 4. FINDINGS

## 4.1 Current Context of Workforce

During the course of the project, the researchers sought to fully understand the workforce context – past, present and expected future.

The **Queensland Farmer’s Federation (QFF)** stated that ... *Cotton in Australia is a billion-dollar industry, underpinning the viability of more than 150 rural communities. More than 1,200 farms grow cotton: 40% in Queensland and 60% in NSW. In an average year, cotton employs 10,000 people*<sup>3</sup>.

Cotton Australia<sup>4</sup> provides the following diagrams as to the people and skills involved in cotton production on a ‘typical’ family farm and also a corporate farm.



The *Family Farm* structure relies heavily on the skills of the owner / manager, a small number of permanent staff (if any), casual staff, contractors and service providers.

The *Corporate Farm* is likely to employ a much larger number of permanent and skilled staff as well as outsourcing some services – and has a need for / uses skilled casual staff at different times in the cropping cycle.

When canvassing “people and skills”, it was considered that a more *industry wide approach* is therefore necessary to include the service industries (agribusinesses), as well as the mobile casual contractors and workers critical to specific functions and times.

In reporting on a survey undertaken through the Rural Jobs and Skills Alliance in 2015/16, the QFF<sup>5</sup> also reported the following statistics (70 respondents – 93% cotton farms) in relation to the Cotton Industry (assumes this includes all farm types and sizes):

Mean number of full-time staff: **5.2**

Mean number of part-time staff: **1.4**

Mean number of casual staff (annually): **7.9 (most used for harvesting 41%)**

Mean number of contractors used: **2.6**

Mean number of staff replaced: **3.4**

<sup>3</sup> [www.qff.org.au/farming-in-qld/cotton/](http://www.qff.org.au/farming-in-qld/cotton/)

<sup>4</sup> <http://cottonaustralia.com.au>

<sup>5</sup> [www.qff.org.au/farming-in-qld/cotton/](http://www.qff.org.au/farming-in-qld/cotton/)

Meanwhile the **2018 CRDC Grower Survey** showed a similar pattern with respect to the average workforce of grower respondents<sup>6</sup>: Growers reported an average workforce of 9.6 staff (with a regional variation from 4.1 in the Darling Downs to 9.1 in the Macintyre/Balonne) – the majority (6 of the 9.6) being employed as full-time permanent, with staff spread evenly across entry level, experienced and managerial levels. Thirty-one percent reported a likelihood to recruit staff in the next 12 months.

The 2018 survey also reported a strong usage of contractors for cotton operations with 83% having used contractors to some degree for aerial spraying; 76% for module transport; 58% for picking; 34% for ground rig spray application; 17% for fertiliser application; 11% for ground preparation and 8% for planting.

Forty-five percent of **owners/managers in the QFF 2015-16 survey** indicated plans to retire in the next 5-10 years with 60% having succession plans in place. Recruitment was described as mostly being through contact/word-of-mouth (79%), newspapers (23%) and on-line ads (19%) next.

Backpacker and **casual roles** are described on the Cotton Australia website<sup>7</sup> as filling the following roles (depending on the time in the season):

- Start irrigation syphons
- Drive tractors or forklifts
- Check/count bugs
- Mix and apply chemicals
- Drive a cotton picker/harvester (typically air conditioned, with CD players and GPS systems)
- Drive a boll buggy (that picks up the cotton from the picker and delivers it to the module builder)
- Operate a module builder/building module
- General farm maintenance and repairs
- Remove/chip weeds.

In considering the status of the cotton workforce, it is important to appreciate that a mix of personnel for cotton farms (the Family Farm and Corporate Farm Structure) exists. This appears to be a necessary part of the workforce mix.

To fully consider the current cotton workforce requirements, the mix of cotton farm personnel (full-time staff, part-time staff, casuals, contractors and staff replacement, including owners and 'management') plus the mix of agribusiness personnel, is a necessary and important consideration.

When looking to the future, the extent of this mix is also a key consideration.

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<sup>6</sup> Intuitive (2018) Grower Survey Interim Report, CRDC September 2018 p.48

<sup>7</sup> <http://cottonaustralia.com.au/work-in-cotton/casual-jobs>

## 4.2 Issues Facing the Cotton (People) Sector

### Past Research

In reviewing twenty reports from past cotton RD&E projects relevant to the people skills area (full analysis tables in the attachments), the following issues were highlighted:

Issue raised	Number of reports	Reports
Need to define 'value' and ROI to drive action needed to attract, retain and develop people; Need to have better performance indicators for (leadership) training	1	<ul style="list-style-type: none"> <li>• Cotton Industry On-Farm Workforce Development Strategy</li> <li>• Cotton Workforce Development for Sustained Competitive Advantage (2013)</li> </ul>
Need to increase participation from an under-utilised resource (women)	2	<ul style="list-style-type: none"> <li>• Understanding and Building Women's Participation in the Cotton Industry</li> <li>• Wincott NRM Survey</li> </ul>
Need to better measure and establish process for ensuring on-going recruitment of the agribusiness staff required to support growth of the cotton grower sector	2	<ul style="list-style-type: none"> <li>• Cotton Industry Succession and Professional Development (2012)</li> <li>• A review of Social Trends from the Crop Consultant's Association business (2011)</li> </ul>
Need to improve participation in (Cotton) myBMP	3	<ul style="list-style-type: none"> <li>• Qualitative and Qualitative Analysis of the BMP Trial (2009)</li> <li>• Economic, Environmental and Social Sustainability Indicators (2009)</li> <li>• Evaluation of the BMP program (2004)</li> </ul>
Need better use of data sets for economic and environmental sustainability	1	<ul style="list-style-type: none"> <li>• Economic, Environmental and Social Sustainability Indicators (2009)</li> </ul>
Need to distinguish CRDC performance from industry and other RD&E	1	<ul style="list-style-type: none"> <li>• A Framework for Evaluating the Performance of CRDC's 5-year Strategic Plan (2015)</li> </ul>
Need to work on development of a national approach to sustainable sources of labour, best practice and skills development	2	<ul style="list-style-type: none"> <li>• Cotton Workforce Development for Sustained Competitive Advantage (2013)</li> </ul>
Need to determine how to attract seasonal workers to cotton	1	<ul style="list-style-type: none"> <li>• Cotton Workforce Development for Sustained Competitive Advantage (2013)</li> </ul>
Need to address obstacles to farmers taking on trainees at the early-stage required – and need for workforce capacity focus	1	<ul style="list-style-type: none"> <li>• Cotton Workforce Development for Sustained Competitive Advantage (2013)</li> </ul>
Need to better involve private sector / agribusiness in Cotton RD&E	2	<ul style="list-style-type: none"> <li>• Stimulating Private Sector Extension (2017)</li> <li>• Piloting a Cotton Agribusiness Strategy to Support the Development of an Innovative Agribusiness Sector (2015).</li> </ul>

A number of the issues raised in those reports likewise underpinned this research – specifically the need for better metrics and indicators and developing the value proposition for training/staff development. This was highlighted as a need both on-farm and in the agribusiness sectors.

## Scoping Interviews

The next stage of the project was to commence ground truthing ‘indicators’ and an emerging Table of Metrics which were being developed concurrently. This stage of the project can be summarised by this comment from a grower interviewee:

*“Access to personnel is one of our biggest risks; as a result, we are taking a corporate approach to staff management; reducing permanent staff and using more subcontractors. HR management is one of the biggest issues for the business and its growth – the key question is who we can talk to (in order to) get good information that is practical and applicable – and a mentoring process would be critical”.*

*Namoi Valley Cotton Grower Informed Person*

Initial interviews (10) were held in February 2017 with Namoi Valley growers and additional Informed Persons. While the purpose of the interview process was to ground-truth a draft metrics table (defining key success factors around the ‘value’ of best practice cotton personnel management) by collecting data in an open discussion with key informed persons, it was immediately apparent that a number of wider industry issues around workforce planning and management were in play.

The respondents were interested in discussing the draft ‘Table of Metrics’ (addressed later in this report) – but far more interested in outlining their problems with attracting, retaining and growing their businesses in the face of difficulties around getting, retaining and managing personnel.

Accordingly, the interviewer established the concepts around Get (personnel), Retain (for the longer term) and Grow (around growing the business with a core group of committed personnel).

These concepts became the basis of The Personnel Sequence developed and reported elsewhere.

Ultimately, the interviews were conducted at two levels – against a series of prepared questions designed to ensure the metrics made sense; and more qualitative data on wider issues linked to the Table and more aligned to the key concerns of respondents.

*(Interviewer comment: This demonstrates the difficulty facing many cotton growers and industry personnel – around workforce issues. It was apparent they simply need / want someone to talk to – a Sounding Board – and ideally someone with solutions to their problems).*

The broad issues raised in these interviews are summarised below:

- The biggest area of concern was expressed by those enterprises going through an expansion process – who noted that a key limitation (apart from water, land and money) was access to suitable personnel.
- The respondents noted that many of these workforce issues are, in reality, structural issues facing the whole of cotton industry.
- Technological advancement is emerging as a major opportunity for industry advancement – yet access to personnel, including the personnel to manage the technology, is an impediment to the future of the industry.
- It is regarded as being critical that current industry success stories and learnings around personnel that provide industry benefit and clearly work to benefit the cotton industry are known, maintained and their use expanded for others' benefit.
- The concept of an urgent, cotton industry roundtable to address workforce issues, including futurists and high-level industry thinkers, was highly recommended by 40% of respondents.

To further understand the people context on farms and build on the scoping study early in this research, a further nine in-depth interviews/case studies were undertaken with a range of selected cotton growers (Central Queensland and Upper Namoi). Issues raised are summarised below:

**Confidence in future** All interviewees had a high level of confidence in the future (7-9 out of 10). They were confident in the industry, its scope for future growth and in the innovation culture of the industry. Access to water was a key issue of concern, with one concern regarding limitations to weed management.

**Access and retaining** The major 'people issue' was the difficulty in finding/accessing and retaining personnel and deficiencies in skill sets of personnel. This was seen as an issue for both full time and seasonal staff. Issues were also raised in relation to absenteeism and associated problems of alcohol and drugs. Lack of enthusiasm and motivation for the farm work was also raised by some...*lots of young staff, hard for them to adapt to the work that needs to be done on farm.* One interviewee referred to ...*the generation of air-conditioned schools...they are not used to working and playing outside of the air-conditioning.* Another noted that it was ...*not hard to find someone with a pair of hands and heartbeat – our biggest challenge is filling position at the farm manager/assistant farm manager level.*

Compatibility was another issue raised...*if someone goes, it's always hard to get the right person who will fit in with the others.*

Retaining staff who are helped to develop skills was seen as a problem: once they've got the skills they need, they want to get a job somewhere else as a manager...*seems like everyone wants to be a manager.* It was pointed out that for smaller operations, staff needed a range of skills and to be able to work across operations.

*Accessing, retaining, motivating and developing high performing teams based on appropriate skills sets and motivation (personal attributes) remains a key problem.*

**Barriers** It was noted that the high wages in the resource sector remained an issue – with workers seeing the relatively low wages in agriculture as not compelling. Some pointed out that many growers were paying above award wages in agriculture and there were other benefits over mining – e.g. accommodation and housing in some cases – which needed to be made known.

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**Filling gaps** Responses to staffing issues were varied and included options/strategies such as: using bigger machinery; reduced reliance on full-time staff; more use of contractors; different farming systems/rotations requiring less labour. Some growers reported using various industry schemes to get young people on farm – for example Ag Cap (high school apprenticeships) and Ag Gap Year schemes.

*Backpackers* were seen to fill a real gap that would otherwise be an issue for business owners – and efforts are made by some to look after this group well. An example was a local story where refugees were provided with opportunities to work in the industry. One family farm pointed out that larger operations could have someone specialising in supervising such casual staff – this is more difficult on smaller farms. In these cases, friends and family sometimes had step in and help when needed.

Some growers have moved to reducing paid staff and doing most of the farm work themselves (with some recruiting other family members) with the help of contractors and casuals – with one comment that ... *this achieved better farm results with fewer 'stuff-ups!*

Providing above award wages, housing and other benefits are other strategies reported to attract and retain staff.

All of the interviewees used one or more agronomists to some extent – with some using business and other consultants as well.

A number of growers reported significant difficulty in accessing staff to fill gaps in the business.

Although all interviewees indicated they were satisfied and had ready access to consultants and other professionals, it was noted by some that consulting firms and agribusiness input providers were likewise having their own staffing difficulties which impacted on grower services.

To provide further insights into the people issues and insights from these interviews, two case studies are presented below – one from a smaller family farm which employs no full-time staff and another larger family corporate farm which employs a number of staff at different levels and roles.

## Case Study 1: Small Family Farm – Managed by Owners (Husband/Wife)

<b>Farm type</b>	Irrigated (185ha)
<b>Situation</b>	The farm is 'stable' in terms of size and future plans and the owner/managers have high confidence in the future, having good access to land and water and new technology – though with some concerns about the limits on weed control.
<b>Staff/labour used</b>	The farm contracts a casual worker (a boilermaker who can do everything from maintenance to operating machinery) for one day per week, uses contractors for air seeding / spraying and picking and have an agronomist consultant. They use a cotton merchant who does a lot of planning with them with respect to the crop and visit their accountant once per quarter for business analysis and planning (they noted that local bank managers are not particularly useful in this regard because ... <i>they tend to be young agribusiness professionals (and) keep moving/getting moved around</i> ). They are not expecting to make changes in terms of staff numbers/skills over next 5 years... <i>expect to hold it where it is</i> .
<b>Issues related to staffing</b>	<p>Their biggest issue has been accessing and retaining staff...<i>we used to have a full-time employee and do our own picking. ... a young bloke. now with our (casual) contractor we have someone who's older, wiser and has a lifetime of skills. We (also) went to contract picking...realised we don't need a need full-time person ..we (believe) we are seeing an improvement in-crop as a result of better management</i>. They also stressed the importance of ... <i>good flexible arrangements</i>.</p> <p>When asked directly about perceptions of quality of the agricultural workforce pool the reply was...<i>I think there's 2 types of people..... those who want to have their own business ... (and) those who are just happy to show up</i>. They were surprised that ... <i>even at some farm managers) (who) don't seem that interested.... (are) very good operationally (i.e. at doing farm tasks, ensuring they are carried out) but don't seem engaged in decisions about the 'what' to do and 'when' to do them (e.g. watering and spraying decisions)... (They) don't seem to be curious or thinking about the business (overall)</i>.</p> <p>There was a perception that high quality staff will often aspire to ownership/greater management involvement/knowledge of the business and so there is ... <i>a need to consider ways of doing this as individual business and industry</i> (e.g. potential of leasehold/share-farming or co-op ventures between farm owners and staff). It was seen that co-operative style farming employment could help .. <i>'spread the risk' of employing staff necessary for expansion of individual businesses</i>.</p>

<b>Access to expertise and support</b>	It was noted local industry support is good... (we have) <i>been very lucky here in CQ...great industry people... (for example) local CottonInfo person is excellent</i> and that there was good access and to high quality professional consultants (agronomy, cotton, cotton merchants, financial etc).
<b>BMP people module</b>	They have made a start on the people module and registered for BMP, but full accreditation has not been completed. The feedback was that BMP (looks like) ... <i>the platforms are in place (to support industry workforce issues) ...probably good supportive tools around good workplace practices including inductions etc).</i>
<b>Training and personnel development</b>	<p>One of the owner-managers has undertaken formal training in the last 5 years including: UNE Cotton Production Course (mainly through ROPL); the AICD (Australian Institute of Company Directors) course; an advanced Excel Course; and Cotton Australia's "High Risk Activities" training (i.e. forklifts tickets etc). Their attitude is to ... <i>try and do something every year/few years ... (we) take that "lifelong learning" approach...keep chipping away...also good for networking/making contacts.</i> Although there were no specific plans around direction of future training; they noted that they would ... <i>probably undertake some on-farm training in areas such as soil, nutrition management... (do some) trials.</i></p> <p>The type of training that was seen as potentially useful for staff (if they had them) included the ... <i>Safety side of things ....got to be essential.</i> It was noted that ... <i>it depends on the person (you have) .....(things like) IPM courses are good.</i></p>
<b>Training benefits/ indicators</b>	It was suggested that in the longer term ... <i>one might look at whether the person stays in the role and extends further... (i.e. stays in and) gets involved in industry. In the shorter term, you'd like to see a lift in their confidence and becoming part of the industry ..... confidence to speak up ...contribute more (at industry events/meetings etc) ... interested in building networks and contacts.</i> Other work-related indicators were suggested as being ... <i>more "observant" and more "giving feedback" back on farm re what was learnt at training.</i> It was noted that effective training ... <i>takes time ... need to take the time to (really) show them. ... (and) build interest".</i>
<b>Industry initiatives needed</b>	It was noted that there are already plenty of ways to build skills and knowledge.... <i>Cotton Info's really good...also CSD...DAF (and the BMP platforms).</i> They discussed potential for ways of giving high quality people an ownership stake in the business/industry.

## Case Study 2: Family Owned Corporate Farm

<b>Farm type</b>	Irrigated (1800 ha Cotton 2016/17) – also grains.
<b>Situation</b>	The farm is 'stable' (actually a total of 6 farms) with a high level of confidence in the future... <i>as long as it rains!</i> The industry is seen as one where ... <i>everyone is always adapting/looking to adapt to new technologies.</i>
<b>Staff/labour used</b>	One of the owners is the CEO, with two farm managers and a 2IC. There are currently 14 seasonal (2-26 seasonal workers at any time) and five operational staff (1 leading hand, 3 farmhands, 1 grader driver). Contractors are used for some spraying, root-cutting and mulching. There is also an agronomist with the team. Contractors are also used for sowing and harvesting, although they have their own headers and can assist with harvest. They also use external assistance with soil moisture (C) probes and 'this year' are trialling in-crop canopy temperature sensors.
<b>Issues related to staffing</b>	<p>Access and retaining are key issues ... <i>finding the skills and suitably skilled people...also finding enthusiasm ...</i> [recently placed 2 advertisements in local paper for farmhand/ grader driver role and only received 3 replies; noting it is harder to recruit grader drivers than farmhands!]. They have relied a lot on backpackers ...<i>lots of young staff, hard for them to adapt to all the work (that needs to be done) on farm.</i> It was noted that in the last 5 years ... <i>we've just been running a skeleton crew' (manager, 2IC, 2 x farmhands) + casuals/backpackers.</i> They were now trying to build core staff numbers with intent of carrying the whole (core) team through any drier times – with less reliance on backpackers. Permanent staff were seen as being more reliable and making fewer mistakes.</p> <p>They believe the main barrier to their new strategy (of carrying larger permanent core staff) will work well...<i>unless water runs out... (and we're) left sitting around...twiddling our thumbs... and forced to cut back on core staff.</i> Lack of interest/response to advertised jobs is an on-going issue.</p> <p>It was noted that they had to increase farmhand pay to attract new staff as part of permanent workforce expansion. They participated in an 'Ag Gap Year' program – and hoping to have staff coming back later (after studies). They also provide accommodation as they are 60 km out of town so have 6 houses on farm, and recently increasing this... <i>just recently bought a 2 bedroom donga to provide better standard of accommodation for one of the permanent workers.</i></p>
<b>Access to expertise and support</b>	They were satisfied with their access to professional services and reported that they have ... <i>never had to go hunting...plenty around.</i>

**BMP people module**

The farm has completed the BMP people module...*a few years ago...and is fully BMP accredited. They reported that it was ... (useful) at the time...definitely...Helped 'get us legal/above board' and even better in some areas - helped make workplace 'a lot safer'.*

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**Training and personnel development**

The farm manager had a degree in agricultural science and has completed standard first aid, chemical training and machinery tickets. While he had majored in plant production at university, he was still interested in specific cotton production short courses. It was noted that they would like to do more business management training/development, specifically 'financial, farm management and business management training'. However, a request to attend a particular farm management course was not supported by the CEO. Others had been able to attend another Farm Manager's short course although the benefits were not clear.

Farm staff training were seen as important. Induction of staff was undertaken ... *on all gear before using a new piece of machinery.* It was noted that...*we are always trying to upskill staff... 'get them as many tickets as we can' for machinery etc, however there was some disappointment when we felt farmhands were being sent to training and didn't seem to appreciate it.* The benefit was uncertain. Several of farmhands had been sent to an IPM short course.

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**Training benefits/indicators**

Having needed/required machinery tickets/training was seen to be a self-fulfilling indicator...*all good.* Staff asking questions/showing interest was seen to be a good indicator of the value of training.

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**Industry initiatives needed**

Training support was seen as needed with training workshops held on-farm(s)/at local farm settings. It was suggested that perhaps a Cotton Australia/Industry job listing website/webpage was needed – not just for finding backpackers but a whole of industry/industry jobs/employment opportunities noticeboard...*Maybe an improvement over traditional advertising?* It was noted that...*Cotton Australia has been pretty good with its training subsidies" (e.g. welding, precision ag training courses).* The GAP year student scheme was seen as a positive for the industry and providing future employees.

## 4.3 Workforce Skills Needed

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### Skill Levels

The myBMP Human Resources and Work Health and Safety Module has the following check list around levels 1 to 3 for 'Training, career development and farm succession planning':

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**Level 1** All staff members hold the relevant training / qualifications required to perform the tasks they are employed to do.

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**Level 3** The transfer of ownership and management of the farm is planned.

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**Level 3** A mentoring process is in place.

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**Level 3** A skills audit has been conducted and staff are provided flexibility to undertake "in house" and or external training.

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**Level 3** An opportunity for career path development is provided for staff.

There is a link to a Skills Audit to assist the progression to Level 3 (link not working at time of assessing site).

### Skill Needs

In a 'Skills and Labour Needs Analysis' in 2012 by AgForce, farming skill needs were separated out in terms of role needs – owner/managers and the farm labour (permanent employees, casuals and contractors). The generic skills (across industries) listed were:

- **Owner/manager/family members:** Business management and financial management; Chemical / nutrition application; Clean Energy and Carbon Farming; Climate and Weather Monitoring; Computer skills; Electronic Field Recording (GPS, NLIS etc); Conservation farming methods; Integrated pest management; Promotion and marketing; Rural Safety and OHS requirements; Staff management and communication; Succession planning; Vegetation and Land Management; and Water management.
- **Employees and contractors:** Animal safety; Animal Husbandry; Chainsaw operation; Chemical/nutrition application; Clean Energy and Carbon Farming; Computer skills; Conservation farming methods; Driving tractors/heavy machinery; Electronic Field Recording (GPS, NLIS etc); Fencing; Integrated pest management; Mechanical servicing and repairs; Riding horses/bikes; Rural Safety and OHS requirements; Welding; and Workshop machinery operation.

The **2015/16 QFF Study** of cotton farms reported that most respondents considered that they did not lack workforce skills (67% for workers; 48% for owners and managers) with the main skills from the workforce that were seen to be lacking being IT/Computer literacy (10%), Machinery (6%) and licences to operate (6%)<sup>8</sup>. Fifteen percent used migrant workers.

The **2018 Cotton Grower Survey** found that 49% of grower respondents disagreed with the statement 'A lack of adequately skilled staff is negatively impacting on my business' – with 27% agreeing or strongly agreeing with the statement.

Skill issues raised from the **interviews/case studies with growers** viewed to be leaders in workforce management included:

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<sup>8</sup> [www.qff.org.au/farming-in-qld/cotton/](http://www.qff.org.au/farming-in-qld/cotton/)

- As farm size and complexity increases, different skills are needed – especially decision-making and leadership skills to meet the farm objectives
- New technologies are requiring people with skills and interest in working with these new approaches – and there is need to provide on-going training opportunities to develop them further
- There is a need to recognise that staff capacity development takes time and needs support and direction – and for them to see a career pathway ahead of them
- Going beyond the statutory training is important to deal with new technologies and challenges.

**Agribusiness leaders** also highlighted the need to go beyond statutory and technical skill development:

- Staff need to have the interest and capacity to go beyond the technical information to working within a business environment.
- Commitment to the success of the business in which they are working is important – with an ability to take on increasing responsibility over time.
- A strategy to support personal and professional growth is critical to a strong agribusiness.

These skill needs were reported as requiring an on-going culture of learning, recognising the increased complexity of cotton businesses. As a result, this change takes time particularly when now considering a more focussed approach to ‘*professional development*’ and ‘*personal development*’ (to get the quality of personnel needed now and into the future).

## Towards a Culture of Learning

To develop an innovative industry and workforce culture, the University of NSW<sup>9</sup> recommended shifts in thinking about workforce skills...*Businesses should be exploring new solutions that enable more personalized training, re-skilling and more flexible work arrangements – and workers should be demanding it.*

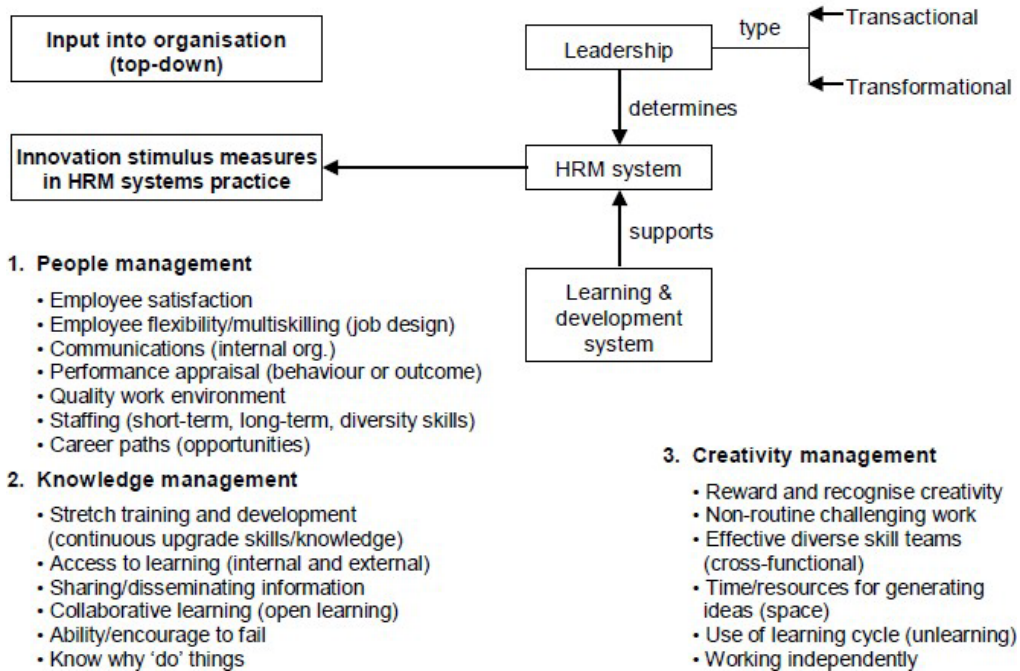
Their on-line article quoted John Chaplin, Head of Digital at Hogarth Australia who argued that...*we need to take a longer-term view of learning and development – which will require a shift in thinking for many organisations. There was a call to ... create a ‘thirsty’ culture for learning and change....I think once that is in place, you have an environment where people find ways to upskill, learn and share their learnings. I think the formal way of training only provides the foundation of relevant upskilling.”*

Research undertaken for the National Vocational Education and Training Research and Evaluation Program by Smith et al<sup>10</sup> (2012) used the following diagram to ... *illustrate the three human capital factors and their associated stimulus measures that build an enterprise’s workforce innovation capacity: people, knowledge and creativity management.*

<sup>9</sup> <https://www.business.unsw.edu.au/agsm/the-leader/articles/building-an-entrepreneurial-mindset-for-the-future-workplace>

<sup>10</sup> Smith A, Courvisanos J, Tuck J & McEachern (2012) Building the capacity to innovate: the role of human capital, NCVER, Commonwealth Government

Figure 2 Innovation stimulus factors



They undertook a number of case studies across different enterprise types and came to the following conclusions. These are:

In order to develop innovation capacity, companies need to:

1. Align their human resource management practices into complementary bundles that focus on innovation;
  - *By this we mean enabling employment conditions that promote creativity and knowledge acquisition, such as the bundling of high performance work practices, including team-based work organisation, support for training and learning, and the use of flexible work practices.*
2. Create a climate of learning that is supported by learning and development programs so that employees feel that they can share their creativity with the organisation;
3. Forge linkages outside the company, particularly with education institutions.

A key driver in the above diagram is 'Leadership' – the capacity of those in management to see what needs to be done to develop such a learning system and build staff capacity.

This study highlights the 'higher level' people management strategies and skills that were needed by owners/managers of cotton businesses. They would be an 'extra' addition to the Level 3 skills listed under the myBMP category.

## Career Development

The 'Australian Blueprint for Career Development'<sup>11</sup> considers that people's careers often develop in quite unintentional ways – and the aim of interventions is to assist people ... *'gain the knowledge, skills, attitudes and behaviours to manage their life, learning and work in self-directed ways'*<sup>12</sup>. It summarises career development, then, as the term that best describes the complex process of managing life, learning and work over time. The question is to what extent does an employer have the responsibility to assist this process?

In a study entitled 'Behavioural Factors that Motivate Work Engagement and Job satisfaction in the Australian Cotton Industry'<sup>13</sup> McDonald concluded that a ... *work environment where workers felt supported and valued led to enhanced wellbeing at work and greater job satisfaction for farm workers.*

McDonald went on to link this to farm outcomes with job satisfaction being important to the farm worker's productivity on farm – and hence overall farm productivity.

A key intervention to achieve this was described as ... *appropriate training (formal and informal) that provides opportunities for observation, supported learning, mastery experiences and working in a way that promotes psychological safety and will encourage continuous development of self-efficacy for workers on farm and ensure they are motivated to employ best practice standards in the performance of their work.*

According to Culture Amp, Chief Scientist Jason McPherson ... *the way an employee feels about their organisation's learning and development opportunities is the biggest predictor of retention*<sup>14</sup> (based on analysis of employee data).

In the same article, Peter Wilson, Chairman of the Australian Human Resources Institute, suggests that ... *for Millennials, high quality, continuous training is particularly crucial...they expect to learn on the job, and that's a key ingredient as to whether they stay with the employer or leave... they want to update their capabilities on digital delivery and applications continuously, and they want employers to support that... it's important for Gen X and Baby Boomers, too, he adds ... because they realise the impact of digital transformation, and know they need to keep up.*

Wilson goes on to talk about the changing nature of training with more ... *'short, bite-sized pieces'* with greater use of ... *downloads, podcasts, consume-as-needed products because that matches the attention span of younger workers.*

This literature suggests that a key element of job satisfaction across a range of age groups, in particular Millennials, is meaningful learning and development opportunities along with formal and informal training delivered in ways targeted to the needs of that market segment.

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<sup>11</sup> MCEECDYA, 2010 The Australian Blueprint for Career Development, prepared by Miles Morgan Australia, Commonwealth of Australia, Canberra

<sup>12</sup> Canadian Career Development Foundation 2002

<sup>13</sup> McDonald, N (2018) Behavioural Factors that Motivate Work Engagement and Job satisfaction in the Australian Cotton Industry', University of Southern Queensland/CRDC

<sup>14</sup> <https://www.theaustralian.com.au/business/the-key-factor-that-keeps-employees-happy/news-story/28818a790d0d6c7de12147fa90c4ac75?nk=52438086a8e4424be2c112528fd18c0b-1554337615>

# 4.4 Attitudes and Approaches to Staff and Training

## Training Preferences

The **QFF 2015-16 Survey** found that only 27% of employers indicated that they preferred to employ staff with Certificate 2 qualifications or above – with a preference for workshops and other face-to-face training as the preferred means of skill development. The main impediments were seen to be the availability of courses (9%) and limited information on content/options (6%).

The initial grower interviews for this research (February 2017) explored the situation in relation to workforce training attitudes and practice. These are summarised below in relation to the owner/managers and the rest of the workforce.

### Owner/managers

About one third had completed the myBMP People Module, another third had started and the remaining third had not even started. Those that had undertaken the myBMP People Modules saw them as very useful in terms of HR and OH&S Management – and the available templates as a support process. A comment was made ... *that it needed to cover mixed farming better rather than purely cotton (required to adapt some of the templates to suit).*

Some owner-managers had relevant degrees and qualifications with one having done the UNE Cotton Production Course. Other formal training taken by some included: Rabobank Management Course; and the Company Directors' course. A number referred to wanting to do more business skills training. One employed manager reported that he had been ... *'knocked back from attending a recent Rabobank farm management course by the owner/CEO – as they did not see the benefit'*. One grower who attended this course saw it as ... *"thinking outside the square – valuable...and expensive"*.

Owner-managers also undertook training for needed certification (e.g. Chemcert; first aid; forklift) and in one case, the owner/managers that were professionally/technically trained were continuing to build on these skills as well as obtaining required certification for chemical and equipment management. Business/financial management skills were seen as a pressing need.

Project findings recognise that a number of owners/managers are seeking their own professional development – particularly around business management, as opposed to production – with a focus on contemporary business and financial management practices.

### Staff/personnel

The main approach used by owners/managers in providing staff training was ... *using an induction process, on-going supervision and on-the-job training.*

Staff training and personnel are mostly provided with training support for *needed* certification (Level 1 myBMP) such as Chem Cert; CPR/First Aid and equipment operation tickets. These needs are developed based on employee gaps and needs for roles on the farm. Some owner/managers referred to other 'on-farm management programs' – generally in a pretty 'ad-hoc' fashion.

Farmhands from a larger family corporate attended an IPM short course with management level staff attending a short Farm Managers' course. There was some interest by some interviewees in providing further training opportunities for staff – but that ... *a lot (of staff) did not show interest.*

One grower pointed out that skills such as IT skills would be something they would consider supporting if they had the 'right people'. Others also pointed out that the big changes coming included increased use of technology and hence the need for skills to use this by farm staff. One noted...*we are progressively becoming more reliant on technology...trends towards greater automation of farming* – which will affect staff numbers and skills sets needed in the future.

It was explained by one grower that most growers are looking for subsidies for training and professional development to offset the costs and inconvenience. Another argued that there was a lot of ad-hoc training already happening, but it lacked (follow-up) support. Another pointed to the need to have training 'attendable' – at a time and place the suited the farm. Others pointed to the value of training in new technologies including GPS, drones and Yield monitoring.

As result, a more targeted and structured approach to training, once again focused on the market segments of personnel (positioning in the business, capability and capacity, etc) appears to be warranted, as opposed to the more generic 'one -size-fits all' approach. The question is: to what extent can/should industry drive or subsidise this approach?

## Assessment of On-farm Skills

The **2018 Grower Survey** did not directly ask about specific training that growers provided or supported for themselves or their workforce, except in relation to Workplace Health and Safety where 78% agreed that they ... *'train, coach and mentor all staff'*. In a more general sense, 57% selected... *'I did not have a lack of adequately skilled staff on farm'*... and only 27% agreed or strongly agreed that a lack of adequately skilled staff negatively impacted on their farm business. Eighty-two percent reported that they had open discussions about skills development opportunities with their staff.

While most respondent owners/managers indicated ... *'they had the skills or could readily obtain them' to use automation on their farms* ... there was less confidence in their workers having the skills (or able to adapt) to use automation (69% of farms currently using automation; 61% of those considering; and 51% of those not considering automation) or even less confidence in hiring others with the necessary skills (60%, 53% and 38% respectively).

The survey also asked growers about their interactions with workers and management in terms of their skills and input into the farming operation. Eighty-nine percent reported that they encouraged workers to give them suggestions and feedback about farming matters (higher in larger farms); 82% said that they had open discussions about skills development opportunities with workers on farm; and 78% said they regularly provide feedback to staff in relation to the performance of their jobs.

Seventy-nine percent reported that they are able to trust workers on the farm to perform their jobs with little supervision. It was interesting to note that only 43% indicated that they gained feedback from exit interviews to reflect on how they managed workers.

A higher level of 'best HR practice' would appear to be beneficial to the industry; with an increasing focus on supporting skill development in automation based technologies.

# Training and Skill Development Approach of Leading Businesses

## Underpinning attitudes and philosophies

**Growers** who were viewed as having a positive approach towards workforce management were asked about their underpinning philosophy in relation to their staff. Their responses are summarised below:

- *“Personal attributes are most important – willingness to apply themselves, learn and be adaptable – and do the best job they can and fit into the farm approach”*
- *“There is value in having local staff committed to the region and having a long-term view to farm employment”*
- *“There is a need to meet staff interests and needs to keep them engaged and committed as well as farm interests – overlap where possible”*
- *“Staff need to understand the science/agronomy as well as following instructions”*
- *“Management skills are critical to getting the best out of less skilled staff”*
- *“Managing personnel dynamics is important – including moving people around to maintain their interest and enthusiasm”.*

**Agribusiness managers** with similar capability provided the following responses:

- *“Having staff with a background that helps them connect with farming people and understand business is important – developing long-term relationships is key”.*
- *“There is need to employ people who are able to think for themselves – value of having a degree (any degree!)”.*
- *“Word of mouth, ‘coming across good people’, and employing people who come to you looking for employment is better than general advertising and using employment agencies”.*
- *“Building on the skills and interests of employees and building business around them can be more productive than fitting them into a narrow existing mould”.*
- *“Providing diversity and maintaining good open communication is seen as important to grow and maintain staff”.*
- *“Staff need to have the interest and capacity to go beyond the technical information to working within a business environment”.*
- *“Commitment to the success of the business in which they are working is important – with an ability to take on increasing responsibility over time”.*
- *“A strategy to support personal and professional growth is critical to a strong agribusiness”.*

Common to both of these groups is the importance of relationship and commitment – and working with staff to build on their strengths and interest areas to nurture that commitment and maximise the contribution to the business. Equally, a ‘professional development mentality’ is emerging in leading business operators – as opposed to a pure skill development focus.

## Approach to training and skill development

The leading growers interviewed took a long-term approach to capacity building. They broadly saw their managers as having a key on-farm role in mentoring/training staff as well as working with them to look for relevant off-farm training opportunities with comments of:

- *'Beyond the certification requirements, on-farm training is (more) important than formal courses'.*
- *'There is a need to recognise that staff capacity development takes time and needs support and direction – and for them to see a career pathway ahead of them'.*
- *'Going beyond the statutory training is important to deal with new technologies and challenges'.*
- *'Senior staff need to see their role as developing and supporting less skilled staff'.*
- *'Support individual staff interests with training and mentoring to develop their capacity to better contribute to the business and advance them in the business as they are ready'.*

One grower noted that they had established an 'inclusive, engaged' business culture amongst all personnel – part of a team – where birthdays etc are celebrated and all staff are involved in problem solving and decision-making.

Agribusiness informants had similar approaches to supporting staff development. These included:

- *'Much of the training/mentoring is undertaken in-house due to its need to be relevant, lack of close training opportunities and because senior staff have direct experience they can share with new staff'.*
- *'Professional Development opportunities externally are supported if it directly relates to the business and staff will get to use the skills within the workplace'.*
- *'Formal courses are supported through time-off or subsidising fees – to ensure necessary certification is maintained and/or professional development is undertaken'.*
- *'Profit and revenue sharing is used to reward and recognise staff contributions to the business success – often linked to performance reviews/achieving targets'.*
- *'Being open about business performance and issues emerging demonstrates that staff are viewed as important and valued'.*
- *'Providing support for staff in their own self and professional development opportunities reflects the value placed on them'.*
- *'Providing flexibility in working hours and working around their needs for time off is seen as positive approach which is often reciprocated by staff doing the extra mile for the business'.*

This strategic mix of in-house training/mentoring, alongside a longer term view of supporting individual development with external training was a common theme across both groups – in other words, a longer term and more holistic view to workforce development.

## Principles for maximising benefits from the workforce

The principles that emerged from the leading grower cases have been summarised below:

- *'Employment needs to consider whole families and ensure work-life balance with incentives such as above award pay, encouraging community participation and other non-cash benefits'.*
- *'Focus on personal attributes and attitudes when employing people – not just specific work skills – and support the development of their particular interests and strength where possible'.*
- *'Consider the long-term benefits of employing local and/or young people/new graduates and build their capacity within the context of the business'.*
- *'Look ahead to new technologies and employ and/or support training for staff to develop the skills and confidence the business will need into the future'.*
- *'Maintain open communication and interact with staff to understand their competencies, interests and limitations and where they can be best supported'.*

The principles from the agribusiness cases reinforce the staff-centred approach and the importance of seeing them as an integral part of the business – rather than a 'hired hand', with summary comments / emerging principles including:

- *'Profit and revenue sharing is used to reward and recognise staff contributions to the business success – often linked to performance reviews/achieving targets'.*
- *'Being open about business performance and issues emerging demonstrates that staff are viewed as important and valued'.*
- *'Providing support for staff in their own self and professional development opportunities reflects the value placed on them'.*
- *'Providing flexibility in working hours and working around their needs for time off is seen as positive approach which is often reciprocated by staff doing the extra mile for the business'.*

In summary, it appears more thoughtful cotton growers and agribusiness owners are adopting a more staff-centred approach, seeing them as an integral part of the business and supporting their personal and professional development (including their role in the community) in a stronger fashion.

## Creating an Entrepreneurial Workforce

In an article written by 'The Economist Intelligence Unit (2013)<sup>15</sup>, the authors address the challenge of creating an entrepreneurial (or intrapreneurial) work force. They noted ... *facilitating internal connections like this has the added benefit of drawing out experiences from a company's existing talent pool, taking employees beyond specific roles and job descriptions to the benefit of employer and employee alike. "There is a growing trend among companies of wanting to hear the voices of their young, tech-savvy employees," says Ms Gratton. "A lot of new products have big technology elements to them, which means their input is becoming more important." Ultimately, making things happen will largely depend on making the right connections, irrespective of the scale of the innovation. Smarter employee collaboration, championed by management, seems a good place to start*".

<sup>15</sup> <https://www.newscientist.com/article/in419-connecting-the-entrepreneurial-workforce/>

In a paper entitled *Searching for entrepreneurs among small business owner-managers in agriculture*<sup>16</sup> Lans et al (2014) reported on a multiple-source case study that was conducted in which ... *quantitative and qualitative data from 19 horticultural firms in the Netherlands were combined.*

Based on comparing data across these case studies, they conclude that ... *entrepreneurial competence development is related to clear, entrepreneurial goals and competence awareness.* They highlighted the lack of feedback on this aspect of business management – and hence the ability to encourage and develop these traits and suggest that this could be done ... *through increasing the possibilities for coaching and mentoring of agricultural entrepreneurs.*

They point out that ... *at present such activities are often limited to specific target groups or events (e.g. succession, crisis).* They also note that development of ... *entrepreneurial competence seems to be dependent on the interaction of farmers/growers with a wide diversity of networks.* Because of this they recommend that ... *Network formation and the ability to network (e.g. social competence) should be actively supported for instance through specific events and programmes.*

The attributes of a more staff-centred approach, seeing key personnel as being integral to the business and its future, likewise characterise a more entrepreneurial workforce. Such a workforce is likely to be more appropriate to a work setting that is more highly automated, requiring a more professional type of staff member.

## Call for a Broader Industry-wide Approach – to Address Structural Industry Issues

A number of wider industry structural issues were identified during the course of the research that were seen as industry priorities.

*“Access to personnel is one of our biggest risks; as a result, we are taking a corporate approach to staff management; reducing permanent staff and using more subcontractors. HR management is one of the biggest issues for the business and its growth – the key question is who we can talk to get good information that is practical and applicable – and a mentoring process would be critical”.*

*Namoi Valley Cotton Grower Informed Person*

These structural issues are summarised below:

- The biggest area of concern was expressed by those enterprises going through an expansion process – who noted that a key limitation (apart from water, land and money) was access to suitable personnel.
- The respondents noted that many of these workforce issues are, in reality, structural issues facing the whole of cotton industry.
- Technological advancement – including the accessing suitable personnel to manage the technology – is emerging as a major impediment to the future of the industry.

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<sup>16</sup> Lans,\*, M.A. van Galen, J.A.A.M. Verstegen, H.J.A. Biemans, M. Mulder (2014) ,Searching for entrepreneurs among small business owner-managers in agriculture NJAS - Wageningen Journal of Life Sciences 68 (2014) 41– 51

- It is regarded as being critical that current success stories (Tocal and Trudy Staines' work) that are known to provide industry benefit and clearly work to benefit the cotton industry – are maintained and expanded.
- The concept of an urgent, cotton industry roundtable to address workforce issues, including futurists and high-level industry thinkers, was highly recommended by 40% of respondents.

A grower pointed out that the issue was bigger than cotton “in fact for all agriculture” with a need to start ... *telling the real story about jobs in agriculture...there's so much technology that's new and exciting*. This was reported in the context of needing more operational staff rather than university graduates ... *they're not the ones we hire to sit on tractors*.

Others referred to the need to develop management capacity and to have a career pathway. The Ag Gap schemes were seen by some as an important initiative for the industry to support.

It was suggested by some that more work was needed to develop an understanding in the industry (growers and agribusiness) about the importance of managing people well. It was also suggested that more needed to be done on engaging with local people to better work in the industry – and an overall better strategic approach to attracting people to work in the industry.

There was a concern that the lack of skilled personnel could be a limitation to future growth in the industry – particularly as professional consultants are retiring without replacements. Business and financial management was also raised as an issue that needed more support into the future.

A strong emerging theme from the research was the need for some form of Cotton Industry Personnel Roundtable. A number of individual business owners suggested addressing these problems was far larger than an individual business issue. They commented on issues as wide ranging as adverse effects of drought (loss of skilled personnel as jobs are lost), The Personnel Sequence (ensuring skilled personnel are attracted to and retained in regional settings) and a core group of personnel skilled in the technologies around automation (today and evolving into the future) are available / made available longer-term.

# 4.5 The Value of Developing Staff Capacity – Individual, Enterprise and Industry

A key question in this research was about better understanding (and quantifying) the value of training and skill development to the industry/business. This was no easy task as there was a lack of direct financial data to draw on for this purpose.

## Value of Training

The *People in Agriculture* website (<http://www.peopleinag.com.au>) (accessed 28/12/17) described the benefits of training as follows:

*Investing in the development of your employees’ skills, knowledge and technical competence is really an investment in the farm itself. Showing people that they are valued members of your team and worth investing in, not only boosts morale and motivation, it can also help people perform their jobs more efficiently and reduce staff turnover.*

This refers to the notion of a ‘people efficient farm’ and goes on to explore what that means. This is seen to include the process from recruitment to induction to communication to efficient and clear work practices. Training was seen as a part of a “people efficient farm” and among other criteria for useful training, it suggests one was ‘does the learner demonstrate improved or changed performance’. Importantly, formalised training is not seen as the only approach to staff development.

Along with good staff management practices, mentoring is also highlighted a part of the development process: *mentoring is another opportunity to develop the people in your business... it can help individuals acquire and develop new skills, build confidence and self-esteem, accelerate career plans, test a personal or professional goal or navigate a business through difficult situations.*

Griffin (2016)<sup>17</sup> argued that ... *understanding the costs and benefits of vocational education and training (VET) provides a basis for making decisions about investing in training.* In a supporting paper, looking at the benefits of training for an employer and employee, Schuler (2016)<sup>18</sup> summarised potential benefits in terms of tangible and intangible(s) for each of these groups.

Benefits	Employee	Employer
<b>Tangible</b>	Improved employee pay	Increased productivity and efficiency
	Improved language & literacy	Increased sales and profitability
	Improved technical skills	Improved product quality & services
	Increased use of new technologies	Improved customer service and satisfaction levels.
	Improved workplace practices and procedures.	Improved OHS
<b>Intangible</b>	<i>Social and well-being</i>	Better management and employee workplace relations
	Improved self-confidence & morale	More co-operation among employees
	Reduced stress	Reduced internal conflicts
	Improved motivation	Developing a learning culture
	Improved work ethic	Supporting social cohesion and inclusion
	Improved physical and mental health	
	Job satisfaction	

Source: Adapted from Barker 2001 and Moy and McDonald 2001 in Brown et al 2015 Workplace Literacy Pays, ACER

<sup>17</sup> Griffin T (2016) Costs and benefits of education and training for the economy, business and individuals, Occasional Paper, National Centre for Vocational Education Research

<sup>18</sup> Schueler J (2016) Evaluation framework measuring Return on Investment (ROI) in TVET, Issues Paper, National Centre for Vocational Education Research, Australia

Griffin (ibid) points out that ... *analyses based on individual businesses or industries appear to be highly context-specific, resulting in extremely variable estimates of the return on investment.* They note that ... *methodologies used to measure increases in productivity seem to be more effective in some industries than in others, leading to uncertainty about the reliability of findings.*

They refer to examples of very high returns reported in the literature being mostly related to manufacturing businesses where ... *training is often highly specific and that some examples of very high returns on investment were uncovered in the literature, especially in businesses focused on manufacturing where training is regarded as crucial.*

They point out that while staff turnover, absenteeism and even positive changes in workplace culture can all have economic pay-offs for the organisation, the non-tangible benefits were viewed in the context which likened businesses to small societies or communities in which the social benefits from VET are experienced.

In considering The Program Investment Logic for Workforce Capacity<sup>19</sup> the 2013-18 CRDC Strategic Plan immediate outcomes (benefits) were listed as:

#### **Changes in attitudes, knowledge, awareness**

- A skilled, educated and progressive industry workforce.
- Cotton businesses understand their workforce needs, the value of people to their enterprise and the ROI of improving capability of their workforce.
- Cotton businesses are equipped to plan workforce needs, attract, induct and retain staff.
- Cotton industry people have effective skills in business management and leadership.
- Farm workers have improved understanding of career progression potential.

#### **Changes in Practice**

- Cotton businesses have effective plans to address future workforce (labour and skills) requirements.
- All farms conform to at least Level 1 WHS practices in BMP HR module.

**Outcomes** were listed and described as:

- Capable and connected people driving the cotton industry.
- Average time to fill vacancies reduced by 30%.
- Cotton farm businesses are rewarding and desirable places to work.
- Cotton businesses are identified as employers of choice.
- Indigenous attraction & retention rates increase.
- Industry identified as a leader in innovation.
- 18% reduction in cotton farm related injuries by 2018.
- No fatalities.

**Industry benefits** were described as:

- Industry has the capability to achieve maximum benefit from CRDC's RD&E investments.
- Cotton farms are as safe as they can be.

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<sup>19</sup> A Framework for Evaluating Performance of the Cotton Research & Development Corporation's 5-year Strategic R&D Plan 2013-2018

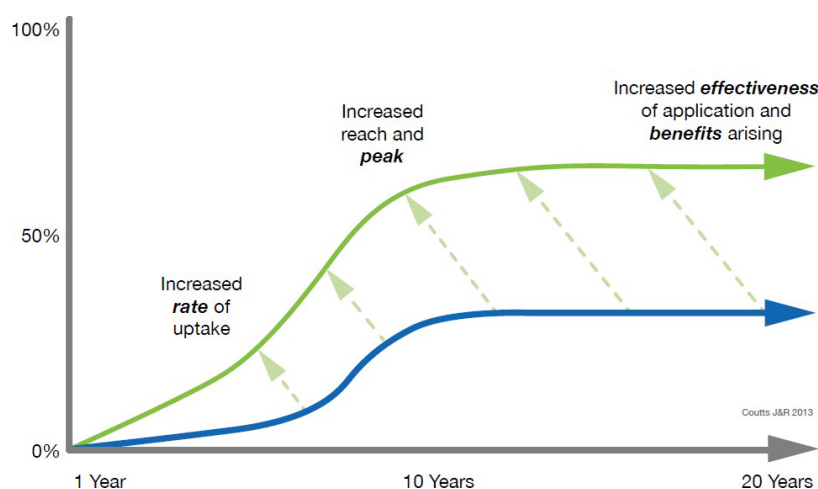
The true realisation of the benefits of training remains a work-in-progress and more rapid implementation could benefit from stronger industry-wide and coordinated support. While the cotton industry is aware of this, a more considered approach to training in the wider cotton industry business marketplace could lead to stronger tangible and intangible benefits.

## Why Invest in Capacity Development and Training?

In developing *the Extension and Education Strategy Update and Implementation Guide June 2014* for the *Reef Water Quality Protection Plan*<sup>20</sup>, the argument was made that investment in extension and education programs and activities is based on the notion that the investment will yield:

1. A higher rate of adoption in targeted practices than would have occurred without the intervention.
2. A greater geographical and demographic spread of adoption – accessing individuals and localities that may otherwise have not engaged.
3. A better application of adopted practices – outcomes being more effective than they might have been without the extension and education support.

This is shown in the figure below which shows the gains that can be achieved by effective investment in extension and education over and above 'business as usual'. The left vertical axis is the percentage of producers to whom a change is relevant and the horizontal axis refers to the time period over which change occurs.



The benefits of capacity building and training may not be fully realised until the longer-term – in which case a longer-term perspective is required at business and industry level regarding investments and returns (tangible and intangible).

<sup>20</sup> Coutts J (2014) *Extension and Education Strategy Update and Implementation Guide June 2014* for the *Reef Water Quality Protection Plan*, Queensland Government

## Impact from Extension/Informal Training

Extension activities can range from webinars, videos, workshops, farm visits to providing information and tools on websites and social media to mass media stories and information. Much of this occurs without measuring impact at the enterprise level – although many group events use a feedback sheet to capture gains in learning and intention to use new skills or information.

In some cases, follow-up practice change or impact surveys are undertaken to see how this learning impacted on-farm decisions and actions. Most of this is directed at the enterprise manager/owner rather than other members of the workforce. Analysis over time and across many different industries and practices demonstrates that ... *in almost 100% of cases, learning occurs and many participants of group extension initiatives indicate an intention to use the information, tools or skills they gained.*

The Cotton Carbon Farming project, for example, ran a total of 138 extension activities between 2013/14 and 2015/16 attended by approximately 6,000 participants representing at least 156,700 hectares of cotton – 60% of the total 263,339ha 2015/16 cotton crop. *100% of Cotton Nutrition workshop respondents indicated the workshop would help them in the management of soils, crop nutrition and nitrogen use efficiency for cotton production; 85%-90% of IrriSAT workshop respondents likely to adopt the IrriSAT technology; 75% of Energy Efficiency field day respondents likely to adopt Renewable energy technology 40-70% of Cotton Nutrition & NUE Workshop respondents likely to adopt presented nutrition concepts.*

A small survey of 40 growers who had participated in one or more activity found that ... *49% (13 growers and 6 consultants) had taken actions to improve energy use efficiency, 49% (12 growers and 7 consultants) had taken actions to improve emissions management, and 33% (10 growers and 3 consultants) had taken actions to increase sequestration of carbon and better manage riparian zones.*

As a result of these actions taken, respondents reported observed benefits including: *economic benefits* (8 mentions – e.g. reduced input costs, lower energy bills, more sustainable farming, and increased profit); *environmental benefits* (6 mentions – e.g. reduced erosion and healthier ecosystems); *improved nitrogen use* (6 mentions – e.g. efficiency improvements and reduced emissions and run-off); *improved soil and crop health* (4 mentions); and *improved monitoring and information accuracy* (2 mentions)<sup>21</sup>.

The **2018 Cotton Growers Survey** reported that more than three in four (78%) reported sourcing information from CottonInfo (the main industry extension initiative) with user respondents rating the degree to which the CottonInfo team, information resources and myBMP assisted them to improve farm practices on their farm as: Insects, weeds, diseases and biosecurity – 3.4/5; Nutrition and soils (3.1/5); and water and moisture management, soil forecasting and climate as 3.1/5. 3/5 was seen as moderate influence.

Likewise, the **2015/16 Cotton Consultants' Survey** reported that the CottonInfo team, information resources and myBMP assisted: 98% of consultants to improve water and moisture management practices on client's farms; 95% improve nutrition and soils practices; 88% improve seasonal forecasting and climate practices; 79% improve natural resource management practices; and 57% improve energy use practices.

It is really only through in-depth case studies that real economic benefits of extension initiatives and resulting changes can be captured in practice. However emerging data does suggest that these real benefits are being achieved; they simply need better quantification.

<sup>21</sup> Coutts J&R (2017) Project Evaluation: *Carbon Farming in the Australian Cotton Industry*, CRDC

## Cotton Operations and Economics

There are a range of factors that impact on the need for staff, different skills and training based on farm size, farm operations, location and access to – and use of contractor expertise. These also affect the economics of cotton operations and hence the potential for staffing factors and training to impact on the returns.

The CottonInfo site provides Gross Margins based on different farming types<sup>22</sup>:

- Furrow irrigated
- Furrow irrigated – all operations contracted
- Dryland – Single & Double skip
- Semi-irrigated
- Overhead irrigated.

The example Gross Margin Budget of \$833/ha broke down costs according to different farming operations – but noted that labour costs ...*an estimated \$250-\$300/ha (and that) it is assumed to be an overhead cost and not included in this budget.*

A similar Gross Margin framework from the Queensland Government<sup>23</sup> used the following major headings for variable costs and income (figures are based on a Cotton lateral/Centre Pivot (Irrigated) farm in the Southern Downs in 2017 – and have a number of underpinning assumptions about price, costs and yields). Each major heading is broken down into smaller components.

Variable Costs (per ha)	
Fallow Management	\$81
Planting	\$487
Nutrition	\$358
Crop Protection	\$124
Irrigation	\$490
Harvesting	\$265
Other	\$185
Post-harvest	\$723
<b>Total</b>	<b>\$2714</b>
Income	
Lint	\$5,760
Seed	\$684
<b>Total</b>	<b>\$6444</b>
<b>Gross Margin</b>	<b>\$3730</b>

Labour also does not appear as a separate item but assumed as an overhead.

<sup>22</sup> [www.cottoninfo.com.au](http://www.cottoninfo.com.au)

<sup>23</sup> <http://agmargins.net.au/>

The OECD<sup>24</sup> uses labour costs per unit as a broad measure of competitiveness: *Labour productivity growth is a key dimension of economic performance and an essential driver of changes in living standards. Growth in gross domestic product (GDP) per capita can be broken down into growth in labour productivity, measured as growth in GDP per hour worked, and changes in the extent of labour utilisation, measured as changes in hours worked per capita. High labour productivity growth can reflect greater use of capital, and/or a decrease in the employment of low-productivity workers, or general efficiency gains and innovation. Through people training and development, it could be assumed that labour costs (e.g. turn-over and recruitment and external input) would decrease and efficiency/quality would increase.*

If labour costs in cotton production range from \$250-\$300/ha as per Cotton Australia's indicative assumptions, then reasonable economic indicators could be developed around such benchmarks. These could include:

- Labour costs/ha cotton production.
- Labour costs/bales of cotton produced.
- Labour costs/cotton income.
- Labour costs/profit on labour enterprise.

Such costs would have to take into account the following:

- Total casual labour costs (including sourcing, equipping, training costs).
- The proportion of managerial and full-time staff costs dedicated to cotton.
- Contracted labour/consultancy costs dedicated to cotton.
- Size and type of farm.

As noted in the papers by Griffin and Schuler earlier, there are potentially both tangible (having a direct economic impact) and intangible benefits of training and staff development at the individual, farm business and industry levels. The challenge in developing a dollar value proposition for training is to link the level of staff skills/competence/experience to (directly) impacting on these different elements that together affect this gross margin. This is further complicated by the different types and levels of skills and potential to impact.

It is helpful to start with the *direct* staff costs. These will vary greatly depending on the size and type of operation, their use of staff/contractors and their staff recruitment and management practices. These direct staff costs (excluding wages and associated employment costs) includes:

- Recruitment costs /staff turnover costs / relocation costs.
- Induction costs.
- Essential training certification costs (e.g. vehicles; chemical).
- Sickness/accident costs.
- Salary/wages and associated super.

There is a direct logic in calculating the value in reducing these costs through effective staff management and support processes. One argument is that on-going staff training can contribute to retaining good staff and reduce the initial training/induction costs – and sickness and accident costs. (A counter argument at the farm level is that by providing such training/development, it may be more

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<sup>24</sup> OECD (2017), *Labour productivity and utilisation (indicator)*. doi: 10.1787/02c02f63-en (Accessed on 30 December 2017)

likely that staff will seek employment with better wages/conditions commiserate with their new level of skills).

The next level is being able to assess how a more skilled/motivated workforce (including managers/owners) can impact on the 'bottom line' in an overall productivity/profitability sense. In the literature review it was reported that high returns were being achieved from manufacturing industries – but variable in other industries.

At the overall level, can an improvement in staff 'capacity' (managerial and technical skills) impact on farm outcomes? Using the above example, *if* the Gross Margin (\$3,730/ha) could be improved by 10% by a more able workforce, this would contribute \$373/ha to the overall gross margin. But to arrive at a figure beyond 'plucking it out of the air', each of the components would need to be studied to see where the 'skill' level could influence the outcome – reducing costs or increasing productivity.

It appears there are tangible (financial) benefits as well as significant intangible benefits to staff development, training, etc. While, arguably, more work needs to be done, the trends appear apparent from the literature – and are supported by the project findings.

## How Businesses Assess Training Impact

### Grower feedback on assessing value

When asked how the benefits of training was judged on the farm, responses from the initial grower interviews included:

- Providing feedback on the training to managers
- Showing greater interest in work/asking questions
- Improvements in knowledge
- Ability to do assigned jobs
- Improved competency
- Reduced level of frustration
- Less time to undertake jobs
- Greater level of quality in tasks undertaken
- Improved job satisfaction
- Staying in the job and industry more broadly
- Confidence in participating in industry events and speaking up.

All of these were qualitative responses – some with potentially a direct economic benefit (e.g. 'less time to undertake jobs') and others more indirect (e.g. 'reduced level of frustration'; 'improved job satisfaction').

### Survey results

In the 2018 Cotton Grower Survey, a number of questions were asked around grower assessment of the impact of a more skilled/capable workforce. The responses are assumed to be of a more subjective or qualitative as calculations and any evidence base was not requested or provided.

### Questions around adequate capacity impacting on productivity and business:

- Half (51%) agreed or strongly agreed that they *found it difficult to get the staff they needed for the farm to be at its most productive* (highest in large farms – 61%) [This might also relate to numbers of staff rather than just skill levels]
- Under a third (27%) agreed or strongly agreed that a *lack of adequately skilled staff* was negatively impacting on the farm business (highest in medium to large farms)
- About one-fifth (23%) agreed or strongly agreed that a *lack of engaged staff* was negatively impacting on the farm business (highest in large farms – 32%).

### Questions around impact on production and profitability:

[Please provide feedback on the impacts that skilled workers have on your farm business outcomes. How significant were employees' actions on the yield and quality of crop produced for 2017-2018]:

Impact of employee actions on production outcomes	% of growers who selected level of impact	Farm size breakdown		
		Small (61)	Med (82)	Large (28)
None	16	26	13	4
<10%	12	11	11	14
10-29%	12	8	16	11
30-49%	12	13	11	14
50-69%	12	11	9	25
70-89%	20	10	27	25
90%+	15	20	13	7

This table is interesting because there is a general recognition (72% chose greater than 10% impact) – especially *in the medium and larger farms* of the impact that employees actions (and hence underpinning skills and motivation) *have had – and can have – on productivity* (weighted average between 40-50% impact).

[In the 2017-2018 season, what shortfall did a lack of adequately skilled staff cost the farm in terms of direct loss, lost incomes and profit (include costs of mistakes made by inadequately skilled staff and cost to potential profit from production outcomes)]

Impact of lack of skilled staff on profits	% of growers who selected level of impact	Farm size breakdown		
		Small (61)	Med (82)	Large (28)
No lack of adequate skill	57	59	61	43
Don't know	7	7	6	11
Nothing	11	20	6	4
<\$50,000	12	10	12	18
\$50,001- \$100,000	6	3	7	7
\$100,001 - \$150,000	4	0	4	14
\$150,000 - \$200,000	1	0	1	4
\$200,001 - \$300,000	1	0	2	0
\$300,001 - \$500,000	1	2	0	0

This question relates somewhat to the earlier question (above) where 27% agreed or strongly agreed that a lack of adequately ... *skilled staff* was negatively impacting on the farm business (highest in medium to large farms). In this case 25% indicated an impact on profitability – again *highest in larger farms* where there is a stronger dependency on workforce.

The weighted average of those who expressed an idea (including those who said none or that they had no lack of skills) was in the order of \$20,000-\$30,000 for the year. If only those who considered they had a lack of skills in their workforce that impacted on profitability are included in this consideration, *the weighted average is in the order of \$80,000 - \$90,000 for the year.*

Besides these figures being likely to have been quite subjective, as well as size and region, *there are many variables likely to be impacting on this figure.* These would include farm type (e.g. level of automation), availability and use of contractors and consultants and other specific farm variables.

The other interpretation of the responses can relate to the other earlier response where half (51%) of the growers agreed or strongly agreed that they found it difficult to get the staff they needed for the farm to be at its most productive (highest in large farms – 61%). So the ‘lack’ could be the ‘lack of staff’ and/or the ‘lack of adequate skills’ in existing farm staff.

It appears that the lack of adequately skilled staff has a quantified impact on the productivity and profitability of cotton farms, particularly the medium to larger farms.

## Summarising the Value of Capacity Building

This research sought to qualify and quantify the value proposition for the cotton industry and its individual business to support skilling and capacity development in their workforce.

This research has not come up with a definitive quantitative measure of the value of such skilling and capacity building for an individual enterprise – there are too many variables and a lack of rigorous enterprise level data directly linking specific gains in skills to productivity and profitability.

The literature also was very limited in studies where such gains could be extrapolated.

What we can say from this research is:

1. **The evidence for the ‘value proposition’ of supporting staff development/capacity/skills is largely qualitative, based principally on logical arguments and intuitive data. Even though this is qualitative evidence, it is very compelling and provides a strong basis for managers to give this serious attention.** Given the contexts, different levels and range of skills that come under ‘staff development’, no single figure/cost-benefit is possible – and not much has been directly calculated in the cotton context (although there is good and sustained evidence that cotton growers have been influenced and assisted by extension and consultant efforts to make changes on their farms leading to improved outcomes). *The range of benefits* – depending on the types of development/skills – that have been documented include:
  - Staff being able to undertake the tasks for which they have been employed;
  - Reduced accidents, harm and loss of work time;
  - Mechanical tasks being done well, efficiently and with improved quality;

- Increased understanding of underlying science and reasons for doing things – raising interest, commitment, inquiry and improvement in techniques;
- Improved higher level of interactive discussion, planning, ideas and innovation potentially leading to improved systems/system changes and greater productivity and/or profit;
- Reduced turnover and hence reduced hiring and induction costs;
- Succession planning as staff can continue to move into areas of greater responsibility.

**2. The quantitative evidence of the value proposition of staff development is more anecdotal (and varies more widely) than calculated.**

- Seventy-two percent (72%) of growers who responded to the 2018 Cotton Growers' Survey considered that skilled employees had greater than 10% impact on the yield and quality of the 2018 cotton crop (especially in the medium and larger farms) – with a weighted average between 40-50% impact. Other quantitative assessments included:
- The 25% of growers who indicated an impact on profitability (highest in larger farms) – estimated an impact in the order of \$80,000 - \$90,000 for the year (weighted average of those who believed there was an impact).
- There is quantitative evidence from impact surveys related to specific extension programs – mainly directed at owner/managers and their consultants – as in the example used earlier – where 49% of follow-up survey respondents reported changes made with observed benefits including: economic benefits; environmental benefits; improved nitrogen use; improved soil and crop health; and improved monitoring and information accuracy. There are many similar follow-up surveys from extension projects in cotton and other industries that reflect such changes – many supported by more detailed case studies.

**3. There is significant complexity when considering the value from this development/training support:**

- There are different types and levels of skills, each with their own contribution to the enterprise.
- There are different ways of providing skills ranging from: on-the-job training; competency certificates; extension delivered information and activities; mentoring; interactive staff reflection sessions; and formal education.
- There are many different sizes and types of enterprises and farming systems with differing scope for people skills to impact (e.g. mechanised operations).
- Enterprises use different levels of external consultants and contractors and hence have different skill needs within their own workforce.
- Development of staff can result in individuals leaving for employment that requires these higher level skills – funded by the initial place of employment.

**4. A lot depends on the enterprise's management philosophy and leadership ability in terms of how staff are viewed and the steps taken towards their development. Thus a suitable enterprise management philosophy could be described as being one of these:**

- **People as Components:** staff are employed only to fulfil strictly defined tasks or roles and employed with the needed skills and certificates or support provided to achieve these defined tasks.

- **People as a Production Team:** staff are provided with extra background learning and information to help them understand the science and rationale so they can contribute to improved operations.
- **People as an Innovation System:** staff at all levels are seen to be central to the strategic thinking, continuous improvement and innovation in the enterprise and are supported to undertake skills in business, planning, leadership, strategic thinking etc and there are proactive opportunities for them to interact and take part in planning and reflection meetings in the enterprise – as well as in broader industry events, organisations and processes.

**5. Recruiting and maintaining the right staff for the enterprise is a key concern of managers and fundamental to have in place to permit effective staff development:**

- There was a lot of concern about the lack of available skilled staff available at all levels of staff skills and roles.
- A lot of emphasis was placed by managers on ‘getting the right kind of person’ who would best ‘fit in’ to the enterprise culture, approach and goals. Agribusiness managers noted the value of people who had a background or affinity with growers. Farm managers noted the importance of employing local people who had a connection to the area and understood the demands of working on the land and in remote locations.
- Families were highlighted as a key consideration in employing people – in terms of considering employment opportunity for spouses (partners in a relationship) and social opportunities in the community. The willingness of spouses to move and stay in a locality was a major factor in successfully attracting and keeping people.
- Growers referred to having to provide incentives such as above award wages, vehicles and housing and other monetary incentives to attract and keep staff. Others made an effort to provide vacation and social opportunities.
- There was some concern about the growing problem with drugs (e.g. ICE) which is having an impact on labour and workplace health and safety.

**6. There is a strongly perceived need for an industry wide approach to addressing skilled workforce needs.**

- Larger expanding enterprises interviewed highlighted the lack of available skilled staff in the workforce as a major impediment to growth. Half (51%) of the grower respondents of the 2018 Cotton Grower Survey agreed or strongly agreed that they found it difficult to get the staff they needed for the farm to be at its most productive (highest in large farms – 61%)
- Interviews and the 2018 grower survey highlighted the need for new skills around the new technologies. Growers indicated a low level of confidence in their workers having the skills (or able to adapt) to use automation (69% of farms currently using automation; 61% of those considering; and 51% of those not considering automation) or even less confidence in hiring others with the necessary skills (60%, 53% and 38% respectively).
- The concept of an urgent, Cotton Industry Roundtable to address workforce issues, including futurists and high-level industry thinkers, was highly recommended by 40% of initial grower and agribusinesses interviewed.

The overall value of capacity building can be described as contributing to more effective farm management; improved team interactions; impacting on yield in medium to larger sized cotton farms; benefitting from access to extension activities; methods of capacity building having to be tailored to the different enterprise needs; being tailored to how 'management' views their personnel in terms of contribution to the enterprise; being focused on Human Resource best practice; and being of such significance to individual businesses and the industry to warrant development of a Cotton Industry Roundtable discussion.

## 4.6 Business Best Practice – Aligned with Higher-Level Personnel Management

In Section 4.2, Issues Facing the Cotton (People) Sector, interviews with Naomi Valley growers and additional informed Persons reported that personnel management is ... *one of the biggest issues for the business and its growth*. This was reported as one of a number of wide-ranging industry issues that impact workforce planning and management.

Likewise these Informed Persons interview responses ranged across a number of key concerns articulated by respondents. It was from this discussion that The Personnel Sequence emerged. Equally, it was noted the same personnel matters concern the consultant and advisory sector.

A recurring theme amongst these business owners – growers and advisers – was the increasing complexity of ... *doing business*. These concerns included matters such: as business management, financial management, the impact of weather, promotion and marketing, succession planning, etc.

In the 2015/16 QFF Study, it was likewise recorded that 48% of owners and managers lacked workforce management skills, while 10% reported they were lacking the required IT/computer literacy skills.

In the subsequent interviews with 'leaders in workforce management', it was reported that as farm size and complexity increases, different skills (decision-making, leadership, understanding new technology, etc) are required by business owners/managers to meet farm management and growth objectives. They also reported a need for ongoing training and professional development of themselves as business owners.

Likewise, advisers reported changes in technology, people requirements and globalisation (including technology management) as being critical issues.

In addition, these business owners also sought personnel who had a commitment to the success of the business over time – with an ability to take on increasing responsibility. They also commented on the need for a strategy to support personal and professional growth in the development of agribusinesses over time.

Furthermore a number of business owners had relevant degrees and qualifications at a tertiary level as well as a more formal training including Company Director's courses.

## Business Management and Business Best practice – an Emerging Unseen Theme

One of the emerging structural issues appears to be the level of business management and business best practice competence of business owners.

While far less overt than the management of personnel, the level of competence and professionalism of cotton industry business owners themselves in a changing marketplace emerged during this project. It emerged as an unseen theme with the potential to adversely affect personnel management in the cotton industry of the future.

In the management of an agribusiness management and mentoring program for the meat and livestock sector<sup>25</sup> an expansive ABDI 12-Pillars of Business Best Practice framework is used to explain 'doing business' in the agri-sector, based on the application of principles used in mainstream business (rather than production).

During 2018, a number of younger cotton growers (ages early 20s to early 40s) attended the short form 3-month Agri-Business by Design Program. One couple in their 40s attended the in-depth 12-month Agri-Business Management Program and agreed to be a *high performing business case study*.

The context was to articulate the characteristics of a high performing business – in terms of its overall business management principles, practices and approach to personnel management.

## Key High Performing Business Principles – A Case Study

This business obtains one-third of its income from irrigated cotton, with equal thirds from grain and livestock. This '3-legged approach' is, in their view, the best risk mitigation strategy.

### Case Study 3: Family Owned Corporate Farm

<b>Farm type</b>	Irrigated (290 ha Cotton 2016/17) – also grains and livestock.
<b>Situation</b>	<p>The farm is 'stable' (one large farm) with an average level of confidence in the future... <i>we are concerned about the threat of polyester, the global customer perception of cotton (clean, green marketplace) and an ageing agronomist workforce, with lesser expertise of younger agros!</i></p> <p>We are comfortable with our business management expertise and skilled personnel – the biggest threats are structural industry and community issues.</p>
<b>Staff/labour used</b>	<p>The husband-and-wife management team operate as joint CEOs, with two FTE personnel dedicated to cotton (including a casual). Contractors are used for spraying, root-cutting, picking and mulching. An independent consultant agronomist (rather than reseller) is a pivotal member of the team.</p>

<sup>25</sup> Stone, G (pers comm) 2019 and [www.abdi.com.au/12-pillars/](http://www.abdi.com.au/12-pillars/) and a [Case Study](#)

**Issues related to staffing**

Their key issues are to avoid the loss of experienced staff, as they are located in a more remote location. Also, the investment they have made in their personnel means they have applied considerable effort to planning the type of personnel required, acquiring and managing them, then retaining them into the long-term (generally 5-10 years).

Furthermore, the contribution the current team have made and continue to make to the business is 'almost priceless'. Both management and the staff/contractors operate as a cohesive team – and this has been a deliberate move that has been put into place over in excess of 10 years.

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**Access to expertise and support**

They are satisfied with their access to professional personnel ... *due to our deliberate, longer term, planned and implemented professional personnel management strategy.*

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**BMP module**

The farm has completed the former cotton BMP accreditation process. It is fully grains, grazing and organic best management practice accredited, noting... *the final myBMP paperwork is yet to be completed.*

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**Training and personnel development**

The farm CEOs have... *fully engaged all personnel in longer term business plans, in the context of understanding and managing their (employees) current and expected skills, abilities and level of professionalism.*

This means ... *we as management are open to any requests for training and professional development that collectively the team regard as being important for development of the business. We are constantly looking for ways to support staff fulfilment, then embrace those needs, to create a more stable workforce.*

Equally, we as the management team... *are particularly open to updating our business management skills if and as required. It was for that reason, we attended the ABDI Agri-Business Management Program – to expand our thinking around business management.*

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**Training benefits/ indicators**

They reported that... *the objective is for our whole team to be on the same page – in terms of level of skills, the future of the business, the highest level of professionalism in how we manage the business and for these key personnel to understand why we do what we do.*

They commented ... *we recruit for positive attitude, recognising that personnel (including us) with a negative and 'can't do' attitude adversely affects everyone in the business; being remote and focused on higher order business plans and outcomes, we simply can't have that type of attitude; it's too debilitating all round.*

This thinking means that ... *all personnel are on the same page when understanding why certain decisions are made, often because we enquire into the true financial and profitability benefits/outcomes of key decisions (usually because of their longer-term implications to the*

business).

They also reported that... *this true understanding of the results of their efforts, by all of our personnel, is one of the reasons why we have such a cohesive workforce. They truly understand why we do what we do!*

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**Industry initiatives needed**

They reported that most current industry initiatives are very valuable. They looked outside the cotton industry to find a higher-level, more professional business management program to expand their thinking around the business side of the enterprise.

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**Benefits of Business Best Practice**

They reported the key advantages of attending a higher-level, more professional business management program was that it... *contributed to a more corporate way of doing things; allowed us to step back and look at the bigger picture and fundamentally tied all elements of the business together.*

They acknowledged that personnel management is a never-ending issue – with staff retention being the key issue, due to the known cost of short-term staff churn. They commented that anything they could do to expand their thinking into a more professional, corporate way of doing things would inevitably support growth of the business over the longer term.

Because of their greater understanding of the corporate way of doing things (The Personnel Sequence); a very professional approach to discipline around roles and responsibilities, employment agreements, regular reviews, etc improves personnel interaction and reduces short and longer-term personnel problems. This is also linked to ... *people's 'can-do' attitudes being so important to us.*

Other elements of business best practice reported by them as being valuable include... *reporting against KPIs; higher-level regular monthly reports; budget forecasting on a business division basis; absolute transparency via our reporting; being aware of financial pinch points well in advance and the capacity to opportunity buy and lock-in higher financial returns all support implementation of the overall business strategy. The staff all have to 'get this approach and sign up to it'.*

Due to this level of discipline, they are prepared to share the business data with staff so everyone truly understands why things are done as they are; the implications of costs vs income; how 'grand plans' may play out (positively or negatively); while ensuring a quality cotton product is always produced (which provides a satisfying and financially valuable outcome, that everyone shares in).

## Implications of Business Best Practice Knowledge to Personnel Management and Innovation

The ABDI Program is actively supported by the Queensland broad acre farming organisation AgForce, Meat & Livestock Australia Donor Company and the Department of Agriculture and Fisheries (Qld). Their focus is on creating a more professional workforce of meat and livestock sector (farmers, advisers and others in the value chain) business owners who can rise to the challenge of the contemporary and evolving marketplace.

It is notable that a cohort of younger cotton growers chose to attend the short-course Programs, with one cotton grower actually attending the long-course Program and with other cotton growers expressing interest and intent, although to-date not yet attending.

One of the resounding themes to emerge from the interview with Case Study 3 farm managers/CEOs, was the level of professionalism demonstrated, their focus on a 'more corporate way of doing things' and intent to expand the business using business best practice as described in the ABDI Program.

Their view was that the management of personnel is inextricably linked to an increasing level of professionalism, a more corporate approach and the use of high-level business skills by the business owners. Furthermore, they placed great store on the attitude of their personnel, as well as seeking external business advice on appropriate Business Best Practice ways of doing 'things' including personnel management and professional development of themselves and their people.

The underlying themes expressed via Case Study 3 support an emerging theme around the increasing need for professionalism by cotton growers and managers themselves. This is particularly manifested in the personnel management strategies in the cotton industry (The Personnel Sequence).

It appears there is a wider theme emerging from the research around the increasingly apparent need for higher level business management (business best practice) skills and increased professionalism (on the business side of the enterprise) by those running cotton sector businesses.

In 2012<sup>26</sup>, a CRDC report on Cotton Industry Succession and Professional Development Needs in the Cotton Agribusiness Sector revealed the need for higher level professional development of advisers, others in the value chain, a more professional cohort of young people entering the industry and the need for professional development of cotton growers themselves. Later in 2012<sup>27</sup>, a second report defined a cotton agribusiness sector industry engagement strategy – focusing on the segments of the agribusiness sector, attracting young professional personnel and up skilling cotton growers.

The purpose of this work was to foreshadow how to ensure appropriate, highly skilled personnel are available to meet cotton industry needs in the decade to 2020 and beyond. Its secondary purpose was to determine how best to assure a supply of the expected requirements of skilled, professional personnel in the cotton agribusiness and advisory sectors.

The spillover realisation was that these professional development requirements are equally applicable to management of all cotton industry business enterprises – from growers through to service providers and throughout the value chain.

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<sup>26</sup> Gordon Stone and Associates (2012) Cotton Industry Succession and Professional Development – a Review of Employer and Industry Needs in the Agribusiness Sector (Project CRDC 1213)

<sup>27</sup> Gordon Stone and Associates (2012) Cotton Industry Succession and Professional Development – a Cotton Agribusiness Sector Industry Engagement Strategy (Project GSA 1301)

The notion of professional personnel, notably directed at business owners themselves (growers, advisers and in the value-chain including 'management' in larger enterprises), and 'professionalism' at large still appears to be a remaining missing link in the industry. It has been 'touched on' during this project and remains an unseen critical element of the personnel management theme of the project.

For the personnel sequence to be adequately managed and to focus on developing an innovative and technologically advanced industry, this higher-level professionalism appears to remain a (still largely) unseen and under-recognised element of the process.

## 4.7 Pathways and Performance Metrics

### Metrics Used in Past Research

The CRDC Research reports referred to earlier were also mined to see the metrics that were referred to or used when considering these people issues. These then formed the basis of a draft metrics table (see Attachments) which was then tested with industry personnel and cotton farmers.

Key performance areas and productivity measures drawn from the process included:

Level	Performance Area	Potential Metrics
<b>Individual</b> <b>[all levels]</b>	<ul style="list-style-type: none"> <li>Confidence in work</li> <li>Career pathway</li> <li>Satisfaction</li> <li>Loyalty/commitment</li> <li>Longevity / health</li> </ul>	<ul style="list-style-type: none"> <li>Rating of job satisfaction, confidence, competence and career opportunity</li> <li>Supervisor satisfaction</li> <li>% of personnel x demographic staying in the industry for 5, 10, 15 years +</li> </ul>
<b>Farm or organisation</b>	<ul style="list-style-type: none"> <li>Improved workplace loyalty, satisfaction, culture</li> <li>Improved work efficiency</li> <li>Improved work safety</li> <li>Reduced turnover and staff replacement costs</li> <li>Improved productivity</li> <li>Improved profitability</li> <li>Taking a business interest</li> <li>Initiatives used</li> <li>Employer professional development</li> </ul>	<ul style="list-style-type: none"> <li>% staff turnover x demographic</li> <li>\$ staff turnover cost</li> <li>% contribution x change in work efficiency and safety</li> <li>% contribution to increased productivity and profitability</li> <li>Return on Investment</li> <li>Productivity per employee</li> <li>Profit per employee</li> <li>Rating of culture at work</li> <li>Number of reported incidents</li> <li>Number of innovations introduced at work</li> <li>Degree of skill mismatch?</li> <li>Right people for the required tasks?</li> <li>Capacity of business owner/employer to anticipate future industry changes and plan accordingly</li> </ul>
<b>Industry</b>	<ul style="list-style-type: none"> <li>Development of leaders</li> <li>Pool of skilled and professional workforce</li> <li>Industry of choice</li> <li>Improved strategic decisions</li> <li>Culturally identify as a cotton grower / adviser</li> </ul>	<ul style="list-style-type: none"> <li>Numbers of industry personnel on boards, committees</li> <li>Changes in pool of skilled and professional staff working in industry x demographic x role type</li> <li>Degree of skills mismatch (do we have the right skilled people?)</li> <li>Educational attainment increased</li> <li>Technology uptake increased</li> <li>Level of industry business growth – at farm and</li> </ul>

	<ul style="list-style-type: none"> <li>• Have capital investment in the industry</li> </ul>	agribusiness level – to meet future needs.
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Each of the categories were explored in the initial scoping study and further scrutinised as the research progressed. The full list is in the Attachments. The challenge was to come up with a relatively smaller number of performance metrics that are meaningful, easily understood and easily calculated – and can be directly related to training and human development to aid in decision-making regarding investing in capacity building.

## Performance Measures Based on the People Projects Funded in the Past

There have been four main clusters of projects funded by CRDC to achieve industry outcomes. These clusters are shown in the table below, together with their logical performance measures.

Cluster	Performance Measures
Projects designed to educate, interest and attract students, graduates and other workers into the cotton industry and workforce.	Number and type of students, graduates and/or targeted and engaged workers showing a gain in understanding about the industry, an (increased) interest in working in the industry and who enter the industry as a result of the project intervention.
Projects designed to develop the professional and leadership skills of those already in the industry and its workforce.	Number and type of professional staff, owners and managers who undertake higher level strategic management and leadership training across the industry and indicate gains in outlook and skills and take actions to implement new approaches in their area of expertise and role.
Projects designed to provide specific planning and operational skills and abilities to managers and workers in the industry and its workforce	Number and type of owners, managers, staff and workers (and their locations) who undertake different levels of training and indicate gains in their knowledge and skills and who take actions to implement improvements in their approach to farm advice or operational decision-making on-farm – and the impact of those changes on efficiency and productivity.
Projects designed to impact on policy and strategic approaches to supporting the required mix and capacity of the industry workforce	The extent of influence and use project outputs have on policies, decision-frameworks and funding decisions and the impact on project effectiveness.

These are developed further in a full M&E Plan and Log Frame including methods of data capture in Attachment 3.

## Approaches to Training and Workforce Capacity Development

A key variable in looking at performance measures and metrics to assess the value of training and capacity development is linking potential benefits to the level of training/support that is provided. The extent to which this support is given – and the level and type of training/capacity building is a consequence of the approach by 'Enterprise Management' to their workforce.

Likewise the management philosophy of growers, advisers and other business owners has a strong influence on their approach to training and capacity building of themselves and others.

This research determined three distinct differences in underlying workforce philosophy that could influence the approach taken, which are:

- **People as Components:** staff are employed only to fulfil strictly defined tasks or roles – and with the needed skills and certificates or support provided to achieve these defined tasks.
- **People as a Production Team:** staff are provided with extra background learning and information to help them understand the science and rationale so they can contribute to improved operations.
- **People as an Innovation System:** staff / personnel at all levels are seen to be central to the strategic thinking, continuous improvement and innovation in the enterprise and are supported to undertake skills in business, planning, leadership, strategic thinking, etc. There are proactive opportunities for them to interact and take part in planning and reflection meetings in the enterprise – as well as in broader industry events, organisations and processes.

In most cases, it was concluded that ‘cotton managers’ focused on the first two approaches in relation to their workforce. This influenced the type of training/capacity development support provided.

While the People As Components and People As A Production Team underlying workforce philosophy appear to represent the majority approach by cotton managers, it appears critical that the People As An Innovation System management philosophy becomes more widespread in the industry.

## Levels of Training and Capacity-building

When reviewing the levels of training provided by enterprise owners/managers, the ‘myBMP’ levels were used as a guide.

Cotton myBMP is a voluntary farm and environmental management system which provides self-assessment mechanisms, practical tools and auditing processes to ensure that Australian cotton is produced according to best practice <https://www.mybmp.com.au>. myBMP defines 3 levels of best practice of cotton production. The intent behind these 3 levels are used below in relation to the level of training/workforce development.

- **Level 1:** These are the requirements in terms of needed training and certification to operate certain equipment or undertake spraying of chemicals etc. There are also levels of *basic knowledge and understanding* – though not legal requirements – that are fundamental to safely and successfully undertaking the tasks assigned to different staff members. These may be provided through induction processes, on-the-job training and mentoring.
- **Level 2:** Level 2 relates to ‘*good industry practice*’ under the cotton myBMP categories. It refers to what is desirable across all farms. In this case, developing the operational and underlying science and rationale behind the different areas of farm activities is included here. The logic in this level is that as staff increase their understanding and underlying knowledge, they can better undertake their roles and contribute to a (increasingly) productive and efficient operation.
- **Level 3:** This level reflects ‘*innovative practice*’ under myBMP. It is not necessarily essential for ‘good industry practice’, but never-the-less has the potential to add value to the enterprise and impact further on (increased) productivity and profitability. In this case, it is implicit that

'higher level' skills and reflective practices can stimulate innovation and system changes – and that that could in turn have significant impacts on productivity, profitability and environmental management.

It is most likely that those who see employees as 'components' to fill strictly defined roles would tend to focus on Level 1, while those who viewed their workforce as part of the 'enterprise innovation system' would focus on Levels 2 and 3.

## Development Approaches

Training/capacity building can be undertaken via various formal and non-formal means. These will depend on the level of training needed or chosen and the options readily available to the enterprise. The main means available are described below:

### **Formal compliance certification**

There are *legal requirements* to protect workers in relation to Workforce Health and Safety. These can vary from state to state and can be found on [http://sydney.edu.au/medicine/aghealth/uploaded/fs\\_docs/guidance/WHS\\_Legislative\\_Requirements.pdf](http://sydney.edu.au/medicine/aghealth/uploaded/fs_docs/guidance/WHS_Legislative_Requirements.pdf).

There are also *Certificates of Competency* required also for the use of different types of machinery or vehicles and in the spraying of chemicals – e.g. <https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/land-management/chemical-controls/using-chemicals/using>

It is important from a *legal, safety and productivity perspective* to ensure the required training and certification has been undertaken by managers and staff who will be undertaking these tasks.

There are also legal requirements for *wages and conditions* <https://www.fairwork.gov.au/employee-entitlements/national-employment-standards>. These can all be sourced through the cotton myBMP site.

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### **On-the job experience and mentoring**

In today's business HR settings, it is a reasonable expectation for this to occur in most if not all enterprises. The challenge is to clearly build such an orderly process into an individual induction and mentoring process to ensure it is systematic and specifically applied to individual and enterprise needs.

Many growers (and agribusinesses) have this as their preferred method for up-skilling staff – it limits the time away from the farm and ensures the skills relate directly to needs and the level of skill of the individual. By not providing extra qualifications and opportunities to learn from approaches beyond the farm, it can be limiting if this is the only approach used.

*"I always supply technical courses like use of GPS on machines – and send them to John Deere courses; mostly its on-the-job and self-learning – because the guys I use are pretty smart" (Cotton Grower, 2018)*

### ***Extension info and events***

There are a significant number of opportunities to grow the operational understanding, knowledge and skills of staff through training provided by the industry (e.g. CottonInfo <https://www.cottoninfo.com.au/>), companies and educational institutions.

Providing staff with the opportunity to see other operations, learn the underlying science and network with peers, can be powerful in increasing their level of interest and contribution to the overall enterprise operations.

There are also opportunities for staff to engage in webinars and other distance learning activities.

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### ***Formal courses and qualifications***

There are cotton-specific and general agricultural and business courses available for staff to undertake while employed in the workforce. Many of these can be undertaken on a part-time basis – for example the UNE Cotton Production Course (<https://www.une.edu.au/study/study-options/landing/cotton-course>). There are other specific technical courses (<https://cottonaustralia.com.au/cotton-growers/technical>) that can be undertaken – some with formal VET qualifications (see also <https://www.tocal.nsw.edu.au/courses/agskilled>).

These provide an opportunity for personal and career development of workers plus provide a direct benefit to the enterprise as employees learn and apply their learning in the workplace.

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### ***Active team learning and innovation***

Developing staff as part of the ‘innovation system’ of the enterprise is about providing them with opportunities to develop skills in areas such as business management, strategic planning and leadership – so they can contribute to considering improvements and changes that can drive innovation and profits.

Encouraging involvement in discussion groups, industry meetings and off-farm events is also important to skill development. There is a complementary need to provide opportunities for staff to meet, discuss and suggest changes and improvements.

## 4.8 Benefits (and their Performance Metrics) Expected from Training/Capacity Building

The expected benefits from training are a result of the type and intent of training provided and hence what can reasonably be expected to be achieved by having staff gain this training level. Based on this research, 8 categories of benefits have been identified.

These are listed and described below – together with metrics that could be used to monitor these benefits.

### 1. Met legal requirements (Level 1):

*“All personnel need training and professional development; they all get their accreditations so they can perform tasks efficiently and I meet my statutory requirements; the big difference is where people have got technological ability; we want to encourage that.” (Cotton Grower, 2018)*

*“I see all people having to work to their level of competence – and being encouraged to do so; unskilled people proved difficult to get to that level; then is about managing the business personnel dynamics” (Cotton Grower, 2018)*

Meeting legal requirements means that the enterprise has a higher-level protection from adverse consequences, as they are following a minimum legal standard. It demonstrates that key personnel have demonstrably been trained at a fundamental level to demonstrate core knowledge regarding operating machinery, undertaking spraying or other necessary technical tasks with a fundamental focus on core efficiency, effectiveness and safety.

See: <https://www.epa.gov/agriculture/laws-and-regulations-apply-your-agricultural-operation-farm-activity#CropProduction>

#### Performance Metrics

Number/percentage of staff having relevant required certificates to undertake tasks they are required to do (goal – 100%); Inspections demonstrating full compliance (goal – 100%); Staff and management confidence and skills to undertake key technical tasks in the business (goal – high level of confidence).

### 2. Reduced accidents and time off (Level 1):

*“(My workers) know what to do and what to expect – therefore a 3-year threshold is what it takes to get a good person. I try to be inclusive in everything I do – but don’t expect people to do work above their competence or level of interest” (Cotton Grower, 2018)*

Moving beyond the legal requirements, on-the-job training, initial supervision and mentoring for people undertaking different tasks ensures that people are clear and confident in the use of machinery and equipment on the farm – which should result in fewer and less damaging accidents and time off.

The Land (December 2018) reported that ... *finest totalling \$475,000 have been issued after the tragic death of a 14-year-old boy at a large property at Goondiwindi on April 1, 2016. At a sentence hearing*

in the Goondiwindi Magistrates Court on December 7, a large cotton and cattle property at Goondiwindi was fined \$450,000 for two separate breaches of the [Work Health and Safety Act 2011](#), while a farm manager was fined \$5,000 and the company he operated received a \$20,000 fine. All three parties were also ordered to pay courts costs of almost \$1,100 each. No convictions were recorded against the defendants.

<https://www.theland.com.au/story/5806718/farm-fined-475000-over-teens-death/>

Safework Australia describes Agriculture as ... *one of the most dangerous industries to work in due to the combination of hazards. These include plant, chemicals, noise, dust, sun exposure, working with animals as well as the fact many in the industry work alone or in remote locations. Between 2010 and 2014:*

- More than one in five workers who died at work worked in agriculture. It has the highest fatality rate of any Australian industry (14.8 fatalities per 100,000 workers).
- Agricultural vehicles, for example tractors and quad bikes, accounted for 82 out of 221 (37%) worker deaths.

<https://www.safeworkaustralia.gov.au/agriculture>

#### Performance Metrics

Number and type of accidents and damage (goal – 0%); Number of workdays lost as a result of accidents (goal – 0%); Cost of machinery and equipment repairs required due to avoidable damage (goal – 0%).

### 3. Reduced employee turnover and succession (Levels 1-3):

*“I have many longer term people and mostly have ownership of parts of the business; now devolving responsibility to 3 key farm managers – becoming more difficult; just looking for people who want to be successful at what they do – self-starters [harder to get these days]; want them as part of the business for 15-20 years to grow with me and it; always keep everything simple; incentives are no longer financial bonuses” (Cotton Grower, 2018)*

*“I seek honest, upfront, thoughtful, multi-skilled, adaptable and reliable workers; these personal values are most important to me as #1; they must be able to understand how we do things in the past and this sets up any changes in how we do things in future; they have to be the type of person who can both dig a hole and also look at reasonably advanced technology, understand it and use it; I want people who can grow with the business and advance themselves too” (Cotton Grower, 2018)*

There is some evidence that as employees feel more confident and trusted in their work environment they become more relaxed in their work and committed to staying. Also, having been supported in gaining more skills adds to this commitment and loyalty to the enterprise. On the flip side, as staff gain more and higher level skills they may look for jobs and roles with more responsibility and pay – and if that is not available within their current enterprise, then they might look to work elsewhere where such opportunities exist. Although this could be seen to be a loss to the farm or enterprise, this does contribute to a stronger workforce within the overall industry.

### Performance Metrics

Number/percentage of staff that left the enterprise in the year prior, due to (inconsistent) expectations/initial understanding (goal – 0); Number of years that permanent full-time staff stay in the enterprise and take on increasing levels of responsibility (goal – all of those seen as capable); Number/percentage of staff who left the enterprise in the year to move to another (higher level) role in the industry (goal – all who leave).

## 4. Reduced time to complete jobs (Levels 1-2):

*“Everyone must have practical skills; I want them to apply my philosophy to how everyone does everything; I want a thorough job done well and properly; look after them and they will look after you” (Cotton Grower 2018)*

*“I seek honest, upfront, thoughtful, multi-skilled, adaptable and reliable workers; these personal values are most important to me as #1; they must be able to understand how we do things in the past and this sets up any changes in how we do things in future; they have to be the type of person who can both dig a hole and also look at reasonably advanced technology, understand it and use it; I want people who can grow with the business and advance themselves too.” (Cotton Grower 2018)*

The logic is that as people become more skilled and confident in their work, then the time to undertake certain tasks will reduce. Also, when there is trust that an employee can do the job on their own, there is less need for close supervision – saving management time and labour costs – and contribution to employee satisfaction.

### Performance Metrics

Extent to which managers and supervisors are confident that a staff member can efficiently and effectively undertake a given task with no or minimal supervision (goal – 100% once training provided); Expectations/deadlines are met in terms of completing tasks on time or more quickly (goal – 100%).

## 5. Improved quality of work and crop (Levels 1-2):

*“(I have) no set approach – really seeking to foster mutual benefits – their interests matched with our interests and needs; I am keen for them to take responsibility [from digging that hole to the camera spraying]; the open door policy is our philosophy of aiming to work to their strengths and interests and foster education that meets their needs and ours too – and encourage them to ask questions and let us know what is on their minds so we can resolve it.” (Cotton Grower, 2018)*

*“I encourage their own personal and technical skill development – and I still do my own too; I am happy to pay for the mostly younger guys we have to do personal and technical development, as part of my commitment to them; this goes as far as the guy being sent back to uni to do the soils / agro course” (Cotton Grower, 2018)*

Where attention to detail is increased and staff understand more of the underlying science and rationale for crop operations (for example, understanding the irrigation needs and impact on crop growth and uniformity) they can undertake operations at a more informed level to support business future plans. Likewise, personnel can make adjustments where needed and so contribute to a better-

quality outcome. Increased understanding can also result in raising interest, commitment, inquiry and improvement in techniques on the farm.

There is significant evidence that participation in extension activities results in greater understanding, improved skills and greater motivation to make changes. Follow-up surveys have demonstrated that practice changes and adoption of new technologies occur earlier and at a greater rate for those who have been impacted by extension.

#### Performance Metrics

Extent to which staff demonstrate understanding and take initiatives related to on-farm/business operations (goal – high level of demonstration); the extent to which staff skills and initiatives are seen as having positively contributed to an improved crop outcome (goal – perceived to be greater than 10% impact).

### 6. Ability to introduce new technologies (Levels 2-3):

*“(I expect my staff to) work within their area of competence, ability and interest and encourage their growth; if there is the opportunity for people on farm to support my precision ag consulting business – so much the better; I see my personnel as higher-level workers – and want to encourage them accordingly.” (Cotton Grower, 2018)*

*“They must want to turn up to work and be prepared to change over time and move with the times. Now they need to be GPS and electronics literate, understand water [the physics, how it moves, how to move it, etc] and do what is needed [as a self-starter]” (Cotton Grower 2018)*

Interviews and the 2018 Grower Survey highlighted the need for new skills to be accessible around the new technologies (to capitalise on their use). This is a growing industry and farm need which could slow growth and improvement if not addresses. Growers indicated a low level of confidence in their workers having the skills (or able to adapt) to use automation (69% of farms currently using automation; 61% of those considering; and 51% of those not considering automation) or even less confidence in hiring others with the necessary skills (60%, 53% and 38% respectively).

#### Performance Metrics

Extent of confidence of manager in introducing new automation and technology with existing staff (Goal – very high); Extent to which new automation/ technologies have been introduced largely relying on staff capacity (Goal – very high).

### 7. Hastening innovation/change (levels 2 and 3):

*“We want to see a full circle of their contribution from an initial worker to a longer-term manager; all seeking the best possible positive outcome; seeking a collaborative approach to their personal growth that matches our business growth [the future of the business and them combined and in parallel]” (Cotton Grower, 2018)*

*“We have set up an inclusive, involving business culture; they become a valued part of the business and they know that; all are part of the team; we all go out for dinner and celebrate team birthdays – all part of the culture we have set up proactively; this includes their problem solving and decision making attributes” (Cotton Grower, 2018)*

*“I mostly avoid(ed) training; only recently felt the need to get started with key people; now we have reached a certain size, technically good people need to expand their management training skills; a combination of both professional development and personal development – leading to stronger leadership.” (Cotton Grower, 2018)*

Rather than incremental change, there is potential to use the workforce to make larger gains and systems improvement at a business and industry level. Smith et al (2012) in their ‘Building the capacity to innovate: the role of human capital’ research on how to stimulate innovation within enterprises concluded that, to develop an innovative enterprise, managers needed to ...*align their human resource management practices into complementary bundles that focus on innovation – by this we mean enabling employment conditions that promote creativity and knowledge acquisition, such as the bundling of high performance work practices, including team-based work organisation, support for training and learning, and the use of flexible work practices ...* to create an appropriate internal business climate / culture of learning that is supported by learning and development programs so that employees feel that they can share their creativity with the organisation; and forge linkages outside the company, particularly with education institutions.

Accordingly, cultural change driven by cotton managers that supports (willing) employees to give of their best becomes an important industry and individual business consideration.

#### Performance Metrics

Evidence of increasing efficiency and entrepreneurial changes within the business (Goal – change happens on an annual basis); the extent to which employees have contributed to significant strategic and systems changes to the business. (Goal – high).

## 8. Improved productivity and profit (levels 2 and 3):

*“We ensure they understand the financial implications of the decisions they make; and also understand the effect of their decisions on the business” (Cotton Grower, 2018)*

The cumulative benefits described provide a compelling case for real effort to be put into staff development, training and skilling.

The quantitative evidence of the value proposition of staff development is more anecdotal (and varies widely), and more logical and intuitive than calculated. Seventy-two percent (72%) of growers who responded to the 2018 Cotton Growers’ survey considered that skilled employees had greater than 10% impact on the yield and quality of the 2018 cotton crop (especially in the medium and larger farms) – with a weighted average between 40-50% impact.

Other quantitative assessments included the 25% of growers who indicated an impact on **profitability** (highest in larger farms) – and estimated an impact in the order of \$80,000 - \$90,000 for the year (weighted average of those who believed there was an impact).

#### Performance Metrics

Farm/business productivity and profitability increases over time relative to regional and seasonal benchmarks (Goal – steady improvement).

## Making Sense of and Applying Performance Metrics

These benefits, the performance metrics themselves and methods for assessing, defining and providing transparency around performance metrics are summarised in the following Table:

Targeted Benefit		Performance metric	Method for assessing
1	Met legal requirements	<ul style="list-style-type: none"> <li>Number/percentage of staff having relevant required certificates to undertake tasks they are required to do (goal – 100%);</li> <li>Inspections demonstrating full compliance (goal – 100%).</li> </ul>	<ul style="list-style-type: none"> <li>(Updated) staff records and certificates of new qualifications</li> <li>Reports on any farm audits</li> </ul>
2	Reduced accidents and time off	<ul style="list-style-type: none"> <li>Number and type of accidents and damage (goal – 0%);</li> <li>Number of workdays lost as a result of accidents (goal – 0%);</li> <li>Cost of machinery and equipment repairs required due to avoidable damage (goal – 0%).</li> </ul>	<ul style="list-style-type: none"> <li>Farm records</li> <li>Incident reports re farm equipment and accidents and related cost records</li> </ul>
3	Reduced employee turnover and succession	<ul style="list-style-type: none"> <li>Number/percentage of staff that left the enterprise in the year prior to expectations/initial understanding (goal – 0);</li> <li>Number of years that permanent full-time staff stay in the enterprise and take on increasing levels of responsibility (goal – all of those seen as capable);</li> <li>Number/percentage of staff who left the enterprise in the year to move to another (higher level) role in the industry (goal – all who leave; to be defined).</li> </ul>	<ul style="list-style-type: none"> <li>Rate of staff turnover</li> <li>Record of unexpected staff leaving</li> <li>Knowledge of staff progressing their career within the business</li> <li>Records of return of casual staff</li> <li>Own knowledge of where staff went after leaving [Industry could capture this in surveys]</li> <li>Exit interviews with staff</li> </ul>
4	Reduced time to complete jobs	<ul style="list-style-type: none"> <li>Extent to which managers and supervisors are confident that a staff member can efficiently and effectively undertake a given task with no or minimal supervision (goal – 100% once training provided);</li> <li>Expectations/deadlines are met in terms of completing tasks on time or more quickly (goal – 100%).</li> </ul>	<ul style="list-style-type: none"> <li>Self-rating by manager</li> <li>Staff performance reviews</li> <li>Records of times for different tasks / staff labour costs</li> </ul>
5	Improved quality of work and crop	<ul style="list-style-type: none"> <li>Extent to which staff demonstrate understanding and take initiatives related to on-farm/business operations (goal – high level of demonstration);</li> <li>The extent to which staff skills and initiatives are seen as having positively contributed to an improved crop or business outcome (goal – perceived to be greater than 10% impact).</li> </ul>	<ul style="list-style-type: none"> <li>Manager observation</li> <li>Staff performance reviews</li> </ul>
6	Ability to introduce new technologies	<ul style="list-style-type: none"> <li>Extent of confidence of manager in introducing new automation and technology with existing staff (goal – very high);</li> <li>Extent to which new automation/ technologies have been introduced largely relying on staff capacity (goal – very high).</li> </ul>	<ul style="list-style-type: none"> <li>Staff performance reviews</li> <li>Manager reflection</li> <li>Review of decisions made and implementation process</li> <li>Records on introduction of new technologies and automation</li> </ul>

7	<b>Hastening innovation /change</b>	<ul style="list-style-type: none"> <li>• Evidence of increasing efficiency and entrepreneurial changes within the business (goal – change happens on an annual basis);</li> <li>• The extent to which employees have contributed to significant strategic and systems changes to the business. (goal – high).</li> </ul>	<ul style="list-style-type: none"> <li>• Manager recollection of instances and cases</li> <li>• Annual review with staff about changes made and why</li> </ul>
8	<b>Improved productivity /profit</b>	<ul style="list-style-type: none"> <li>• Farm/business productivity and profitability increases over time relative to regional and seasonal benchmarks (goal – steady improvement).</li> </ul>	<ul style="list-style-type: none"> <li>• Annual figures</li> <li>• Industry statistics</li> </ul>

# 5. IMPLICATIONS EMERGING FROM THE DATA AND KEY FINDINGS

This project sought to understand the value (and consider the ROI or benefit: cost) of improving the capability of the wider cotton industry workforce. It also sought to establish relevant metrics so that business owners and managers (cotton managers) can make informed investment decisions about how to improve the capability, knowledge and capacity of their workforce now and into the future.

Furthermore, it sought to support CRDC (and the wider industry) to assess and report on the impact of its investments in the People Program. This principally aligns with Goal 3 of the CRDC Strategic RD&E Plan, 2018-2023.

## Industry Context

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The CRDC Strategic Plan recognises that the industry is entering an era of significant change with rapid technological advances. This requires adaptive capacity to be built into the industry to allow it to innovate and find solutions to existing and new problems.

It recognises the importance of preparing Australian cotton growers for this changing environment and marketplace, while providing them with the skills to adapt to those changes. This includes responding and adapting to a range of future possibilities – and supporting service providers as greater diversity in the cotton industry emerges.

It has identified the need for ‘futures thinking’ to assess and monitor grower resilience and support communicating initiatives to address knowledge gaps.

A range of Performance Indicators have been identified to support and monitor these changes. These include: social and business network diversity; the level of innovation supported by CRDC and growers with improved capacity to manage unknown or unexpected events; and within the framework of future known (and unknown) opportunities.

The myBMP program includes modules focused on training, career development and farm succession planning. As the program increases its reach, it provides a vehicle to support enhanced capacity building – and monitor the level of success in doing so. It is noted the myBMP program is currently undergoing redevelopment, providing opportunities for additional inclusions.

Likewise work has been undertaken by a range of industry groups canvassing the extent to which core skills are in place in the industry.

## Key Take-Home Messages

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The key take-home messages from this research includes:

- The majority of cotton managers are positive about the future

- They see access to adequately skilled personnel, with appropriate personal characteristics including suitable attitudes – as (one of) the significant future limitation to their growth
- It appears that the lack of adequately skilled staff has some quantifiable impacts on productivity and profitability of cotton farms – particularly medium to large enterprises
- It has proved problematic for the research to come up with completely quantitative measures of the value of skilling and capacity building – although the qualitative measures are robust and strongly demonstrate the value of up-skilling and capacity building
- However, together those quantifiable and qualitative measures can be used to measure level of success in capacity building over time (via a monitoring and evaluation framework and suitable methods of data gathering)
- A number of cotton growers expressed concern about ready access to skilled advisers in future
- There are varied skill needs across the sector – with family farms, corporate farms and the agribusiness advisory sector all having their own particular requirements (albeit with some consistency)
- Significant changes are expected into the future of the Australian cotton industry – recognising increasing automation, access to higher-level technology, significant retirement of ageing business owners/cotton managers, changes to the workforce mix (full-time, part-time, casuals, etc)
- The value proposition for training, staff development, skill development, professional development, etc – still needs to be articulated fully in the industry
- A future culture of learning and professional development will be necessary when operating in the global marketplace – to manage the expected, significant future change noted above
- As farm size and business complexity increases – different skills will be needed (to those in place currently), especially to support more autonomous decision-making and leadership (to meet business objectives of cotton businesses in future) by key, skilled, employed personnel
- This recognises the need for business owners to take a more expansive, business wide view – as they create a high performing businesses (and focus more on the business side of the enterprise)
- For these enterprises, particularly those in a growth or expansion phase – a more staff centred approach, where key personnel are seen as being integral to the business and its future, will result in a stronger focus on accessing professional types of staff members, who in turn will require a stronger focus on professional development
- Overall, there is an expectation that key personnel will have an ability to take on increasing responsibility over time – with a stronger commitment to the success of the business (thus requiring a more professional workforce)
- These new technologies will require people with varied skills and interests – and also require higher level continued training and professional development
- Changes to business culture, with a higher focus on job satisfaction is also expected – supporting increased worker and farm productivity, with one determinant being the need for/expectation of high quality training and a culture of continuous learning to be embedded in future businesses
- To support the culture of continuous learning, different approaches to formal and informal learning/training, more targeted to particular market segments, is expected to be required

- There is significant diversity in how skill development occurs currently – and this may change significantly into the future as businesses themselves and the personnel required alter accordingly
- Those businesses in a growth or expansion phase are expected to be seeking their own and higher level professional development for the business owners/managers – with a particular focus increasingly on contemporary business management (as opposed to production)
- A higher level of best HR practice is also expected to be required – both to meet statutory obligations and the culture of continuous learning, with a focus on professional development for a much more professional workforce – with potential inclusion in a redeveloped myBMP
- A lead-time will be required for this transition process – and for this to occur, an increasingly professional and more highly skilled workforce, seeking a more defined career pathway, is expected to be required
- Managing this change process will require attention at the individual business level (cotton growing, advisers and elsewhere in the value chain) – and most likely at an industry wide level (to facilitate and support the needed change).

The next step in this process is to facilitate wider industry discussion about the Key Take-Home Messages emerging from this project.

#### Recommendation

That mechanisms are created to encourage further discussion, resource development, training and skill development to develop cotton manager's understanding of the requirements to develop a more innovative and entrepreneurial workforce; to recognise the skills required to manage personnel in a more empowering and interactive manner and bring in outside (the cotton industry) expertise to support this process.

## The Personnel Sequence

As a result of this research, it became apparent that cotton managers are poorly acquainted with the logical sequence which supports their human resource management. It is built around four components, namely:

- **Plan** – to determine which personnel are required, for what purpose, with which characteristics, to support the daily management and future growth of the business.
- **Get** – once an organisational chart and job descriptions are determined (of current and expected future personnel), contemporary business best practice must be implemented in order to acquire the key personnel required to meet the business needs.
- **Manage** – the next step is to ensure cotton managers appropriately manage their key personnel, (also according to best business practice). This includes managing to the strengths and weaknesses of those personnel, while addressing their (personnel and owners/managers) motivations, demonstrating management leadership and appropriate culture, etc both for the benefit of the business and to ensure legal requirements are met.
- **Retain** – recognising the acquisition and management costs of personnel are significant, and the replacement costs (direct) and indirect (members of a high performing team with an

understanding and appreciation of business attributes) are considerable, it makes sense to focus on retaining key personnel within the business and/or to ensure a suitable career progression pathway exists. This recognises that these personnel may exit the business and move on elsewhere within the industry (ideally remaining in rural and regional localities).

This Personnel Sequence has been articulated as a logical, simple way of viewing how human resource management ought to be addressed (current and future needs) in context of the project findings.

## Enterprise's management philosophy

It became apparent during the project that a range of diverse approaches are taken by management across cotton enterprises. These diverse approaches are aligned with internal leadership and cultural approaches of the individual businesses (as reflected by the owners/managers).

As result, three options for describing management philosophy were developed:

- **People As Components** – fulfilling strictly defined tasks
- **People As a Production Team** – where personnel are provided with extra learning and information on the basis of them understanding how they can best contribute to improved operations
- **People As an Innovation System** – where key personnel throughout the business are regarded as being central to the strategic thinking, continuous improvement and innovation; to support greater planning and more proactive approaches of the business at an holistic level.

Furthermore, skill development can be regarded as being 'On-demand' (somewhat reactive and meeting the emerging/urgent needs resulting from the People As Components management philosophy) or 'Structured' staff and personnel development (demonstrates a proactive, thoughtful and forward-thinking approach to meet known or expected emerging business and personnel needs) which is more in tune with the Production Team/Innovation System philosophy.

It also emerged that the Production Team/Innovation System philosophy is expected to be far more relevant for those businesses in an expansion or growth phase – and for those businesses (business owners/managers) looking to take a longer-term strategic approach to meet expected industry changes.

For those business owners looking to take this longer-term strategic approach, it has become apparent that there is real value in engaging key business personnel in understanding (and potentially developing) longer term business plans. Equally, providing a strong sense of ownership by these key business personnel (based on their skills and experience and personal characteristics) defined mentoring and coaching approaches, consideration of rewards (financial and non-financial) and leadership opportunities merits serious consideration.

Accordingly, training of business owners in higher-level personnel management skills has significant merit.

### Recommendation

That advanced personnel management skills and training is developed and piloted (and hence evaluated) for owners/managers of cotton farms and for agribusiness.

That strong consideration is given to educating cotton managers on the implementation of The

Personnel Sequence in context of having/developing an appropriate Enterprise Management Philosophy.

That these advanced personnel management skills are developed with appropriate checklists and support resources for inclusion in myBMP (mostly Level 3)

## Performance Metrics – Benefits from Training/Capacity Building

The purpose of developing appropriate Metrics (as Measures of Success and defined as Key Performance Indicators) is to help define the expected and actual benefits accruing as a result of the type, intent and result of training, skill development or professional development sought and provided.

In order to fully articulate the benefit from training, etc, a series of performance metrics were identified to monitor the expected benefits to be gained.

The benefits included:

1. Met legal requirements
2. Reduced accidents and time off
3. Reduced employee turnover and succession
4. Reduced time to complete jobs
5. Improved quality of work and crop (performance)
6. Ability to introduce new technologies
7. Hastening innovation/change; and
8. Improved productivity and profit.

Arguably, further metrics could be developed around the performance of cotton managers (business owners, managers, etc) to fully round out the understanding of the full scale and scope of cotton industry capacity building. However, the project scope was focused on capacity building of staff rather than business owners.

It is notable that key data was obtained from the 2018 Cotton Grower Survey. This created a baseline of key personnel management data. It is logical that such a process is repeated on a regular basis to establish future benchmarks of progress on practice change.

### Recommendation

That the CRDC Cotton Grower Survey is used as a vehicle to benchmark progress on key industry personnel management issues.

The limitation with this process is that there is no mechanism to regularly gather data regarding personnel management issues elsewhere in the industry value chain. Looking to the future, it is logical that some form of annual parallel survey to establish and monitor benchmarks around workforce management, skills and capacity building needs, etc is likewise developed and implemented.

It was noted that the Crop Consultants of Australia conduct an annual survey – and that the links between this survey and the CRDC Cotton grower survey are assessed to create a cohesive process for benchmarking changes in personnel management over time.

#### Recommendation

That a parallel wider cotton industry survey process is investigated and implemented to continue to benchmark key workforce management metrics elsewhere in the value chain – which can build on the Crop Consultants of Australia annual survey.

## An Appropriate MER framework

A more comprehensive statement of the draft metrics, measures of success and KPIs is included in Attachment 1. This relates to the ability of key personnel to support and influence more successful outcomes of farm operations (which are then defined in financial terms thereby supporting a benefit: cost analysis around changes in profitability and productivity). These were partly developed by reviewing past People Projects – then seeking industry input to ground truth the emerging metrics.

These Performance Metrics are best considered in the context of a Monitoring and Evaluation Framework for capacity building projects, which are aligned to the CRDC Strategic Plan. The Framework (see Attachment 3) is built around expected program types of activities, then considered in context of performance measures (of success) and appropriate monitoring and evaluation methods of gathering data to support robust reporting of the level of success, change over time and wider contribution of projects and activities to the CRDC People Program Goals.

## Assigning ROI and Benefit: Cost

After developing an appropriate MER framework, the next step is to be able to articulate the Return on Investment and/or Benefit: Cost in terms appropriate to the purpose for which the value is to be reported. Those seeking appropriate reporting, in context of this project, are:

- CRDC – and industry bodies
- Cotton Managers – at the individual enterprise level (family farm, corporate farm, advisory businesses and elsewhere in the value chain) where business owners seek to assign value when money is spent on training and/or professional development.

At CRDC/industry body level, a culture of monitoring, evaluation and reporting exists.

#### Recommendation

That a further project step of implementing the M&E methods outlined in the MER framework is rapidly embedded in appropriate industry organisations, including CRDC.

# myBMP as a Vehicle to Understand and Monitor Effective Capacity Building

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The Cotton myBMP program already includes modules of work which supports cotton managers with their active skill development activities. There are moves to expand program reach in the industry.

During the course of the project, a training tool (to view [click here](#)) was developed as a way of supporting cotton managers to assess the level of success in managing key personnel issues.

As myBMP already covers elements of capacity building and skill development, it is logical to add another dimension to myBMP by determining the extent to which the tool could add value to the program. Its purpose is proposed to be to monitor the level of adoption of changed personnel management practices by cotton managers.

Preliminary discussions have been held with myBMP management, and the proposed extra Level 3 of personnel management practices, checklists and resources was deemed more appropriate (see above). This investigation remains a work in progress over time.

## Business Best Practice

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Throughout the research several business owners described their personnel management in context of a desire for a more comprehensive understanding of other elements of business best practice.

As they came to appreciate the extent of their limitations in taking the most professional approach to their personnel management, it became apparent that other elements of their business operations potentially required attention.

These included: appropriate management skills; managing personnel dynamics appropriately; high performing management teams; communication; understanding futuristic industry requirements; high level financial management; managing the personal and professional development of business owners and cotton managers (management); appropriate business culture; profit and revenue sharing; business performance; establishing an entrepreneurial workforce; importance of longer term planning; etc.

These matters were regarded as being of sufficient importance that they required wider industry discussion. In a similar way to access to personnel, business owners concluded that their understanding of Business Best Practice could well be a limitation to expanding their operation into the future (increased automation, a more technologically advanced workplace and rapidly changing global marketplaces).

### Recommendation

That the underlying theme of understanding and implementing business best practice becomes more overtly addressed due to its emergence as an unseen industry limitation.

# A Cotton Industry Personnel Roundtable

A strong emerging theme throughout the project was that many of these personnel issues are outside the scope and ability of individual businesses to fully consider and manage. These included:

- Loss of skilled personnel during adverse climatic events
- How best to attract and retain suitable skilled personnel in regional settings – including their partners (a major influence on the longevity of key personnel)
- Accessing a core group of personnel skilled in technologies around automation and high-tech
- Sharing of knowledge regarding personnel management – given this matter is outside the comfort zone of many cotton managers
- Relating personnel management to the wider and higher order business management skills, expected to be required into the future – this includes issues such as Business Best Practice (as reported above)
- Understanding and articulating the benefits of training, skill development and professional development – including potential needs for a more coordinated approach, to address tangible and intangible benefits, and appreciating change is a longer-term process (greater than 5-years)
- Sharing of knowledge around practical experiences – to inform other cotton managers.

Furthermore, a number of matters emerged from this project which could prove beneficial to discuss more widely in the industry context; namely:

- How to embed a culture of continuous learning and professional development in the industry
- How to support stronger professional development around higher order business management skills – to ensure cotton managers adopt and implement contemporary business best practice (aligned with future industry needs)
- How best to articulate return on investment and benefit: cost – including the use of my BMP as a primary vehicle for doing so (at industry and cotton manager level).

## Recommendation

That a Cotton Industry Personnel Roundtable is held as a way of ensuring significant industry wide discussion is undertaken on the key issues emerging from this project – both within and outside the scope of the project brief.

As a result of a debrief by the People Program members and a group of Informed Persons, on 30 May 2019 (see Attachment 4), the need for a personnel roundtable; or a Brains Trust, or similar, to support industry cultural change; attraction and management of appropriate young personnel and recognition of the need for/how to access more technologically adept persons (in particular young people) to meet future industry personnel needs was examined.

It is apparent that the Cotton Industry Personnel Roundtable assumes increasingly higher importance in driving the industry's futuristic thinking about personnel than first considered in this project.

# Conclusions

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The work emerging from this project, and based on meeting the project objectives, can be summarised via a number of key conclusions; namely:

1. The evidence for the 'value proposition' of supporting 'staff development' (including skills development, capacity building and wider professional development) is fundamentally positive, even though the data acquired from this project is largely qualitative, based on logical arguments and quite intuitive. Even though this is a mainly qualitative outcome, there was consensus from the project findings that the value proposition around active 'staff development' it is particularly compelling. This consensus provides a strong basis for managers across all cotton sectors to give the matter of 'staff development' focused attention.
2. While the quantitative evidence to support the value proposition regarding 'staff development' is more anecdotal (and varies widely) as calculated from this project, several data sets do exist that provide robust quantitative data to support this case. Specifically data from the 2018 Cotton Growers' Survey reveals that 72% of growers who responded to the survey considered that skilled employees had greater than 10% impact on the yield and quality of the 2018 cotton crop (especially in the medium and larger farms) – with a weighted average between 40-50% impact.
3. There is considerable complexity when considering the value from the 'staff development' / training / support reported from the project. This is due to the different types and levels of skills, each with their own contribution to the enterprise needs at the time. Furthermore, there are different ways of providing skills ranging from: on-the-job training; competency certificates; delivered information and activities; mentoring; interactive staff reflection sessions; and formal education / extension.

To add to the complexity, a combination of these methods of staff development can be used at any one time or over time, often due to circumstances unfolding in the business operation. In this case, the intuitive element and so-called 'on-demand' (as requested or determined at the time, may be a combined decision between personnel and employer determining a more immediate need) as opposed to 'structured' (planned and organised well in advance) staff development adds to this complexity.

4. The enterprise's management (or leadership) philosophy has a significant impact on staff development. The ability of business owners, farm managers and managers in general, (in terms of how staff are viewed as a resource and human beings, including their interpretation of the value proposition), influence the steps taken and implemented (including on-demand and structured staff development) and has a significant impact on how staff development is viewed and implemented.

For the purposes of this project the philosophy of management in staff development was regarded as being one of three possibilities, namely: People As Components; People As a Production Team; or People As an Innovation System. Likewise, insights gained from more advanced cotton grower and advisor business owners show how the effect of a wider understanding of the business side of managing the enterprise could contribute to managing personnel more effectively. This is expected to facilitate how best to address expected industry technological and other changes as they unfold over time.

5. Recruiting and managing the right staff for the enterprise is a key concern of managers and is a fundamental to have in place to permit effective staff development. During the project, a

logical (and simplistic) personnel management sequencing and flow was identified, namely: Plan, Get, Manage and Retain (called the Personnel Sequence). While simplistic, this was a somewhat profound realisation for some even more advanced business owners / managers.

6. There is a strongly perceived need for a Cotton Industry-Wide Approach to addressing skilled workforce needs. This concept of an orderly, industry-wide, collaborative, collective and innovative approach to The Personal Sequence emerged early in the project. The proposal was to initiate a Cotton Industry Personnel Roundtable to discuss how best to collectively create access to and manage appropriate personnel well into the future.

While initially dismissed as being outside the scope of this project, the concept of a collaborative collective industrywide approach continued to emerge during the remainder of the project. As result, it must be brought to the attention of cotton industry decision-makers.

Such an Approach ought to also consider how best to implement a culture of continuous learning, professional development and implementing business best practice. This is particularly appropriate, especially in context of the expected emergence of the enterprise management philosophies of People As A Production Team and People As an Innovation System as they become the industry norms over time.

## Key Outputs

Key Project Outputs include:

- A wide-ranging examination, namely *this Report*, of key factors affecting capacity building in the cotton industry workforce of today – and considering the implications for the future
- A *Table of Metrics* – on which the level of success in personnel management, training, upskilling and professional development can be assessed
- A *Monitoring, Evaluation and Reporting Framework* – which maps out the method(s) by which assessments can be made, M&E methods which can be used to access data in order to make those assessments and a structure which allows for ROI and BCA (based on quantitative and qualitative assessments) calculations
- A *Map of Workforce Capacity Building Steps and Benefits*
- The proposed *Workforce Capacity Building Steps and Benefits* access page proposed to be added to the Cotton myBMP System (this represents the so-called *Tool/Guide* – [view it here](#)); and
- A schematic of *The Personnel Sequence*.

The Project Outcomes represent an *Industry Framework*, creating context in which to examine and assess the value of capacity building as it reflects the ability to ensure an innovative cotton industry workforce (in its entirety).

This represents significant industry value in being able to consider *how capacity building initiatives can be assessed more effectively* to consider their return on investment or impact against a series of objective measures.

Furthermore, the project outcomes identify a range of *apparent plus unseen implications around capacity building initiatives* seeking to improve cotton-wide industry personnel outcomes.

The focus has been on how best to consider *development of an innovative cotton workforce* in an holistic sense – employed personnel, growers, advisers, enterprise owners and others in the value chain.

The data reflects an *increased industry awareness regarding the desire to more effectively implement better personnel management* (to the extent of seeking some form of *'Roundtable Discussion'*). This represents a strong positive move to address what appears to be an emerging industry limitation – around access, management, up-skilling, professional development, etc – which goes beyond the individual businesses and has implications for the wider industry.

The context of this project has been a focus on supporting implementation of the Vision of the CRDC Strategic Plan, 2018-2023; namely ... *creating a more innovative, automated, technologically advanced and positioned 'globally focussed and leading edge industry'*.

Thus this limitation around employed personnel, cotton managers (growers, others in the value chain including advisers) and their training and professional development must also be examined in context of considering a best-in-class enterprise management. This requires examination of the extent to which enterprise managers and owners are aware of and implementing *the (global) business best practice* required to take them into the next generation of automated, high tech and innovative business operations.

## 6. ATTACHMENTS

### Attachment 1: Draft Metrics, Measures of Success and KPI's – Cotton Industry People Program

#### Comprehensive Metrics Table Based on Analysis of Past Projects and Feedback from Stakeholders.

A shorter version is included in the report – as is an alternative approach related to expected on-farm benefits.

This process is focusing on what is occurring now (2016-2019) – expectations during the life of the current CRDC Strategic Plan (at that time the data was relevant to the 2020 Plan completion) – and beyond. It was developed by QualDATA and refined with input of a number of People Program respondents in late 2016 and remains current at March 2019.

It formed the basis of project work from that time on – and remains relevant to the current Strategic Plan (and relevant to other industries in which QualDATA has likewise developed metrics).

Category	Class	Sub-class	Metric
<b>Demographic</b>	Location and size	<ul style="list-style-type: none"> <li>• Cotton regions</li> <li>• Irrigation/Non-Irrigated</li> <li>• Total cotton ha</li> <li>• Cotton vs. Mixed Farming (rice; grain; livestock; horticulture)</li> </ul>	<ul style="list-style-type: none"> <li>• Numbers of farm businesses x ha cotton (irrigated/non-irrigated) x regions</li> </ul>
	Farm Type	<ul style="list-style-type: none"> <li>• Family – one farm</li> <li>• Family – 2 farms</li> <li>• Family – 3 + farms</li> <li>• Small Corporate</li> <li>• Large Corporate</li> </ul>	<ul style="list-style-type: none"> <li>• Numbers of farms businesses in each type</li> </ul>
	Organisation type	<ul style="list-style-type: none"> <li>• Government</li> <li>• Industry</li> <li>• Private consulting</li> <li>• Corporate services</li> <li>• Other [not organisation or farm]</li> </ul>	<ul style="list-style-type: none"> <li>• Numbers of organisations x type x total personal</li> </ul>
	Attitude to risk [Aspirations/ Goals?]	<ul style="list-style-type: none"> <li>• Low risk profile</li> <li>• Medium risk profile</li> <li>• High risk profile</li> </ul> <p>[Could also look at recent adoption/innovations]</p>	<ul style="list-style-type: none"> <li>• Demographics x Changes in goals and aspirations</li> </ul>

Category	Class	Sub-class	Metric
	Stage of business cycle	<ul style="list-style-type: none"> <li>• New [change of ownership]</li> <li>• Generational change</li> <li>• Stable</li> <li>• Growing</li> <li>• Declining</li> </ul>	<ul style="list-style-type: none"> <li>• Demographics x Changes in goals and aspirations</li> <li>• [Changes in production/profit over time]</li> </ul>
<b>People</b>	Farm Personnel	<ul style="list-style-type: none"> <li>• Unskilled worker [specify, e.g. backpacker?]</li> <li>• Semi-skilled</li> <li>• [need industry agreed descriptions]</li> <li>• Specialist skilled – what type?</li> <li>• Manager – what type? [ref HR job description from Bernice Kotey's work]</li> <li>• Owner</li> <li>• Board Member – Senior Leadership Team</li> <li>• Contractor [type?]</li> <li>• Seasonal worker</li> <li>• Sharefarmer</li> <li>• Family member</li> </ul>	<ul style="list-style-type: none"> <li>• Number of farm staff x roles</li> <li>• [Tasks/salaries/incentives/age?]</li> <li>• [Roles: Broad classification could include labourer, machine operator, technician, professionals, managers]</li> </ul>
	Career aspirations	<ul style="list-style-type: none"> <li>• No career aspiration</li> <li>• Some career aspiration</li> <li>• High career aspiration</li> </ul>	<ul style="list-style-type: none"> <li>• Demographics x Changes in goals and aspirations (Individual staff)</li> </ul>
	Agribusiness / Agency Organisational Personnel	<ul style="list-style-type: none"> <li>• Researcher</li> <li>• Adviser e.g. agronomist – generalist</li> <li>• Adviser e.g. financial or agronomist – specialist</li> <li>• Irrigation/engineering</li> <li>• Management</li> <li>• Sales</li> <li>• Other professional specialist – what type?</li> </ul>	<ul style="list-style-type: none"> <li>• Number of organisation staff x roles</li> </ul>
	Dreyfus Level of Skill	<ul style="list-style-type: none"> <li>• Novice</li> <li>• Minimum standard</li> <li>• Moderate standard</li> <li>• Advanced standard</li> <li>• Mastery</li> </ul>	<ul style="list-style-type: none"> <li>• Number of organisation staff x skill level [each role]</li> </ul>
<b>PD/Training</b>	Farm staff  [separate out owners/ family?]	<ul style="list-style-type: none"> <li>• Prior experience/ education level/ qualifications</li> <li>• On-farm/on-the-job</li> <li>• Informal short course</li> <li>• Certified short course</li> <li>• Formal Vet -level 1-4</li> <li>• Formal Vet 5+</li> </ul>	<ul style="list-style-type: none"> <li>• Number of farm staff x roles x type of training undertaken x topic area.</li> <li>• Total/% staff days dedicated to training</li> </ul>

Category	Class	Sub-class	Metric
		<ul style="list-style-type: none"> <li>• Management &amp; Leadership</li> <li>• Professional development – what type?</li> <li>• Particular project management (e.g. develop new farm; assess &amp; purchase assets)</li> </ul>	
	Professional staff	<ul style="list-style-type: none"> <li>• Informal short course</li> <li>• Post-grad course</li> <li>• Post-grad research</li> <li>• Management &amp; Leadership</li> </ul>	<ul style="list-style-type: none"> <li>• Number of professional staff x roles x type of training undertaken x topic area</li> <li>• Total/% staff days dedicated to training</li> </ul>
<b>Outputs &amp; Tools</b>	To support training, professional development, etc	<ul style="list-style-type: none"> <li>• Manuals (OH&amp;S; my BMP HR module; etc)</li> <li>• Job descriptions</li> <li>• Processes (induction; performance review)</li> <li>• Recruitment templates (interview; advertising; method for recruiting)</li> <li>• Skilled trainees</li> <li>• HR Mentors</li> <li>• Workforce plan for future skills and training needs</li> </ul>	<ul style="list-style-type: none"> <li>• Details of new/ updated outputs</li> </ul>
<b>Engagement</b> [Specific to industry or other available tools e.g. <a href="http://www.fairwork">www.fairwork</a> ] [source/ type of engagement]	To support personal development, professional development, industry development?	<ul style="list-style-type: none"> <li>• Participation in people related training or events</li> <li>• Distribution/ accessing/ downloading people tools and information</li> <li>• Direct engagement</li> </ul>	<ul style="list-style-type: none"> <li>• Number and demographic of people engaging and aware of information, messages and messages</li> <li>• Number x demographic of people receiving/ accessing or downloading</li> </ul>
<b>Practices</b>	In their development – in context of the demographics	<ul style="list-style-type: none"> <li>• Utilising information, processes and tools</li> <li>• My BMP modules usage</li> <li>• Changes in specific farm practices/approaches</li> <li>• Providing training opportunities with immediate benefits</li> <li>• Providing training opportunities for longer term benefit</li> </ul>	<ul style="list-style-type: none"> <li>• Number and % of farm business and organisations x demographics:</li> <li>• Utilising specific information, processes and/or tools; and/or</li> <li>• Providing training opportunities for staff (immediate/ longer term)</li> </ul>
<b>Benefits and Costs</b>	Individual [all levels]	<ul style="list-style-type: none"> <li>• Confidence in work</li> <li>• Career pathway</li> <li>• Satisfaction</li> <li>• Loyalty/commitment</li> </ul>	<ul style="list-style-type: none"> <li>• Rating of job satisfaction, confidence, competence and career opportunity</li> <li>• Supervisor satisfaction</li> </ul>

Category	Class	Sub-class	Metric
<p>[Time off farm, up-skill and can't promote so leave]</p> <p>[How is training funded – grants? Business?]</p> <p>[Longevity sought through personnel taking a financial interest / stake in a business venture in collaboration with others]</p>		<ul style="list-style-type: none"> <li>• Longevity / health</li> </ul>	<ul style="list-style-type: none"> <li>• % of personnel x demographic staying in the industry for 5, 10, 15 years +</li> </ul>
	Farm or organisation	<ul style="list-style-type: none"> <li>• Improved workplace loyalty, satisfaction, culture</li> <li>• Improved work efficiency</li> <li>• Improved work safety</li> <li>• Reduced turnover and staff replacement costs</li> <li>• Improved productivity</li> <li>• Improved profitability</li> <li>• Taking a business interest</li> <li>• Initiatives used</li> </ul>	<ul style="list-style-type: none"> <li>• % staff turnover x demographic</li> <li>• \$ staff turnover cost</li> <li>• % contribution x change in work efficiency and safety</li> <li>• % contribution to increased productivity and profitability</li> <li>• Return on Investment</li> <li>• [productivity per employee</li> <li>• Profit per employee</li> <li>• Rating of culture at work</li> <li>• Number of reported incidents</li> <li>• Number of innovations introduced at work</li> <li>• Degree of skill mismatch?</li> <li>• Right people for the required tasks?</li> </ul>
	Industry	<ul style="list-style-type: none"> <li>• Development of leaders</li> <li>• Pool of skilled and professional workforce</li> <li>• Industry of choice</li> <li>• Improved strategic decisions</li> <li>• Culturally identify as a cotton grower</li> <li>• Have capital investment in the industry</li> </ul>	<ul style="list-style-type: none"> <li>• Numbers of industry personnel on boards, committees</li> <li>• Changes in pool of skilled and professional staff working in industry x demographic x role type</li> <li>• Degree of skills mismatch (do we have right skilled people?)</li> <li>• Educational attainment increased</li> <li>• Technology uptake increased.</li> </ul>

## Influence on Farm Operations by People Factors

The table below looks at the different farm factors that are influenced by different farm roles and the capacity of people filling these roles – and their potential impacts.

Farm Operation	Personnel type	Influence of people factors	Metrics	Outcome variation based on people skills
<b>Overhead costs</b>				
<b>Overall strategic decision making</b>	<ul style="list-style-type: none"> <li>Owner</li> <li>Manager</li> <li>Agronomist</li> <li>Other professional advisers</li> </ul>	<ul style="list-style-type: none"> <li>Choice of area of cotton, variety, timing, management, staffing</li> </ul>	<ul style="list-style-type: none"> <li>Management cost/bale cotton</li> <li>Return on capital/ investment</li> </ul>	
<b>Direct personnel costs</b>	<ul style="list-style-type: none"> <li>Owner</li> <li>Manager</li> <li>HR Person</li> </ul>	<ul style="list-style-type: none"> <li>Advertising</li> <li>Selection</li> <li>Induction</li> <li>Support/mentoring</li> <li>Review</li> <li>Training</li> </ul>	<ul style="list-style-type: none"> <li>%staff turnover</li> <li>\$ staff turnover</li> <li>Labour cost/ bale cotton</li> <li>WHS incidents and costs</li> </ul>	
<b>Machinery/equipment maintenance and depreciation</b>	<ul style="list-style-type: none"> <li>Manager</li> <li>Perm staff</li> <li>Skilled staff</li> <li>Contractors</li> <li>Casual labour</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance schedules</li> <li>Machinery use/mis-use/damage</li> </ul>	<ul style="list-style-type: none"> <li>Maintenance costs/bale</li> <li>Machinery/ equipment costs per year/per bale</li> <li>Labour cost/ha</li> </ul>	
<b>Production factors</b>				
<b>Fallow management</b>	<ul style="list-style-type: none"> <li>Manager</li> <li>Perm staff</li> <li>Casual staff</li> </ul>	<ul style="list-style-type: none"> <li>Choice of fallow crop</li> <li>Timing</li> <li>Effectiveness of spraying/cultivation</li> </ul>	<ul style="list-style-type: none"> <li>Labour cost/ha</li> </ul>	Av \$81 Range: ?
<b>Planting</b>	<ul style="list-style-type: none"> <li>Manager</li> <li>Perm staff</li> <li>Skilled staff</li> <li>Contractors</li> <li>Casual labour</li> </ul>	<ul style="list-style-type: none"> <li>Planting efficiency</li> <li>Planting effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>Planting cost per bale</li> <li>Strike rates</li> <li>Labour/contracting cost/ha</li> </ul>	Av \$487 Range: ?
<b>Nutrition</b>	<ul style="list-style-type: none"> <li>Manager</li> <li>Agronomist</li> <li>Skilled staff</li> <li>Contractors</li> <li>Casual labour</li> </ul>	<ul style="list-style-type: none"> <li>Choice, cost and amount of fertiliser</li> <li>Efficiency and placement</li> </ul>	<ul style="list-style-type: none"> <li>Fertiliser/applied N cost per bale</li> <li>Bales per ha</li> <li>Labour cost/ha</li> </ul>	Av \$358 Range: ?
<b>Crop protection</b>	<ul style="list-style-type: none"> <li>Manager</li> <li>Agronomist</li> <li>Skilled staff</li> <li>Contractors</li> <li>Casual labour</li> </ul>	<ul style="list-style-type: none"> <li>Effectiveness of pest monitoring</li> <li>Choice of chemical and spraying regime</li> <li>Efficiency and effectiveness of spraying</li> </ul>	<ul style="list-style-type: none"> <li>Chemical cost per bale</li> <li>Bales per ha</li> <li>No sprays</li> <li>Labour/contracting cost/ha</li> </ul>	Av \$124 Range: ?

Farm Operation	Personnel type	Influence of people factors	Metrics	Outcome variation based on people skills
<b>Irrigation</b>	<ul style="list-style-type: none"> <li>• Manager</li> <li>• Agronomist</li> <li>• Skilled staff</li> <li>• Contractors</li> <li>• Casual labour</li> </ul>	<ul style="list-style-type: none"> <li>• Soil moisture and crop monitoring</li> <li>• Irrigation scheduling</li> <li>• Irrigation operation – efficiency and effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>• Litres irrigation per bale</li> <li>• Irrigation cost/bale</li> <li>• Labour cost/ha</li> </ul>	Av \$490 Range: ?
<b>Harvesting</b>	<ul style="list-style-type: none"> <li>• Manager</li> <li>• Agronomist</li> <li>• Skilled staff</li> <li>• Contractors</li> <li>• Casual labour</li> </ul>	<ul style="list-style-type: none"> <li>• Timing</li> <li>• Operation of harvesting machinery</li> </ul>	<ul style="list-style-type: none"> <li>• Harvesting cost per bale</li> <li>• Bales per ha</li> <li>• Labour cost/ha</li> </ul>	Av \$265 Range: ?
<b>Post-harvest</b>	<ul style="list-style-type: none"> <li>• Manager</li> </ul>	<ul style="list-style-type: none"> <li>• Storage of cotton</li> </ul>	<ul style="list-style-type: none"> <li>• Post-harvest loss percentage</li> </ul>	Av \$723 Range: ?
<b>Overall productivity</b>				
<b>Overall production costs</b>	<ul style="list-style-type: none"> <li>• Manager</li> <li>• Agronomist</li> <li>• Perm staff</li> <li>• Skilled staff</li> <li>• Contractors</li> <li>• Casual labour</li> </ul>	<ul style="list-style-type: none"> <li>• Efficiency of operations undertaken</li> </ul>	<ul style="list-style-type: none"> <li>• Production costs per ha</li> <li>• Labour cost/ha</li> </ul>	Av \$2714/ha Range: ?
<b>Overall production levels</b>	<ul style="list-style-type: none"> <li>• Manager</li> <li>• Perm staff</li> <li>• Agronomist</li> <li>• Skilled staff</li> <li>• Contractors</li> <li>• Casual labour</li> </ul>	<ul style="list-style-type: none"> <li>• Combination of different operations and their effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>• Bales per ha</li> <li>• Labour cost/ha</li> <li>•</li> </ul>	Av Range: ?
<b>Cotton Quality</b>	<ul style="list-style-type: none"> <li>• Manager</li> <li>• Agronomist</li> <li>• Skilled staff</li> <li>• Contractors</li> <li>• Casual labour</li> </ul>	<ul style="list-style-type: none"> <li>• Harvesting operation</li> <li>• Storage management</li> <li>• Transport management</li> </ul>		
<b>Overall profitability</b>	<ul style="list-style-type: none"> <li>• Manager</li> <li>• Agronomist</li> <li>• Skilled staff</li> <li>• Contractors</li> <li>• Casual labour</li> </ul>	<ul style="list-style-type: none"> <li>• Strategic decisions and operational practice</li> <li>• Staff Management</li> </ul>	<ul style="list-style-type: none"> <li>• Profitability per ha</li> </ul>	Av GM \$3730/ha Range: ?
<b>Social</b>				
<b>Workplace cohesion, enjoyment and satisfaction</b>	<ul style="list-style-type: none"> <li>• Manager</li> </ul>	<ul style="list-style-type: none"> <li>• Workplace satisfaction</li> <li>• Staff turnover</li> </ul>		
<b>Career development and staying in industry</b>	<ul style="list-style-type: none"> <li>• Manager</li> </ul>	<ul style="list-style-type: none"> <li>• Training provided</li> <li>• Mentoring</li> </ul>		

Farm Operation	Personnel type	Influence of people factors	Metrics	Outcome variation based on people skills
<b>Environmental</b>				
<b>Loss of soil and nutrients off-farm</b>	<ul style="list-style-type: none"> <li>• Manager</li> <li>• Perm staff</li> <li>• Agronomist</li> <li>• Skilled staff</li> <li>• Contractors</li> <li>• Casual labour</li> </ul>		<ul style="list-style-type: none"> <li>• Kg soil loss/ha</li> <li>• N loss/ha</li> </ul>	
<b>Chemical contamination off farm</b>	<ul style="list-style-type: none"> <li>• Manager</li> <li>• Perm staff</li> <li>• Agronomist</li> <li>• Skilled staff</li> <li>• Contractors</li> <li>• Casual labour</li> </ul>	<ul style="list-style-type: none"> <li>• Safety and operational management procedures and processes</li> </ul>	<ul style="list-style-type: none"> <li>• Chemical levels in water run off</li> <li>• Incidents of chemical contamination</li> </ul>	