



FINAL REPORT 2014

For Public Release

Part 1 - Summary Details

Please use your TAB key to complete Parts 1 & 2.

CRDC Project Number: UM1201

**Project Title: Innovative work: Cotton workforce development
for sustained competitive advantage**

Project Commencement Date: 01/01/2011 **Project Completion Date:** 30/12/2014

CRDC Research Program: 4 People

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Date Submitted:

8th January, 2015

Part 3 – Final Report

(The points below are to be used as a guideline when completing your final report.)

Background

1. Outline the background to the project.

The cotton sector has prioritised workforce development for strategic investment by setting human capacity building as a goal and defining a strategy to plan for future industry capacity needs. This strategy reflects an understanding that effective workforce development is important for a sectors competitiveness and innovation. However workforce development is not straightforward, particularly for primary industries, where there are a relatively large number of individual businesses that on their own cannot influence the organisation and activities of training organisations or employment services providers, or even necessarily offer a broad range of career opportunities within their own businesses. Therefore to ensure there are enough people of appropriate capacity to meet the demands and needs of the Australian cotton sector in the medium term, collective action by the organisations that influence or have a stake in human capacity is required. To take effective action however required:

- a. an understanding of the current system of how people are attracted, retained and developed in the sector and what is currently working and why,
- b. a framework to assess, prioritize, align, plan, invest and act to improve how workforce development happens over time.
- c. confidence to act strategically and collaboratively in this domain.

This includes both what individual businesses can do to develop their workforce – but also what collective industry action can do.

Research in workforce development has identified that to improve the contribution of human capacity to a sectors' competitiveness a multi-dimensional response is required. This means that people need to be simultaneously deployed more effectively in the production system, developed to meet new challenges and provided with interesting work and career opportunities. Further, this is understood to only be achieved with due consideration to the particularities of local communities and regional economies in designing effective support systems. The issues of attracting, retaining and developing people in a sector then is far from solved simply by generating knowledge about skill needs, clever marketing strategies to attract people or developing and delivering training products. What is required is effective workforce development across the supply chain requiring both an understanding of the workforce development system and a capacity to improve it.

This project activated the cotton sector strategy and addressed these challenges by establishing a research-based process to:

a) collect and interpret regionally specific data and information about how cotton workforce development happens and what is currently working well or could be improved. This includes building an information system on the diversity of job and skill profiles of farm and off farm businesses through the supply chain in a rapidly changing production environment, the way people are attracted, retained and developed in the sector; the demand for people and skills, regional labour market analysis, and the different roles and contributions of stakeholders like employers, training organisations, employment organisations and government in the cotton workforce system;

b) engage key stakeholders, including those outside the sector, in understanding the workforce development system to identify potential partnerships for local action;

c) develop a regionally relevant framework to mobilise and support networks of employers and relevant stakeholders in 2-3 regions in planning to improve workforce development.

Objectives

2. List the project objectives and the extent to which these have been achieved.

All the following objectives, milestones and performance criteria have been achieved. The exception is a change to objectives 3 and 4 in consultation with CRDC to consist of the completion of regional trials of workforce activities rather than workforce development plans for each region and funding proposals submitted to funding bodies.

Obj No.	Objective	No.	Milestone	No.	Performance Indicator
1	Critical data and Information about the Cotton Workforce development system and labour market is collated, analysed and interpreted for stakeholders.	1.1	Searchable & updateable data base that presents relevant labour market analysis information for each cotton region (ABS, Census and ABARE data)	1.1	Workforce development data and implications are presented to steering committee and feedback collated
		1.2	Report: Review of current industry, regional and farm workforce development activities and human resource practices on farms	1.2	Data base is owned and located in the cotton industry organisations responsible for human capacity in order to be used and updated at next census
		1.3	Report: The cotton workforce development system: gaps and opportunities for enhancing industry competitiveness		
2	There is greater understanding of the cotton workforce development system by stakeholders nationally and regionally.	2.1	Stakeholder briefings held in 2-3 regions	2.1	Change in stakeholder understanding tracked (pre-post briefings)
		2.2	Report to steering committee on stakeholder briefings: Stakeholder feedback and changed levels of awareness	2.2	Stakeholders seek information about cotton workforce development generated by the report
				2.3	Increased awareness of workforce issues in cotton communities

3	There is a framework to support cotton workforce planning at a regional level and help to support planning in up to 3 chosen regions	3.1	Report on cotton workforce development planning and action framework for regional action.	3.1	Two to three regions are interested in being part of planning process
		3.2	Regions chosen to use framework to support planning and action (in conjunction with steering committee)	3.2	Local project coordinator develops plans.
		3.3	Local action project coordinator appointed in conjunction with steering committee		
4	There is a plan in place for addressing priority areas beyond the life of the project and the funding sources identified in up to 3 chosen regions	4.1	Project coordinator submits regional plans	4.1	Regional plans available and proposals for funding submitted to relevant funding bodies
		4.2	Project coordinator submits proposals for funding to progress priority areas in regional plans		
5	Conclusions and recommendations for progressing workforce beyond the project development are made	5.1	Reflection workshop with steering committee on harnessing lessons form the project	5.1	Stakeholders have increased confidence in how to act to improve cotton workforce development.
		5.2	Report on lessons from the project for improving cotton workforce development over time.	5.2	Journal papers submitted for publishing on the contribution of the project to workforce development research.

Methods

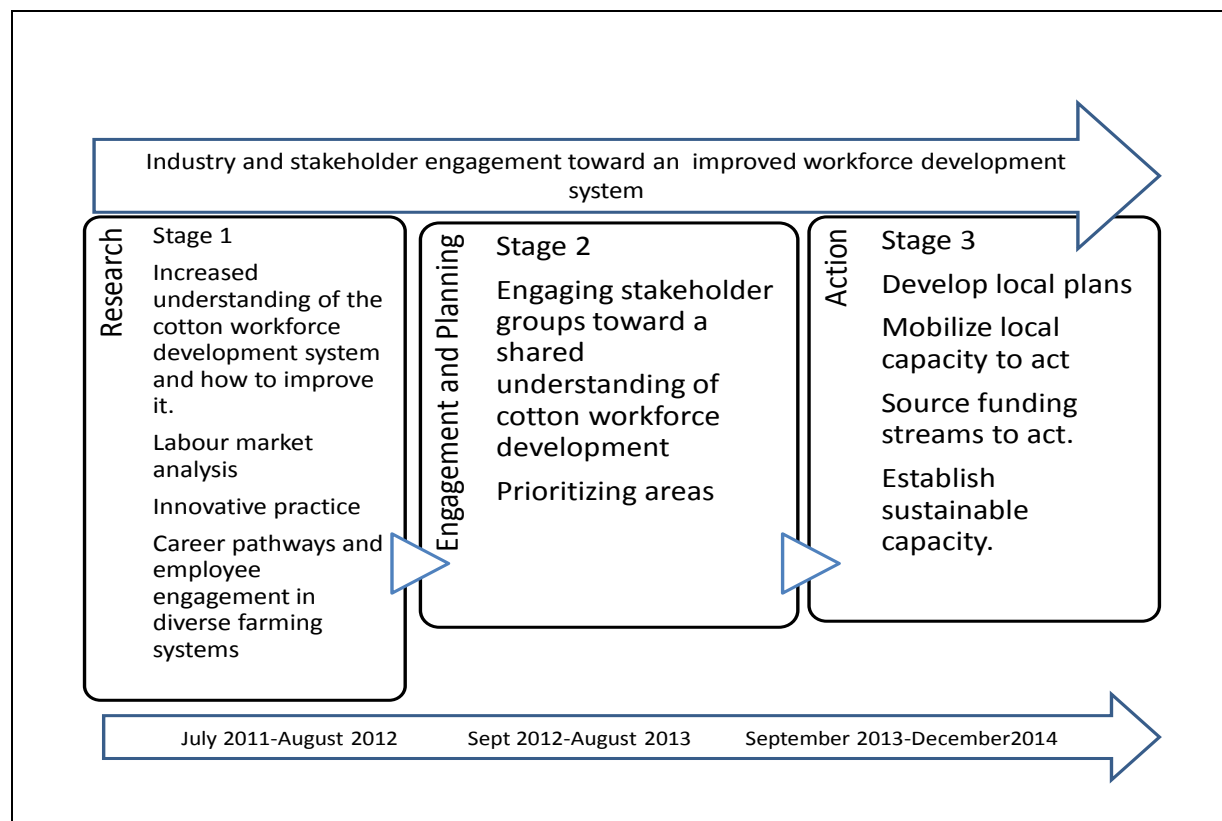
3. Detail the methodology and justify the methodology used. Include any discoveries in methods that may benefit other related research.

Chapple (2005) identified that workforce development systems need to be: collaborative in scope; regional in scale; career-oriented in focus; and data intensive in strategy. The design of this project aligned with these principles in order to create the foundation for effective cotton workforce development systems over the longer term. The project used an overarching framework of Action Research in which the research team, investors and key stakeholders take part in cycles of generating knowledge about the workforce development system (research) and doing things to use this knowledge to improve the workforce development system (action).

In workforce development research it is important to maintain the integrity of the systemic nature of the workforce development process in data collection and analysis. Therefore, it was important to collect business-level information (i.e. farm human resource management practices, working conditions, skill profiles and needs) in the context in which these decisions are made (i.e. the location of the business in regional labour and commodity producing markets), the supply chain in which the business operates and the form of social organisation (e.g. corporate or family structures or large or small enterprises). For this reason a case study methodology was the most suitable, in which the unit of analysis is the farm business and the unit of interpretation and action will be the region/place in which workforce development can be understood and influenced. (e.g. a cotton production region or valley).

The methods for data collection and analysis consisted of a combination of recognised quantitative and qualitative approaches including descriptive statistics, labour market analysis and qualitative models of workforce development processes (workforce flows, critical path analysis) as well as cross-case analysis of individual business workforce development. The methodology and methods had been ground-truthed in previous studies and projects in dairying (Nettle and Oliver, 2008) as well as a number of other rural and non-rural industries and occupations.

The project methodology involved 3 phases. A research phase, a planning phase and a coordination phase (outlined below).



The methods deployed in the research have a number of elements that are worthwhile replicating in the cotton sector to understand and track cotton workforce issues over time beyond this project, including:

1. **The cotton workforce data** collected via interview questions and survey instruments and used to quantify workforce needs and conditions and the demand for people and skills should be used as a template for future data collection exercises to ensure comparison between years.
2. The **Labour market analysis** synthesising ABS, Census, and ABARE data should be housed and updated by CRDC or Cotton Australia to inform priority setting, policy makers and in assisting with engaging with government. This will require updating of the excel spreadsheet “People in Cotton” aggregated at the unit of collective (local) action at each census point.
3. **Regular stakeholder analysis:** understand major changes in the stakeholder community and environment to identify contributors to cotton workforce development (funding, expertise, interest)
4. **An annual report on the cotton workforce situation should be developed to:**
 - bring data together from 1-3 above to describe the Cotton workforce development system and identify priorities, emerging issues, future needs and opportunities for improvement.
 - identify pressure points in the workforce system, (priority areas to act)
 - identification of current and possible career trajectories and occupational groups
 - identify opportunities for acting and creating desired change
 - identify regions of highest priority and also capacity, based on previous regional action experiences
 - identify stakeholder interest – and best-bet areas of action

Further relevant methodologies from the project that can be used in the future include: the process for establishing a training program as outlined in the case study report for the Emerald region (milestone 4); and the process of running a regional workforce event as outlined in the case study report of the Riverina Workforce event (milestone 4).

In improving the methodology of the research in general, the research team would emphasise the importance of a formal steering committee for a project such as this and obtaining buy-in for the action research approach, including time of staff in key industry organisations like CRDC and Cotton Australia/CGAs. Further, in seeking to establish regional trials after the research phase, more time spent within the regions and gaining industry and stakeholder support was needed and would have benefitted from having a designated cotton industry champion to support the activities of the research team.

Results

4. Detail and discuss the results for each objective including the statistical analysis of results.

Detailed results and discussion are contained in each of the milestone reports for each objective. Provided here is a summary of results..

Objective 1: Critical data and Information about the Cotton Workforce development system and labour market is collated, analysed and interpreted for stakeholders

Summary from census: cotton is a small industry in a workforce sense Comparison 06/11:

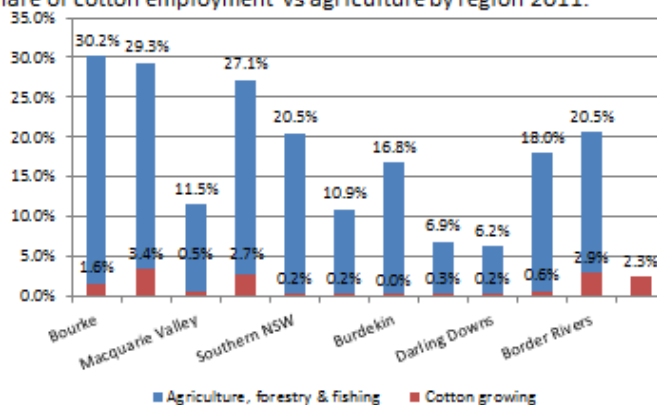
1. Smaller proportion of Australian workforce in agriculture and larger proportion in mining
2. Tightening of labour market in cotton regions
3. Trend for populations in cotton regions to be younger and have more formal educations than Australia as a whole (check)

Size of agriculture and cotton

Industry sector employment and sub groups	2011 %	2011 n
1) Agriculture, fishing & forestry	2.5	249,827
2) Ag sub industries: Sheep, beef & grains	48.1	120,143
3) Ag sub industries: Cotton, sugar & other crop growing	3.5	8,846
4) Cotton industry 1,760 people who indicated they worked in the cotton industry and 586 ginners	0.9	2,346

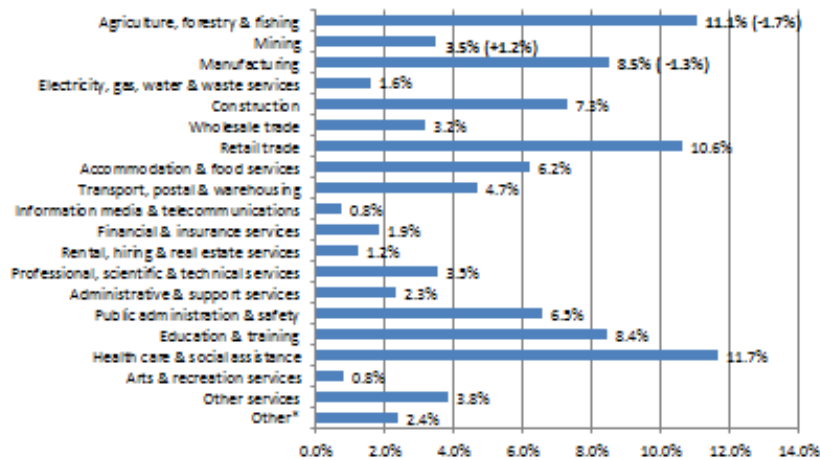
However in specific regions, the cotton workforce makes up a significant proportion of the agricultural workforce.

Share of cotton employment vs agriculture by region 2011:



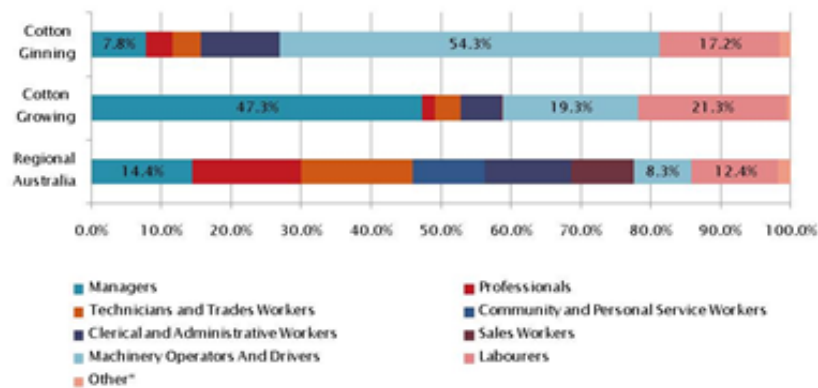
The relative importance of agriculture as an employer relative to other employers in cotton regions is an important consideration

Average industry employment shares, all cotton regions, 2011:

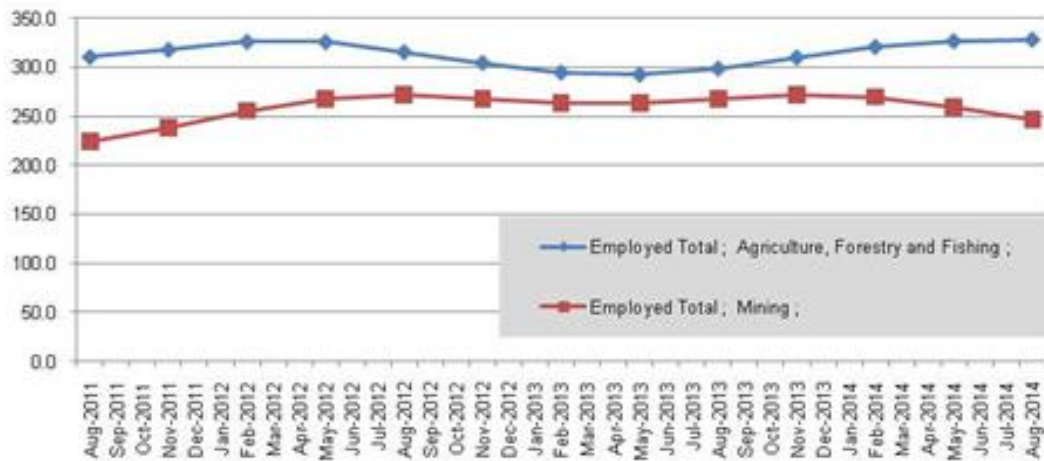


Cotton: a different occupational trajectory

Occupations, growing & ginning, 2011 (Census)



More recent employment change with sharp reduction in mining jobs...



External and regional influences on cotton workforce labour markets still need to be kept in mind when deciding workforce interventions.

1. External influences

- On-going agricultural restructuring
- Policy environment
 - focus on formal skillstraining
 - workforce issues are industry's responsibility
- Prolonged drought (& other climate events)
- Increased automation
- Industry competition

2. Regional influences

- Emerald: mining; flooding; mining
- Gwydir: reputation; generic rural issues
- L & M: unreliable water

Regional differences in the workforce development system: A summary

Emerald production valley

Emerald is an example of a mine-impacted cotton production valley. While the area was traditionally agricultural but co-existing with mining for decades, mining has become the largest employer. The recent expansion of mining has resulted in workforce shortages across sectors and the region, with the flow-on effect that occurs in high growth mining towns, further negatively impacting on recruitment and retention. The high price of and scarcity of accommodation and associated limited access to basic services such as health and childcare act as barriers. The 2.4% unemployment rate validates the interview and survey data results, as does the population growth of 2.1% compared to the national rate of 1.6%. The isolation inherent in a rural community so far from the coast, and the poorer infrastructure such as roads and schools known to be part of many rural communities are further impediments.

The mining expansion has exacerbated existing workforce shortages resulting from the length of the recent drought. This forced farmers and others to reduce their workforce and many of these people who were predominantly semi-skilled men between 30 and 50 years. These workers are now resettled elsewhere.

Consequently Emerald has a 'missing middle'.

Gwydir production valley

Gwydir is an example of a large and well-established production valley. While to date the impact of the mining industry on workforce has been a limited, many growers are very concerned that as mining expands towards Gwydir they will suffer significantly due to the inability of agriculture to compete with mine wages. As with Emerald, interviewees reported that the poorer infrastructure associated with rural communities is a deterrent to potential employees.

Those in Gwydir reported two other workforce related issues. Firstly, water – while most cotton in this valley is irrigated it is a part of the highly regulated Murray-Darling Basin system, which is well-known for its changing water policies. This combined with the long drought results in water being unreliable. As for Emerald, the long drought resulted in many semi-skilled employees resettling out of the region. The second issue is the perceived negative image of Moree due to the high Aboriginal population.

Lachlan & Murrumbidgee Production Valley (LMPV)

The Lachlan & Murrumbidgee Production Valley (LMPV) is an example of a valley where the industry is rapidly expanding however, this is shaped by other influences too. The Riverina, where this valley is located, was converted from pastoral use to cropping and horticulture with the introduction of irrigation schemes from early in the 20th Century. With the focus on closer settlement schemes, original land parcels were small. Consequently many farms remain so, but to achieve economies of scale, families have expanded their ownership to multiple properties and often these are family businesses among siblings or including two generations. Currently there is a preponderance of young men leading or taking over these businesses, and they have a desire to build the enterprise. Corporate ownership is also reported to be expanding in this area which is known to prefer contractors over permanent staff. A key factor in the expansion of cotton in the LMPV was the full allocation of irrigation water in 2012 and the development of varieties that a suitable for this climate; the price

and good returns from cotton; and increased automation. The retrenchment of skilled on-farm staff during the drought and the sale of water licences during the drought have contributed to cap production and development.

For decades, a transition in agriculture has been occurring. The structural changes creating fewer, larger farms and often with corporate structures with a preference for employing contractors for on-farm work, has contributed to a smaller pool of skilled farmhands. In addition, in agriculture but markedly in cotton, there has been an expansion of automated machinery, but this requires a higher level of skill than the traditional farmhand work which was predominantly unskilled labour though the demand for unskilled work continues to exist. Beyond agriculture, but now influencing it, is the expectation from employees that they will have a work-life balance, yet the demand remains for long working hours.

WORKFORCE GAPS

The study found workforce gaps in Emerald and Gwydir reported in both interviews and surveys. In the Emerald survey, approximately half of the 25 participants reported gaps; in total there were 23 vacancies (7 for senior/experience-level employees; 9 for entry-level employees; 7 for part time employees). When the 75 paid staff was combined with the 18 unpaid staff, less the vacancies, this gave a workforce gap of 20%. In the Gwydir survey approximately half of the 24 participants reported gaps, also; in total there were 50 vacancies (3 at the managerial-level; 22 for senior/experience-level employees; 13 for entry-level employees; 9 for casual employees; 3 for part time employees). When the 210 paid staff was combined with the 45 staff, less the vacancies, this gave a workforce gap of 16%. With the exception of the use of transport and spraying contractors, few contractors were used frequently, however most survey participants reported using agronomy consulting services frequently, but few other consultancy services were used.

In the LMPV survey, the 24 survey respondents reported a total of 97 paid employees and 46 who were unpaid (e.g. family). More than half the paid workforce was either managerial-level or senior/ experienced-level full-time employees, with almost one-quarter being casuals. A larger workforce is required for cotton production than other crops, with experienced staff being most in demand for both cotton and other crops. Of contracting services, only transporting and spraying services were used with any frequency however, most reported using agronomists frequently. In this region, most growers reported having a sufficient number of staff but appeared to lack confidence that this would remain so however, they would have preferred staff with higher skill levels. Many of the permanent farm hands of interviewees are approaching retirement age.

Several interviewees currently sponsor people on 457 visas or have commenced this process. Others have a desire to sponsor 417 visa holders they have found suitable but there is a recognition and frustration that a 417 visa is not a pathway to a 457 visa. In total in the LMPV at the time of the survey there were 17 vacancies, (7 casuals; 4 entry-level; 4 senior or experienced staff; 2 managerial-level). Interviewees reported having largely the staff they required, but some had just made decisions to recruit more staff.

In Emerald the majority of staff were at the manager (28) and senior/experienced-level employee (22), whereas in Gwydir the back bone of

staff were the farmhands (senior/experienced (54) and entry-level (54)), however casual staff numbers in Gwydir were the highest at 63 employees.

ATTRACTION

From interview data, employees working in cotton in all production valleys, were largely attracted to agriculture rather than cotton, and to the lifestyle, and in Emerald, the employers were also attracted to the lifestyle, many having a farming background; in Gwydir there was the lifestyle and the added attraction of the profitability of cotton and the dynamism of the industry. In the LMPV, the primary attraction to cotton was the financial return however, the interview data revealed a broad range of attractions.

RECRUITMENT STRATEGIES

The strategies favoured by employers reflect those typical in rural communities, with a heavy reliance on personal networks, but they are not providing an adequate number of farm hands in either valley. Many participants reported using multiple strategies at once, with the use of Labour hire companies, employment agencies, the internet and newspapers all being mentioned. The use of networks was reportedly effective because of the positive outcomes – usually the parties were known to each other, often through a previous employer-employee relationship, and it was a success. However this largely resulted in ‘churn’ – the same farmhands moving around the region. The key issue with recruitment is the inadequate number of farmhands, so if the informal approach to recruitment continues to be the primary approach, the numbers are likely to remain inadequate.

In Gwydir there are Labour hire and employment agencies already working collaboratively to meet the employment needs in agriculture and willing to collaborate further.

In the LMPV, the top two recruitment strategies reported in the survey were informal – from the participant’s own network, or the recruitment of a previous employee. This informal approach is typical of rural communities, but the interviews show that while it is producing an adequate number of staff in the LMPV, it is not attracting skilled staff with cotton knowledge. Most of those recruited were casuals, as these are required for the seasonal work, and are reportedly quick and easy to recruit, with the majority being back-packers who are highly regarded when compared to the quality of Australians as casuals. Most of the interviewees have used employment agencies, some with great success and others not so.

RETENTION

Turnover

In the LMPV, an estimated 44% of the experienced farm hand staff turned over in the last 12 months and 42% of casual entry-level staff. The survey results shows that approximately two-thirds of staff recruited in the last year was new to cotton, and of the new recruits approximately two-thirds were entry-level and of those not new to cotton, three-quarters were entry-level. By contrast interviewees expressed a desire for staff with ‘cotton experience’.

While the results for casual staff would be influenced by the 417 visa restrictions, it requires investigation. However, the turnover for experienced-level staff indicates that being an experienced farm hand on a cotton farm may not be an attractive job. This resonates with all the interviewees all reporting difficulty attracting experienced staff however, the unemployment rate of 2.8% would account for some of this difficulty. By contrast, the long working hours despite

being desired by both employees and employers, in addition to the moderate levels of elements known to engage staff, may contribute to this turnover rate. In the interviews while some reported turnover, there appeared not to be a pattern. There is a mis-match between what appears to be considered important by employers and what appears to be valued by employees. While employees tend to favour the formal strategies such as paying above award, employees value a respectful relationship with their employer, and working conditions such as flexibility around hours and family responsibilities, and enough time off. If employers were to understand the perspective of their employees this could lead to insights that bring strategies with the potential for mutual appeal. While research suggests that long working hours appear to be somewhat routine in agriculture, this is likely to be contributing to retention capacity. However the employees interviewed in Gwydir in particular were very contented with their circumstances.

An issue for agriculture is that the agriculture skill set and cotton ginning skill set provides a career pathway to mining. In Emerald the constant turnover of largely inexperienced farm hands, and the regulatory and familiarisation training, taxes already stretched employers, with a pattern of now trained farm hands moving on to mine employment. This contributes to the workload and stress levels of employers, with the regulatory training and familiarisation, but impacts more on family farmers and their families than the corporate sector, due to the inherent support in a corporate structure.

In Emerald existing staff tend to be senior/experienced farm hands with many approaching retirement age; there are some 457 visa holders but this is considered a costly, time-consuming and difficult process; casual staff are largely back-packers with some use of 'grey nomads'. In Gwydir there is a range of ages with farm hand staff, with many managers being in their 20s and 30s. Casual staff are predominantly back-packers.

In the LMPV, the five most frequently mentioned retention strategies by survey respondents were: saying thank you; paying above award; giving an employee responsibility for a geographical area; being flexible about working hours; and recruiting people who live locally. As these are typical strategies, those not using them may not be as competitive.

Development

Despite workforce shortages training is valued and provided by employers, yet the perceived value by employees was mixed with Emerald employees showing great interest, but with Gwydir employees aspirational but not seeing training as a part of the pathway.

While those employers interviewed in Emerald who appeared to be successful with retention spoke of matching the employee with suitable tasks/interests or providing them with a level of responsibility, and with this being among the top-five retention strategies in Gwydir, there was little evidence of career paths for employees. The exception here was the larger enterprises, but in both valleys employees reported that advancement opportunities were limited. There is evidence that suggests that farm hands in Gwydir created their own career paths through the alleged poaching activities.

In the LMPV, survey responses indicated some training occurred during the last 12 months and that further training is planned. Of the 11 training events reported, 3 were conducted by a machinery manufacturer and 3 by a Registered Training Organisation. All but one of the 11 were reported to be moderately to

extremely beneficial to the farm. Interviewees report sending their staff for training, such as chemical handling and plant operations which includes those with staff on 457 visas and one who is doing a Certificate III, to upgrade skills.

FUTURE EMPLOYMENT NEEDS

Interviewees in both Emerald and Gwydir valleys reported that while technology, particularly round bale pickers, reduced their staffing needs, this and GPS guided technology resulted in a requirement for staff who were more skilled staff, and this greater skill requirement would be increasingly required. In Emerald despite having workforce gaps survey respondents reported that their workforce needs were likely to remain the same as currently.

In the LMPV, nearly half of the survey respondents indicated that they intended increasing their cotton hectares over the next five years and more than one-third that they intended to increase the size of the farming enterprise. This is consistent with the expansion reported by most of the interviewees. However, over one-quarter of survey respondents reported that the decision to plant cotton was a season-by-season decision, which is also consistent with the interview data. Here, the availability of water is key but the price of cotton is also important. Despite clear plans to expand, three-quarters of survey respondents reported that their employment needs would remain the same.

So, while the key factors that influence the expansion of cotton are outside the control of growers (the quantity of water available; price of cotton), in the LMPV the rapid expansion of the recent past is expected to continue. Therefore, because cotton is more labour intensive than other crops, overall the conclusion here is that the demand for skilled farmhands will increase.

STRATEGIES FOR MANAGING WORKFORCE GAPS

In both Emerald and Gwydir the large-scale and quick adoption of round bale pickers was reportedly driven primarily by the significantly reduced number of staff required for picking with these machines; this was reportedly not a cost-effective technique for picking.

Also in both valleys, survey participants reported working longer days and hours. This was highlighted by the survey results showing that in both valleys most staff worked 6 or 7 days per week in busy periods. This was consistent with the Emerald interviewees reporting high levels of burn out and stress. Even during off-peak periods two-thirds of Emerald employees and three-quarters of Gwydir employees worked more than 38 hours a week. Questions need to be asked about how much longer owners and managers can sustain this level of activity and whether these working conditions are an issue in attraction and retention for the farm hands.

Employing back-packers was a workforce shortage workaround in all valleys. They were a readily available source of labour and while there were mixed opinions on their value, overall they were valued for their work ethic. A disadvantage of the usually unskilled back-packers was the damage to machinery causing costly delays and for some dramatically increased insurance premiums. There are two longer term issues created by the heavy reliance on back-packers. Firstly, who will be the labour force when global financial stability increases, and secondly without a set of strategies in place to create the next generation of farm hands, as now there will be an inadequate number, so this creates a future workforce limit. In both valleys the view about those currently unemployed was that they were unemployable, even though many growers had

a desire to and did employ locals, and in Gwydir with the high Aboriginal population, there were mixed views, based on experience, of the reliability of this potential workforce.

Apart from the use of round bale pickers as a business strategy to manage workforce shortages, other business strategies were diversification, such as operating a contracting business which allowed two part time jobs to be converted to a full time position. In Gwydir they used retention strategies to reduce their need to recruit.

POTENTIAL FOR WORKFORCE DEVELOPMENT STRATEGY

Emerald's history of workforce shortages have resulted in two previous and a current regional based action designed to address the issue. Therefore this community has an existing capacity take a systems perspective and collaborate across sectors. While not insurmountable a key barrier is the low unemployment rate; a second barrier, for cotton growers, is that due to the workforce shortages that are already carry high workloads.

In Gwydir there is a history of growers and the agricultural community taking action to address predominantly production issues; most recently however growers lobbied government to relax the visa conditions that would allow those on 417 visas longer periods of employment.

In the Riverina, there are established regional workforce networks, however the cotton sector is not well linked to those efforts in representing their needs and issues.

Objective 2 There is greater understanding of the cotton workforce development system by stakeholders nationally and regionally

Between March and September 2013 six stakeholder briefings were held to increase the understanding of the cotton workforce development system by stakeholders nationally and regionally. These briefings consisted of two presentations targeting growers in the case study communities of Emerald and Gwydir. An additional two presentations were made at cotton events held in regional communities, on the invitation of the cotton industry (the Moree Trade Show and the Narrabri Cotton Forum). Two presentations, each with a workshop, were held targeting a national audience (CRDC meeting in Moree and Sydney workshop).

There is clear evidence that participants at the Sydney workshop had a changed understanding after the workshop when compared to their knowledge prior to the workshop, based on pre- and post-measures. While no other 'before' measures were taken it is evident from two other briefings that the participants unambiguously understood the key messages presented. These were the participants in the Moree workshop, and the Emerald Central Highlands Cotton Growers and Irrigators Association who reported back that the results reflected their experiences. Further evidence is their current level of interest in being involved in a regional trial.

In addition, the research team facilitated 3 workshops over the project period with people and human capacity researchers to integrate and align cotton sector projects with the workforce development strategy built from this research.

The milestone reports related to workforce data have been distributed to almost 40 individuals many of whom are outside the cotton industry, and through nine separate oral presentations (6 with regional audiences and 3 with national audiences).

Objective 3 There is a framework to support cotton workforce planning at a regional level and help to support planning in up to 3 chosen regions

Based on research into the workforce development system in the cotton sector, the project developed a strategy for addressing the workforce issues:

1. Identifying a sustainable source of labour that has the capacity to acquire the necessary skills and which can accept the physical and social demands of working in the cotton industry
2. Build a critical mass of “good practice in employment relations” and establish a culture of innovation and excellence in this area to: improve job design, manage work across seasons, and retention. Share good practice examples widely, within and outside the industry.
3. Over the longer term, developing skill and career pathways for workers within the industry that take account of technical improvements in cotton production and the ongoing trend toward capital deepening and automation.
4. Developing a national and regional capacity to coordinate and take action and link to government.

Importantly the notion of strategic collaborative action would need to be considered in terms of strategies, and whether each strategy would best fit the short term, such as identifying a sustainable source of labour, medium term which may encompass broader collaborations in recruitment and retention such as with other primary industries and regional industries such as mining, or the longer term which could involve adding workforce planning to strategic management at the enterprise level and considering what would help the industry best ride out the external threats such as drought and mining.

Further, the project adapted a model of workforce development from the dairy sector to test in 2 regional trials.

Objective 4 There is a plan in place for addressing priority areas beyond the life of the project and the funding sources identified in up to 3 chosen regions

A draft regional action plan for Emerald following the pilot study

Mobilising action: Establishing a regional core capacity related to the cotton workforce

Extend regional core capacity in the Emerald region from the pilot to include:

- Nationally endorsed working group/steering committee to oversee implementation of plan and source funds for actions: 2 to 3 cotton growers (paid); Emerald Agricultural College; service sector, gins.
- Funding for a designated cotton workforce Project Coordinator (based with CA): to maintain relationship with stakeholders over time in order to be flexible in addressing workforce needs season-by-season.
- Use this plan as a basis of the first meeting: consider cross sector workforce strategy (farm, service sector, processing).

- Goal of group:
 - advance human capacity strategy for cotton in the region;
 - build a capacity to link cotton sector needs into regional workforce plans;
 - tap into local network of training, education and labour market stakeholders (see Figure 2: Core capacity and other network members, Emerald case study);
 - increase awareness of cotton sector needs amongst stakeholders;
 - leverage funds for cotton needs; and
 - link into national Human Capacity strategies to deliver activities and projects locally (e.g. human resource management training; employer and employee training initiatives; schools programs; career camps; etc).

Activities of co-ordinating group

- Set annual goals/outcomes.
- Ensure workforce data for cotton is up-to-date for the region: For example, produce an annual cotton workforce update report; update research of the CRDC Innovative Work project (Milestone Report 1.2); basic understanding of employer demand in the region (use survey from original research); use network of local stakeholders to understand employee supply.
- Choose appropriate annual priority: For example, traineeships if willing employers; employer skills; new entrant co-ordinated induction, ginning staff; farm advisers etc.
- Identify and engage stakeholders relevant to the priorities: For example, MRAEL; schools; Vet providers etc.
- Secure funding for priorities and the commitment of growers.

Annual project plan for one or two priority areas (that may extend over more than one year) to include:

- A. Identify interested growers or service providers/gins (depending on priority area).
- B. Identify and address potential obstacles for *farmers* or service providers and gins for engaging in the project.

For employment entry projects

- A. Support and train growers/offer incentives for 'industry good' skills development.
- B. Support and train candidates.
- C. Address obstacles for candidates.
- D. Provide ongoing mentoring and support to entrants into the cotton workforce (e.g. employee events etc).
- E. Annual report to national human capacity panel, seek national funds for evaluation.

National role to support Emerald workforce issues

- Human capacity strategy is known in the region and regional action is linked to progress in national strategy.
- Ensure Census data and excel spreadsheet updated every five years related to workforce.

- Support region in collecting appropriate workforce data to inform stakeholders.
- Report on regional progress to the board of CRDC/CA.

A draft regional action plan for Riverina following pilot study

Regional plan

- Maintain energy from the Griffith workforce event for future action by maintaining contact via Cotton Australia representative with Regional Development Australia, training bodies and schools.
- Nationally endorsed working group/steering committee to set priorities and update cotton workforce needs in the Riverina to communicate to regional stakeholders.
- National funding for some of the time of a Cotton representative to be networked into the Riverina regional workforce network by: maintaining relationships with stakeholders over time in order to be flexible in addressing workforce needs season-by-season.
- Cotton representative to ensure data on cotton workforce is up-to-date (annual); stakeholders in the region know about cotton needs; cotton is represented at relevant regional events/initiatives to leverage funds for cotton workforce needs; and engage in proposals for funding that bring stakeholders together to address cotton needs.
- Report to national human capacity panel.

National role to support Riverina workforce issues

- The Griffith workforce event can be replicated in other cotton regions when workforce issues are emerging (in term of attraction/supply and increasing demand) and in partnership with regional stakeholders (e.g. to fund the event).
- Human capacity strategy to be socialised in the region and regional action is linked to progress in national strategy.
- Ensure Census data and excel spreadsheet updated every five years related to workforce.
- Support region in collecting appropriate workforce data to inform stakeholders.
- Report on regional progress to the board of CRDC/CA.

Objective 5 Conclusions and recommendations for progressing workforce beyond the project development are made

The experience from the *Innovative work* project and reflected in experiences from other sectors like the dairy industry is that collective action to progress farm workforce planning and action does not occur spontaneously. Whilst some elements of this research project such as the labour demand information or elements of the regional trials are likely to persist through designated funding and/or regional ownership and support, the capacity to sustain an ongoing process of workforce planning and action that can tackle systemic cotton workforce problems has not been sufficiently built at this stage. Therefore the following recommendations are made to further progress cotton workforce development for the sectors sustained competitive advantage:

With growers – work to change the culture toward people as an important asset in the cotton business:

- Ensure HRM and IR resources are maintained and continually updated to support practice change
- Embed the HRM aspects of running a cotton farm as an aspirational goal of all cotton farmers. Over time, this will make the cotton industry an “Employer of Choice”.
- Develop and conduct grower-centred and HRM-focused activities. Working with growers to improve their HRM practice, starting with current initiatives like MyBMP and expanding out into other targeted HRM training, is the most promising way to increase grower engagement in workforce development.
- Explore applying to the Industry Skills Fund to support a “train the trainer” program to build up the core of HR trainers strategically located around the cotton regions. Tocal College already has an online course (Managing People) but it would be even better as mixed delivery.

With advisers: develop HR cotton specialists to support the change in culture toward people as an important asset in the cotton business:

- To make the best use of existing resources, develop a network of trained people who are able to deliver HR training both formally and informally across the industry. These experts could be promoted through the Cotton Australia website and “endorsed” once they have completed the Diploma qualification.
- Provide resources to support local champions so that they can maintain local connections and identify new opportunities (such as for funding, for training or for collaborations).
- Allocate resources to central workforce specialists, along similar lines to the CottonInfo team.

With project officers, practitioners and researchers: Continue to coordinate HR activities and foster links between activities and projects to achieve desired workforce outcomes

- Integrate where possible people issues into the projects where the main national stakeholders – Cotton Australia, CRDC and CIC – are already collaborating.

With industry leaders: prioritise the leadership of people and workforce as a strategic concern for the cotton sector

- Leadership: Build national leadership in workforce by encouraging national industry bodies to adopt, promote and resource workforce development as an ongoing, top-five priority.
- Responsibility: clearly identify which agencies, and who within the agencies, carries responsibility for workforce issues. If it is a responsibility shared between agencies, establish clear governance arrangements.
- Form a national workforce development group within the Human capacity panel
- Develop a routine approach to collect national and regional data/research that aids decision making and priority setting. The project demonstrated the importance of

data and information about the cotton workforce and how it is changing in order to target strategies and understand better the workforce issues. However to date, no national group has specifically indicated they will take on the updating of the census data nor how annual workforce data will be sourced and used. This needs to be decided.

- Evaluation of impacts from interventions (e.g. monitoring and research into the on-farm and sectoral impacts of workforce initiatives). This will enable CRDC and Cotton Australia to better understand the full value of their investment in these projects and assist it to make best use of future funding;
- Maintain links with national stakeholders in the workforce development system and provide this network into regions.
- Enhance the sustainability of workforce planning and action projects in production valleys or regions by investing in:
 - workforce co-ordination in production valleys for eg. through CGA and linked to national;
 - promotion of people-culture amongst CGA's
- To build capacity to attract and develop the future workforce for cotton, it is recommended that an expert panel/team on workforce development initiatives at a national level be established to be aware of and tap into national initiatives of relevance to the cotton sector (e.g. initiatives from AgriFood skills, federal and state workplace agencies and regional development bodies). This panel would be a critical issues response group deployed to assist regions develop appropriate local projects/work with non-cotton stakeholders and access regional or national funding schemes (for instance, youth unemployment, labour shortages, targeted skills strategies, etc).

Outcomes

5. Describe how the project's outputs will contribute to the planned outcomes identified in the project application. Describe the planned outcomes achieved to date.

Expected Industry/Applied Outcomes	Outcomes achieved
Accurate and relevant data on supply, demand and flows of labour used to prioritise efforts in cotton regions - greater efficiency	Yes: the data and methodology are available for industry to use to inform government, decide priority workforce issues and update over time.
Gaps in existing projects and activities in contributing to workforce development at farm, region and industry levels are identified.	Yes: all cotton sector workforce initiatives have been mapped against a workforce development strategy, gaps identified and plans in place to address gaps.
Stakeholders are engaged to work collaboratively on workforce development in cotton regions	Not yet: ongoing stakeholder engagement at a production valley or regional level will require a local presence or champion for workforce issues.
Action plans are in place to address challenges, act in priority and rewarding areas and have a path to implementation	Not yet: whilst 3 cotton regions (Emerald, Gwydir and Riverina) have information regarding workforce demand and supply and priority workforce issues, these have not been formalised into locally owned and resourced action plans.

There is greater collaborative leadership to drive cotton workforce planning and action nationally	Partially: The human capacity panel and combined efforts of CRDC and Cotton Australia to embrace the workforce strategy and consider future workforce initiatives indicate a form of collaborative leadership that will require ongoing commitment toward sustaining workforce planning and action capacity.
Local action plans address critical workforce issues and address attraction and retention of people in the industry, increase farm productivity and innovation	Partially: Some of the foundational elements are present, but will require resourcing and co-ordination to transfer to action.
The sector has a best practice workforce development strategy and a process to assess, prioritize and deliver actions that ensure there are enough people of appropriate capacity to meet the demands and needs of the sector through time.	Yes: The strategy will require leadership and resourcing from within the cotton sector itself to ensure capacity continues to build and strategic actions are taken.

6. Please describe any:-

a) technical advances achieved (eg commercially significant developments, patents applied for or granted licenses, etc.);

NA

b) other information developed from research (eg discoveries in methodology, equipment design, etc.);

Discussed under the methodology section

c) required changes to the Intellectual Property register.

No changes

Conclusion

7. Provide an assessment of the likely impact of the results and conclusions of the research project for the cotton industry. What are the take home messages?

Although all rural industries have worked to various degrees to support the development of their human resources, very few have an integrated strategy and targeted, sustainable action to link the needs of individual producers regionally to the workforce development system – a system that exists predominantly outside the farm-gate. This project has instigated a process for industry leaders and stakeholders to use to understand and develop an effective workforce development system in cotton that now:

1. integrates industry activities in attraction, retention and development to increase their impact,
2. could secure greater co-investment by workforce development and employment services that meet mutual needs,
3. can better inform employment services sector about cotton sector needs,
4. can lead to increase farm productivity through higher quality jobs and work that is more attractive sector to potential entrants, and farms with greater capacity to adopt and adapt innovative techniques and practices.

The sources of economic benefits that can flow because of these changes include:

- o Better deployment of people to tasks (align people to jobs)
- o Reduced recruitment costs from lower turnover (best practice HR)
- o Less stress on employers and employees from filling gaps in labour demand (well-being)

Further, economic impacts are envisaged to occur regionally through greater co-investment by employment services and workforce development services (like training) because they are better informed regarding the cotton sector needs and there is more effective alignment

between their core business and industry needs. This would result in cost savings or efficiency improvements (e.g. greater impact from current investments in training).

Increased stakeholder understanding of the cotton workforce development system creates advocates outside the sector as well as increased recognition of how cotton contributes to a community and the economy.

Therefore the social impact of this project has been:

- Increased social capital from new networks and more effective current networks that can be utilised over time.

In the future, this can lead to:

- An industry that is more attractive to potential entrants and more valued by the community.
- Greater visibility of the impact from attraction, retention and development activities in cotton communities.

Overall, the *CRDC Innovative Work project* has increased the confidence of cotton stakeholders to act to improve cotton workforce development. The project has also advanced knowledge on the nature of workforce challenges in agriculture, particularly associated with new technologies, post-drought recovery and the experience of work by employees and human resource practices of employers. The project has compared and contrasted workforce development approaches in agriculture and developed knowledge on the specific attributes of workforce development in the cotton sector. Finally, the project has progressed knowledge on collective action to address resource constraints like workforce in agriculture and challenges in building and maintaining the governance arrangements for innovation in addressing workforce issues.

Extension Opportunities

8. Detail a plan for the activities or other steps that may be taken:

(a) to further develop or to exploit the project technology.

The lead researcher to stay engaged with the cotton sector workforce development strategy and its progress.

Continual testing/refining of the working model of cotton workforce development post- this project and comparison with other industries/sectors.

Embed an annual/bi-annual and census workforce data collection process to continually inform sector workforce strategies.

(b) for the future presentation and dissemination of the project outcomes.

Presentations to national and regional meetings as requested.

Work with cotton info team and HR and IR people to extract relevant “fact files” from the research for use in industry.

(c) for future research.

The current CRDC project *UM1501: the impact of farm workforce turnover in the cotton sector* is an important addition to this study because it examines human resource management dimensions of workforce issues as it relates to business performance in cotton production and

will assist in communication with growers around the strategic importance of HRM in the future of cotton production and the sectors overall workforce development through time.

Further research required includes: establishment of meaningful metrics of progress in workforce development; tracking workforce changes in cotton – particularly the impact of technologies on workforce numbers and skills.

**9. A. List the publications arising from the research project and/or a publication plan.
(NB: Where possible, please provide a copy of any publication/s)**

- Four conference presentations have been given
- One peer-reviewed international conference paper has been published.
- 1 journal paper has been submitted to a journal and 5 more are in different stages of draft for publication in 2015 and 2016.

Moffatt, J and Nettle, R. (submitted for publication). Towards solving the Australian agriculture workforce issues: theorizing the farm-hand career.

Nettle, R. and Moffatt, J. (2014). “Two steps forward and one back: Progress towards innovation platforms for Agricultural Workforce Development in Australia”. 11th European International Farming Systems Association (European chapter) Symposium, Farming systems facing global challenges: Capacities and strategies. Berlin. 1-4 April.

Publication plan:

1. Progress towards innovation platforms for Agricultural Workforce development in Australia. Authors: Nettle and Moffatt. Target journal: *Agricultural systems*.
2. When the water comes back: The resilience challenge related to the agricultural workforce post-drought in Australia. Authors: Nettle and Moffatt. Target journal: *Journal of Rural Studies*.
3. Collective action for agricultural workforce development. Authors: Nettle, Oliver and Buchanan. Target journal: *Work, Employment and Society* or *Journal of Rural Studies*.
4. Theorising workforce development for the agricultural sector. Authors: Nettle, Moffatt, Oliver and Buchanan). Target journal: *Work, Employment and Society* or *Journal of Rural Studies*.
5. The challenges of having tomorrow’s agriculture workforce: the case of cotton regions. Authors: Moffatt and Nettle. Target journal: TBC.

B. Have you developed any online resources and what is the website address?

The updateable excel spreadsheet of census and ABS information for cotton production valleys is available but is not in a web format.

Part 4 – Final Report Executive Summary

Provide a one page Summary of your research that is not commercial in confidence, and that can be published on the World Wide Web. Explain the main outcomes of the research and provide contact details for more information. It is important that the Executive Summary

highlights concisely the key outputs from the project and, when they are adopted, what this will mean to the cotton industry.

Cotton workforce issues summary:

- The cotton sector is a small but important industry due to the value of the crop but volatile because of the dependence on water and is often grown opportunistically. These features impact on workforce demand, and whilst demand in cotton is small in relative terms to other sectors, it tends to employ a workforce better educated than the agricultural sector average; good employees are generally well looked after, valued and career paths forged, with training opportunities and lifestyle factors considered.
- Workforce shortages at full production post drought and with mining competition, created heavy and unsustainable workloads with back-packers and grey nomads being used as a stop-gap, but this increased the workload due to the need for basic WHS and related training; the workload was also being managed through upgrading technology such as irrigation upgrades and round-bale pickers. Most solutions are largely short term and unsustainable and creating longer term problems associated with a lack of a future workforce.
- While there are regional differences there are some commonalities; workforce shortages in Emerald are critical, however with the recent drop in the mining workforce in the region the labour market has significantly shifted to a workforce surplus with a large exodus of people from the region. These changes make planning and targeted actions in workforce difficult.
- There is interest in training from growers. The informal approach to recruitment and training prevents hard data for policy makers to argue for intervention/assistance.
- The need to consider assisting, collaboratively and creatively, with meeting seasonal demands for semi skilled workforce for eg. through visa schemes was considered important as well as in up-skilling resident populations of many cotton towns.
- While the industry has lacked skilled labour for 10 years, the industry believed the data gathered from this project can be used to prepare and implement programs.

Cotton workforce strategy – summary:

- A four part approach to a workforce strategy for the cotton industry would involve looking at labour sources, best practice employment relations, a career pathway and skills progression in the industry, and building national and regional capacity make the appropriate links with government to put these ideas into practice.
- This strategy reflects the underlying principle that effective workforce development has a key role in driving a sectors competitiveness and innovation.
- Focussing first on the farm sector, this project activated the cotton sector strategy and addressed this challenge so that the cotton sector now has:
 1. A searchable and updateable database that presents relevant labour market analysis information for each cotton region.
 2. Labour supply and demand data and a review of current farm workforce development activities and human resource practices on farms in 3 regions (i.e. Emerald, Gwydir & Riverina/SNSW).
 3. Cotton industry and other regional workforce stakeholders have been informed and are aware of the results and needs from the research with evidence of a greater understanding of the gaps and opportunities in the cotton workforce development system for enhancing industry competitiveness .
 4. All cotton sector human capacity activities have been mapped against a workforce development strategy and gaps and priorities identified.

5. A one-day workforce information event was conducted in a cotton region (Riverina, NSW) and can be replicated to all regions.
6. A small cotton entry-level trainee project trial was conducted in a cotton region (Emerald, QLD) with the process and lessons from this trial available to other regions for implementation.

Overall, the *CRDC Innovative Work project* has increased the confidence of cotton stakeholders to act to improve cotton workforce development. The project has also advanced knowledge on the nature of workforce challenges in agriculture, particularly associated with new technologies, post-drought recovery and the experience of work by employees and human resource practices of employers.

Recommendations for the cotton sector:

- **With growers:** continue to increase skills and capability in the importance of people as an asset rather than a cost in a business and provide useful and relevant resources and training in HRM and IR.
- **With advisers:** develop HR cotton specialists to support the change in culture toward people as an important asset in the cotton business.
- **With project officers, practitioners and researchers:** Continue to coordinate HR activities and foster links between activities and projects to achieve desired workforce outcomes
- **With industry leaders:** prioritise the leadership of people and workforce as a strategic concern for the cotton sector by creating a national workforce development group to provide leadership and responsibility for promoting and resourcing workforce development as an ongoing, top-five priority and the collection and analysis of national and regional workforce data/research that aids decision making and priority setting and evaluation of impacts from interventions.
- **With industry:** Enhance the sustainability of workforce planning and action projects in production valleys or regions by investing in workforce co-ordination in production valleys for eg. through CGA's.

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