Harvesting in the Australian Cotton Industry

The practices and their impact on the quality of the Australian Crop

Project Report

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Table of Contents

Key Points

- 53% of interviewees had been contract cotton picking for more than 15 years
- 59% of picking operators have a formal employee agreement that covers OH&S and is signed by both parties. All contractors suggest they would benefit from a standardized employee agreement
- 45% are familiar with the farm hygiene principles of "Come clean go clean"
- Picking contractors are most concerned about the financial viability and security of their business and the aging status and declining value of their machinery
- Movement of machinery is a major concern for picking contractors. Standardised and simplified Road Transport requirements need to be prepared and available for contractors.
- These is little focus on the impact of fibre quality during picking as both growers and contractors assumed the impact is minimal and/or they are doing their best to minimise degradation. An overview of fibre quality needs to be given at an ACPA meeting and fibre quality guidelines needs to be disseminated.

Introduction

The business of cotton picking is an intensive and arguably a high-risk/low profitability exercise. It is an industry where over half of the stakeholders have been in the business for over 15 years and as a result run very efficient and finely-tuned operations. Of these businesses, the majority entered the industry as they saw picking cotton as a profitable venture and in some cases, an opportunity for self-employment or a supplementary income that complemented other business interests. Despite the length of time in the industry, majority of operators are only continuing as their machinery has no trade in or sale value and their long term future in the industry is non-existent.

There is frustration in the industry due to the lack of profitability and security and the decreasing value of machinery. Furthermore, staff, occupational health and safety (OH&S) and moving machinery between jobs provides added stress and complications. Added to this is the reduced picking window due to agronomic advancements and the lack of physical time to make money.

This report outlines the current status of the industry with reference to the operation in general, staff and OH&S, machinery maintenance and transport, and fibre quality.

Project Background

1. This project aimed to gain an understanding of the current practices of cotton picking operations and establish the knowledge and attitude of harvesters and growers to fibre quality preservation during harvest and how they manage fibre quality during harvest.
2. Recommend and develop protocols or information guidelines for cotton picking, module building and storage, and module transporting, based on how these practices ultimately impact the quality of fibre delivered
3. Identify any areas where investment in either training, extension or research may lead to significant practice change and improvements in fibre quality

Information Collection

Twenty-nine face-to-face convergence interviews were held with cotton picking contractors and twelve interviews were held with growers who rely on contractors in the Macintyre Valley, St George, the Upper Namoi, the Lower Namoi, the Gwydir and on the Darling Downs. Although initially skeptical, these interviews were very relaxed and appeared to be comfortable and honest. An alliance with the Australian Cotton Pickers Association and funding from the Cotton Research and Development Corporation gave contractors confidence in the project. Although costly, face-to-face interviews are essential to generate conversation and stimulate detailed answers.

With this particular group, telephone interviews were very unsuccessful. In an age where telemarketing is endemic, it is difficult to convince anyone to disclose quite private business information over the phone to a "stranger". Face-to-face interviews showed that we were interested and were willing to take the time to meet with them and discuss their business, in detail, in comfortable surroundings. Fortunately, the majority of cotton picking contractors reside in the southern Queensland/Northern New South Wales cotton growing

area. A total of four telephone interviews were held with contractors and six interviews with growers who reside outside this area.

Results

Drive

Money was the most common drive for those involved in contract cotton picking and the reason 48% of contractors were involved (figure 1). Although the lack of profitability is the current reality, in the past, these operations were, or were seen to be, profitable and provided the opportunity to make a substantial amount of money in a reasonably short period of time. Furthermore, the opportunity to be either self employed or to complement an existing income was very inviting.

Figure 1 - What inspired you to become involved in contract picking?

Amongst the growers who owned pickers, the ability to pick their own crop to their specifications was very inviting. Contracting with the machinery either before or after their crop was harvested provided the economic rationale behind owning the machinery. Grower contractors usually commented that they enjoyed contract picking as it was an opportunity to have a look at other farms crops in different valleys.

Growers who relied on contractors did so, so that they did not have to maintain the expensive machinery and deal with staff required to complete their own picking. These growers also agreed that picking contractors run professional operations in a competitive environment and as a result, do the best job possible.

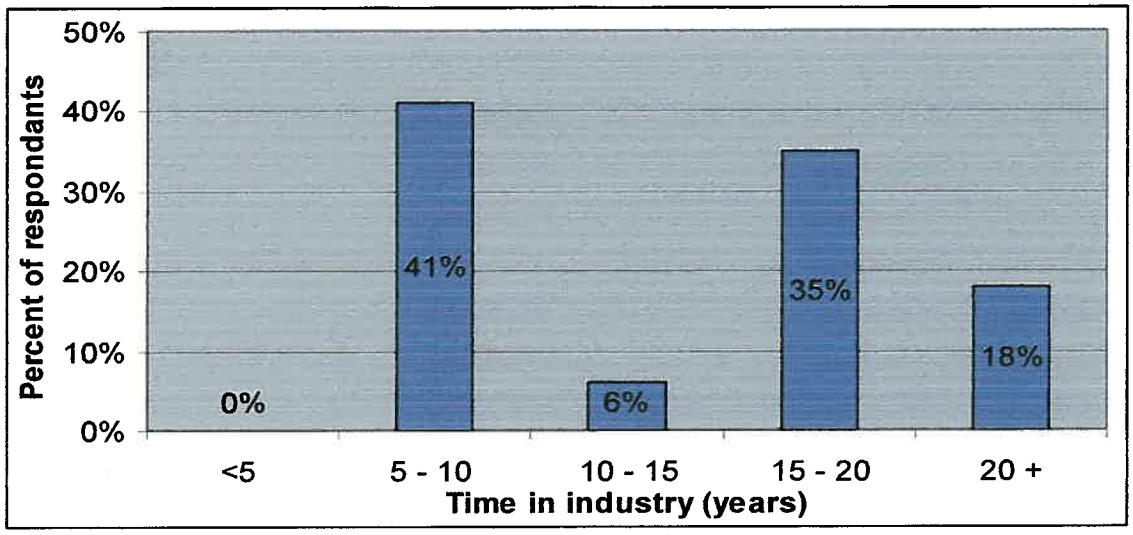
Some contractors commented that they were only picking because they always had, and that their machinery was of no sale value so they are better off to continue contracting.

Overview of Operations

Time in the industry

Figure 2 shows that 53% of picking contractors have been in the industry for more that 15 years. More alarming, no business interviewed has been operating less than five years, suggesting that no one has entered the industry. Furthermore, a great proportion of businesses that have been in the industry intend to exit in the near future.

Figure 2 - Time in contract picking industry



Machinery

Table 1 - Overview of machinery

Machinery	Min	Max	Average
No of 4-Row pickers	1	7	2.6
Module Builders/4-Row picker	0.6	3	1.7
Boll Buggy/4-Row picker	0	2	0.9

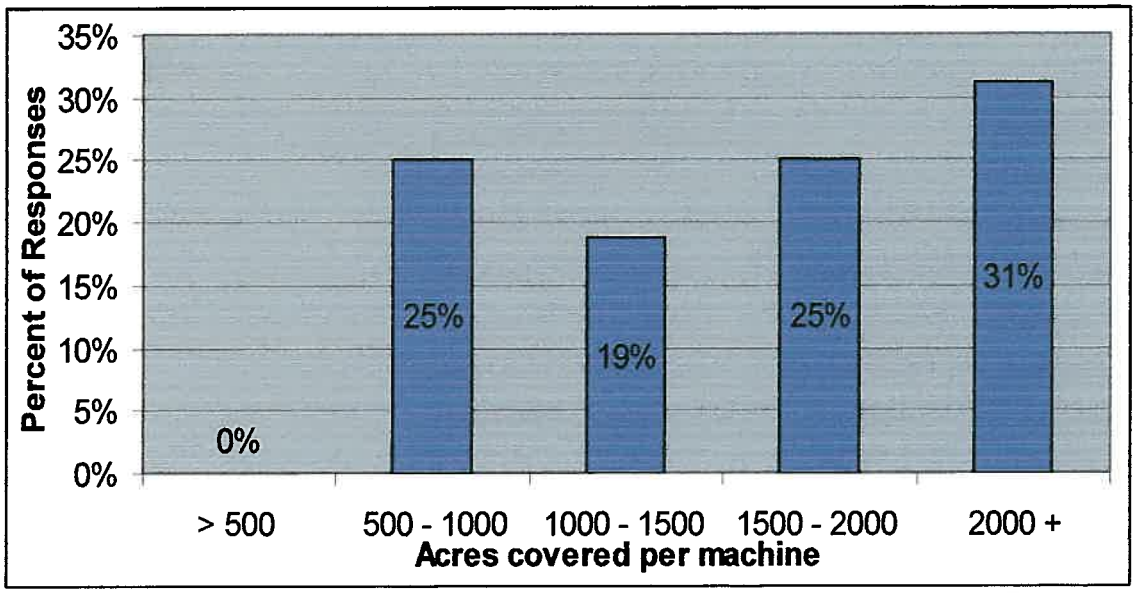
The contracting businesses interviewed have a range of one to seven 4-Row pickers with an average of 2.6 4-Row pickers per operation. On average, business ran 1.7 module builders per 4-Row picker, with some business operating as few as 0.6 and some as many as 3 builders per picker. Businesses maintained an average of 0.9 boll buggies per picker, with one contractor not operating any boll buggies and some up to two per 4-Row picker. Many contractors owned more machines than they picked cotton with, with machines made redundant and being used for parts or being shedded until another significant crop.

Growers who rely on contractors are attracted to businesses that operate more than one machine as this provides the capacity to pick the crop quickly. In most cases, if the business only operates one machine, the grower will engage more than one contractor at a time.

Acres Picked Per 4-Row Picker

The numbers of acres per machine covered by each contractor varies according to the number of machines, and the distance the contractor is willing to travel. It is increasingly difficult to pick large acres due to competition. It is very easy for growers to allocate small areas to a number of contractors so the crop can be picked in a very short period of time. In the past, a contractor was more likely to take a number of weeks to pick an entire farm. Figure 3 shows that 56% of 4-Row machines survey picked more that 1500 acres in a season.

Figure 3 - Number of acres covered by each 4-Row picker



The minimum number acres picked per machine in any season to remain viable varies from contractor to contractor according to the number of machines they operate and whether or not they own their machinery. If the contractor does not own his machinery outright, they will require more acres to make the season profitable.

Machinery Maintenance

"Machinery Maintenance is vital to my business.
I can't afford not to be picking when there is cotton to be picked"

Keeping machinery mobile during the picking season is of paramount importance to picking contractors. As a result much time, effort and money is spent on ensuring machinery is in peak condition ready for the next picking season. Machinery maintenance during the off season appears quite consistent across contractors. Many contractors complete the timely, laborious maintenance in house — such as replacing spindles — as this is expensive when you have to pay a labourer at a dealership. Generally, the heads are completely gone over, including replacing blunt and damaged spindles and worn doffers, moisture pads and a full mechanical overhaul is carried out. Typically a contractor will spend up to three months on a machine. In most cases, pickers are also inspected by the dealer for a full test and further repair if needed.

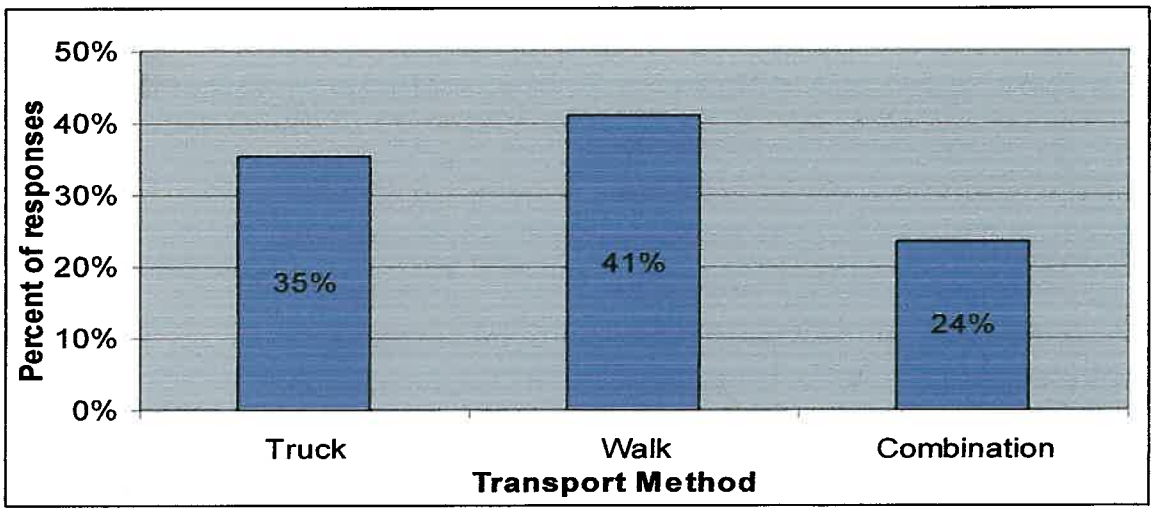
Numerous comments were made about the availability and quality of spare parts. It was commented that parts are often not available and when they are the quality is questionable.

On a day-to-day basis in the operating season, machines are checked over every evening or the next morning before picking starts. Picker baskets are blown down to minimise contamination and the oil and water is checked. Although boll buggies and module builders are overhauled in the off-season, there is a "fix it as it breaks" mentality with this machinery. Although these pieces of machinery are vital, these break downs are often not a limiting factor.

Transport

"The single biggest problem we have is moving our machinery around"

Figure 4 - Movement of Machinery between Farms and Valleys



Movement of machinery between farms and valleys is one of the main complications contractors have. Compliance with legislation, public holidays and other traffic provide the most challenges.

35% of contractors choose to truck all machinery between jobs. Those who do this commented that the cost of trucking is offset by the value of additional work and that if you do it properly from the outset it is simple and straight forward (Figure 4).

41% of machinery is "walked" between valleys, meaning the machinery is driven up the road with escorts (Figure 4). Understanding and following legislation is a problem as it is often not clearly defined or even available. Interpretation of the legislation between states and even areas in the same State further complicate the process. While contractors make every effort to follow legislation, they believe this is almost impossible and that they can show that they have made an effort to obey the law and travel safely.

A majority of contractors mentioned that staying away from the main highways and roads with lots of traffic is safest as other motorist often have little consideration for the size and speed of the machinery. Roads with low power lines also provide a safety risk and are avoided if possible.

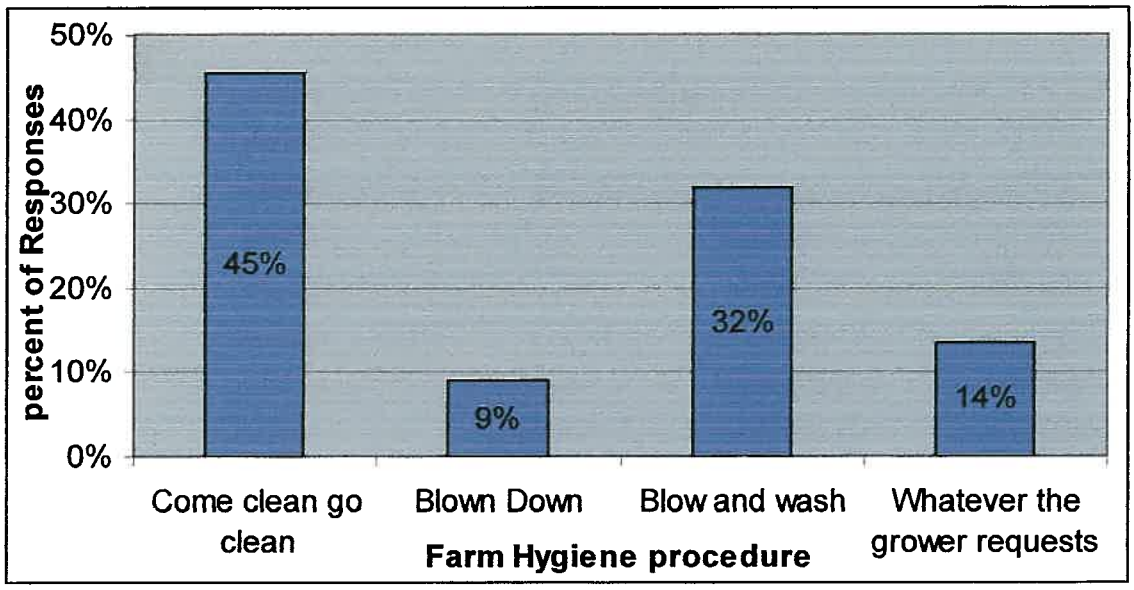
The legislation surrounding movement of oversize machinery varies from state to state. In New South Wales, at least one escort vehicle is required to move oversized machinery on weekends and public holiday and police in the area need to be notified. Other than this, machinery can be transported at this time

Although Queensland legislation originally restricted the movement of oversized machinery during the Easter and Christmas periods, work by Cotton Australia has resulted in a change in legislation that allows movement of machinery during this peiod with the addition of a rear escourt,

Farm Hygiene

Picking contractors are very aware of the need for sound farm hygiene. Of those interviewed 45% were familiar with the principles of the "Come Clean Go Clean" farm hygiene program and made direct reference to the same (Figure 5). Contractors in general are quite diligent in ensuring that they clean equipment between farms and particularly between valleys, with most contractors washing down as they leave one farm and washing down again onto the next.

Figure 5 - Farm Hygiene Procedure



Generally contractors do what is required by the grower. If a grower is particular about farm hygiene, the contractor ensures they are very diligent cleaning down. By following the request of the grower, they are not jeopardizing the security of the job. Sound farm hygiene is often not discussed as it is assumed and expected.

Unfortunately, the wash down facility provided by the grower is not always conducive to achieving the condition they expect of the machinery. Growers expect contractors to be immaculate although they are required to wash machinery in a dirt paddock on the way into the farm. Comments were made that there is less concern about farm hygiene, with reference to fusarium wilt, than five years ago. Quite often, growers' priority is to get the crop picked, particularly if there is rain predicted. Contractors noted the importance of being spotless going into Central Queensland. Growers who rely on contractors generally believe they are aware of the need to exhibit sound farm hygiene and in most cases machinery is very clean when entering the farm,

Staff

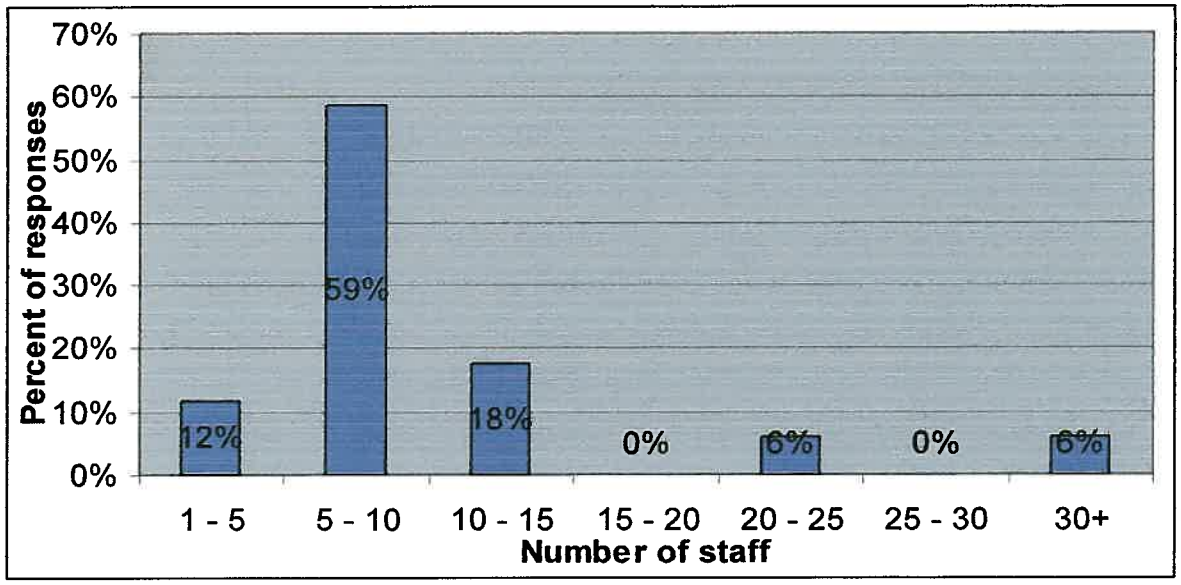
"The very seasonal nature of the work, the type of work and the number of people we need determines the calibre of people we attract"

Staff is the second biggest issue picking contractors face behind profitability. As picking is high intensity, each operation must employ a considerable number of staff. 77% of businesses employ between five and fifteen people, while some businesses employ in excess of 30 people (figure 6). As the work is short term and monotonous, these positions often attract itinerant and seasonal work and the unemployed.

The window of employment is so small, there is an opportunity for permanent employees from other businesses to take annual leave to do a picking season. This arrangement often works well as the employee usually has a reasonable work ethic and is looking for the money and the employer is hiring someone with a good work ethic.

Although staff are required to work very long hours, often up to 18 hours per day, they are usually very well looked after. The majority of contracting operations fully keep their staff at no cost and provide breakfast, dinner and a packed lunch and accommodation, usually in caravans or hotel rooms.

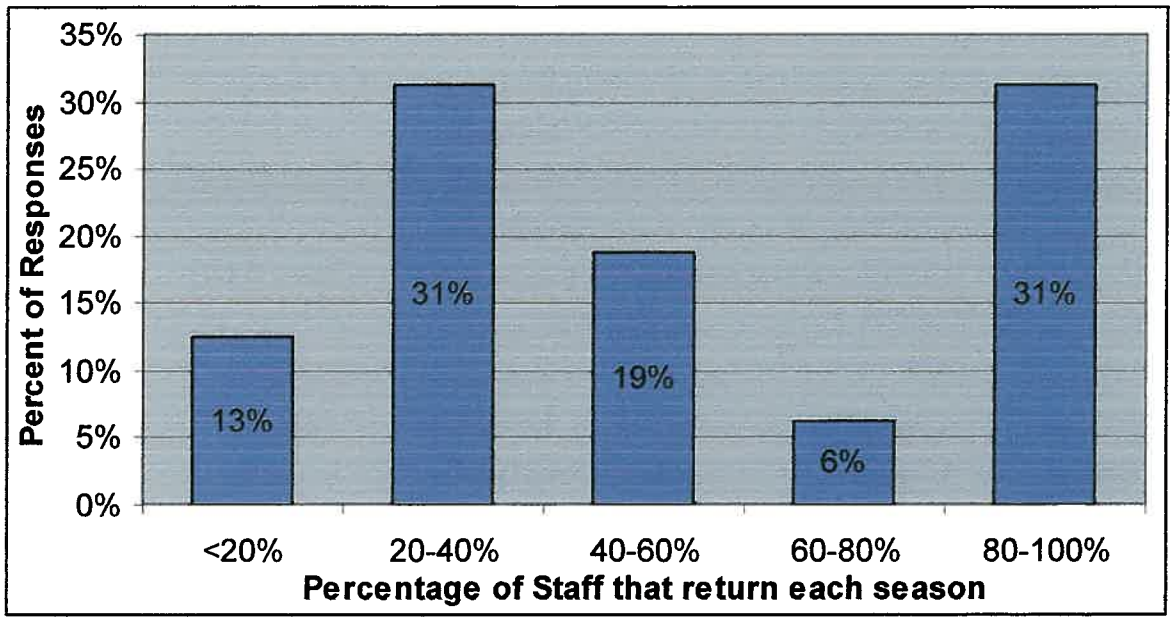
Figure 6 - Number of staff employed during the picking season



Most contractors are concerned about the enforcement of Industrial Relations legislation about overtime and work hours. As wages make up a large percentage of expenses, having to run two shifts to reduce operating hours or stop picking early to enable adequate rest time would further reduce the profitability of these operations.

Repeat staff

Figure 7 - Percent of staff returning each season

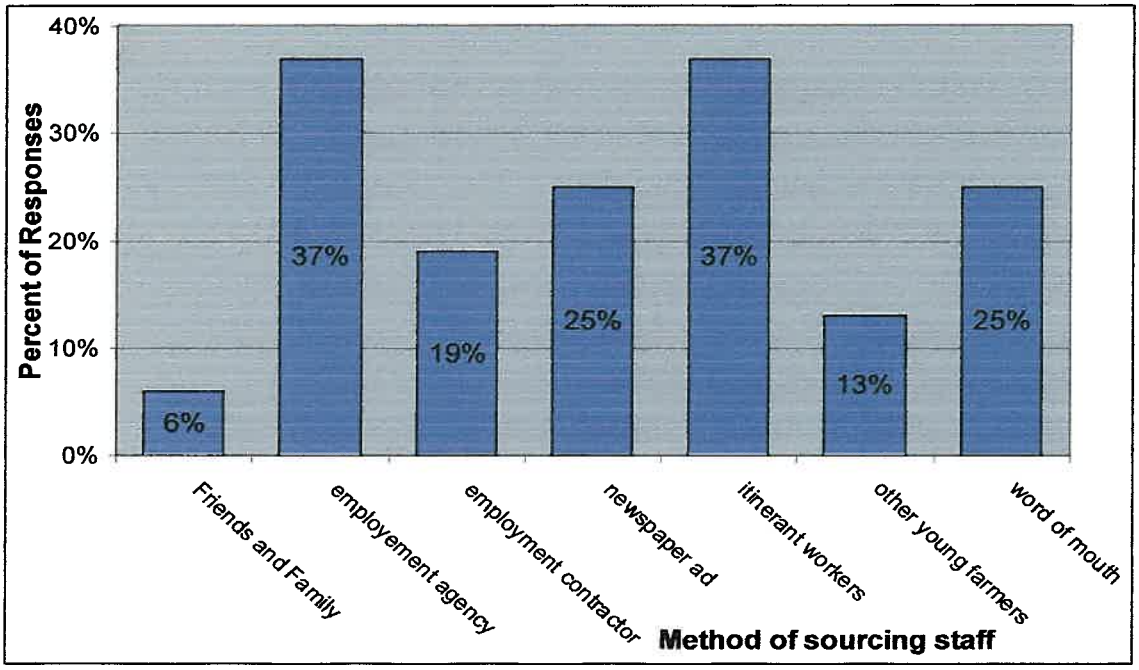


63% of picking contractors need to replace up to half of their staff each season (Figure 7). Generally, the more staff that are employed, the higher the turnover. Businesses that have high staff return percentage (over 80%) are usually smaller businesses that employ less than ten people.

Although the tasks of module building and of the ground crew are often not technical nor difficult, staff with experience in machinery and risk assessment are highly desired. Even if this experience is operating machinery in another non-agricultural industry or even working in a meat processing plant, the general safety skills are usually transferable to the position.

Picker drivers and boll buggy drivers are usually experienced or show signs of trainability early in their employment. If a contractor only has a couple of staff returning, they will often be assigned to drive either of these machines as these machines are pivotal to the efficiency of the operation. Furthermore, the boll buggy driver must be aware of the OH&S risks associated with driving in and out of the paddock and unloading cotton.

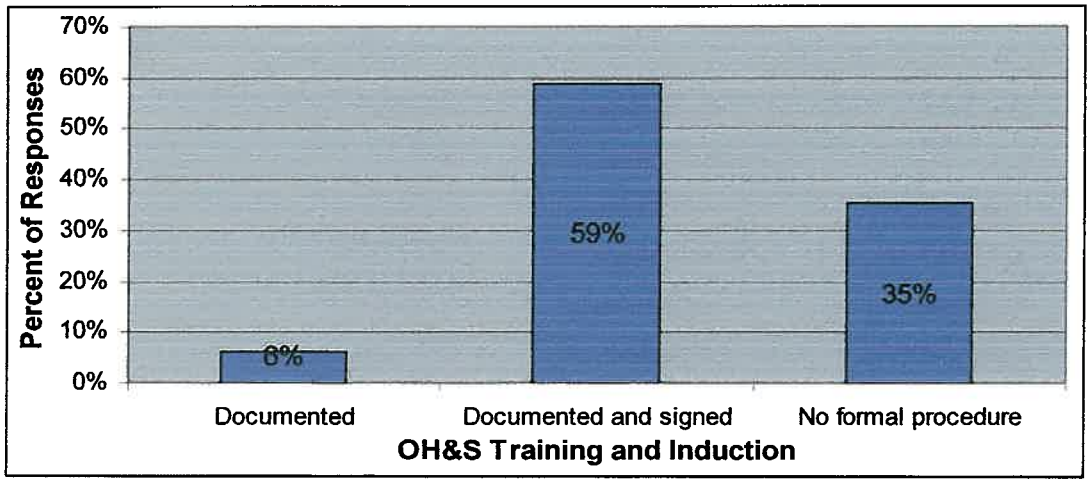
Figure 8 - Method of sourcing casual seasonal staff in the picking industry



Seasonal staff are sourced through a wide range of channels (Figure 7). Although one third of businesses rely on family and friends and word of mouth, over 50% utilize local employment contractors or agencies. Itinerant workers traveling throughout Australia are usually backpackers, while local seasonal workers often combine cotton chipping and work at a cotton gin and wheat silo to complement work in a picking crew. 25% of operations employ newspaper advertising to attract staff, which usually results in the employment of backpackers.

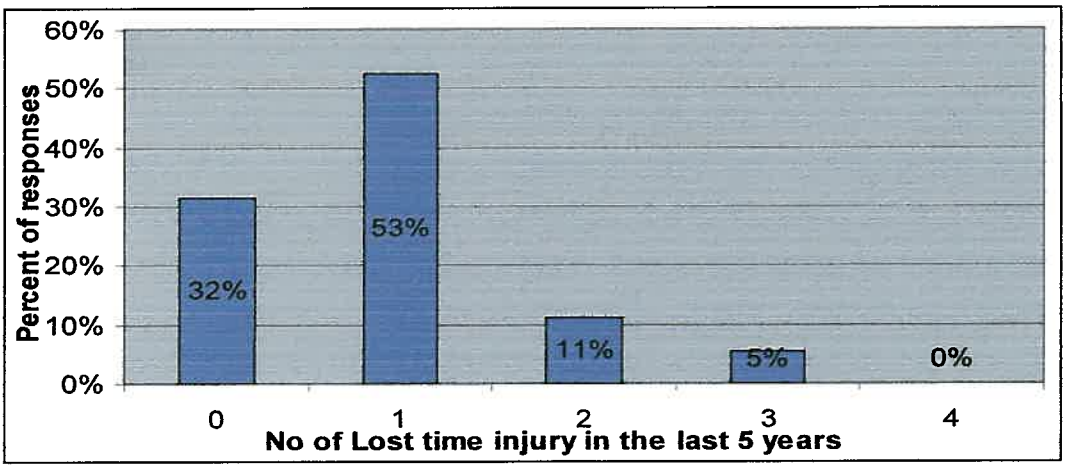
Training, Induction & OH&S

Figure 9 - Form of OH&S training and Induction



Occupational Health and Safety plays a role in all picking operations. 65% of businesses have a documented OH&S agreement that outlines the risk of the position, what to do and what not to do. Of these, 59% are signed by the contractor and the employer. The remaining 35% of businesses have no formal procedure and provide on-the-job training (Figure 9). All contractors suggested the need to identify the risks associated with the position and it is clear that regardless of current practice, a formalized OH&S program was vital.

Figure 10 - Number of Lost time injuries in the last 5 years



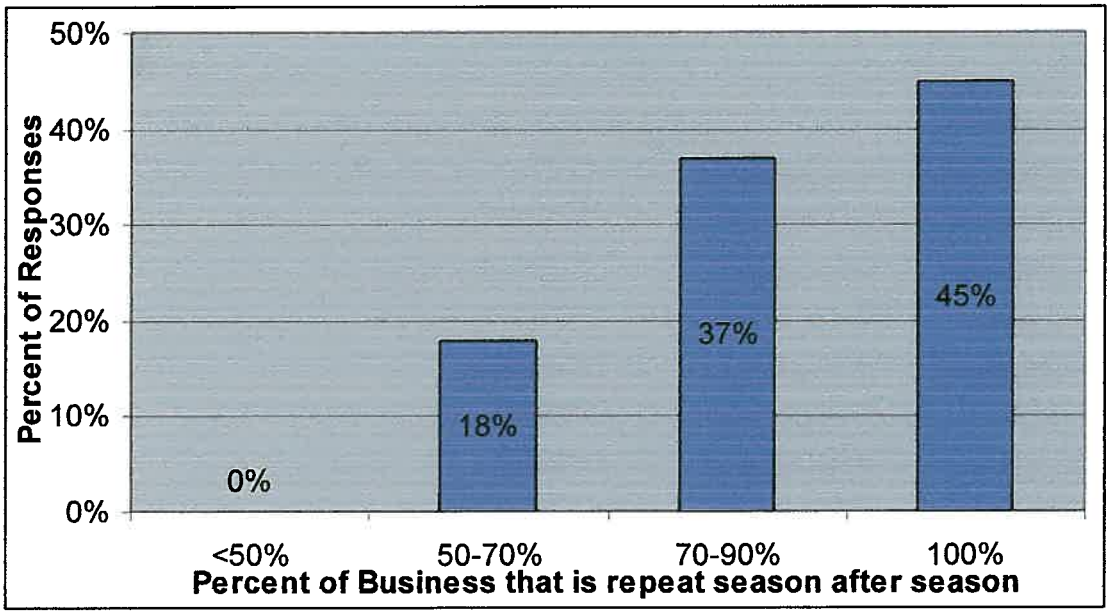
32% of contractors interviewed have not had an injury within their crew that required first aid or hospitalization in the last five years. Over half of the business recorded one incident. These incidences included crushed feet and hands, asthma attack and sprained ankles (figure 10).

Training and induction of new staff varies from business to business. Some contractors have a large emphasis on training and induction while others believe that formal training is not suited to the type of people attracted to these positions and the best strategy was to train on the job. The most complex program involved up to one day in the office, watching safety videos, completing an induction package and being addressed by the contractor and farmer owner. This was followed by a tour of the machinery to explain its functions and hazards and instruction on how to operate each machine. Once picking has started each new staff member was teamed with a more experienced operator until they were deemed competent to operate the machinery independently.

Grower Relations

Repeat business

Figure 11 - Percent of business that is consistent each season



Cotton picking is a very important link in the cotton industry chain. For this reason, growers and contractors work closely together during the picking season and in the off season to develop a relationship that ensures both parties are happy with the job. Figure 11 shows that 82% of contractors return to at least 70% of jobs each season. In most cases, lack of water or moving on to a more suitable job are the reasons contractors would pick up different work. Changing fleet size or growers wanting to get the crop off quickly therefore having more than one contractor also leads to reshuffling of clients.

Interaction with the grower

Table 2 - Frequency of interaction with growers

How often does the grower visit whilst picking on farm			
Frequency of visits	Daily	2 -3 times per week	Rarely
Percentage of responses	70%	22%	8%
How often do you contact the grower in the off season			
Frequency of interaction	1 – 2 times	3 – 4 times	More than 5 times
Percentage of responses	13%	46%	40%

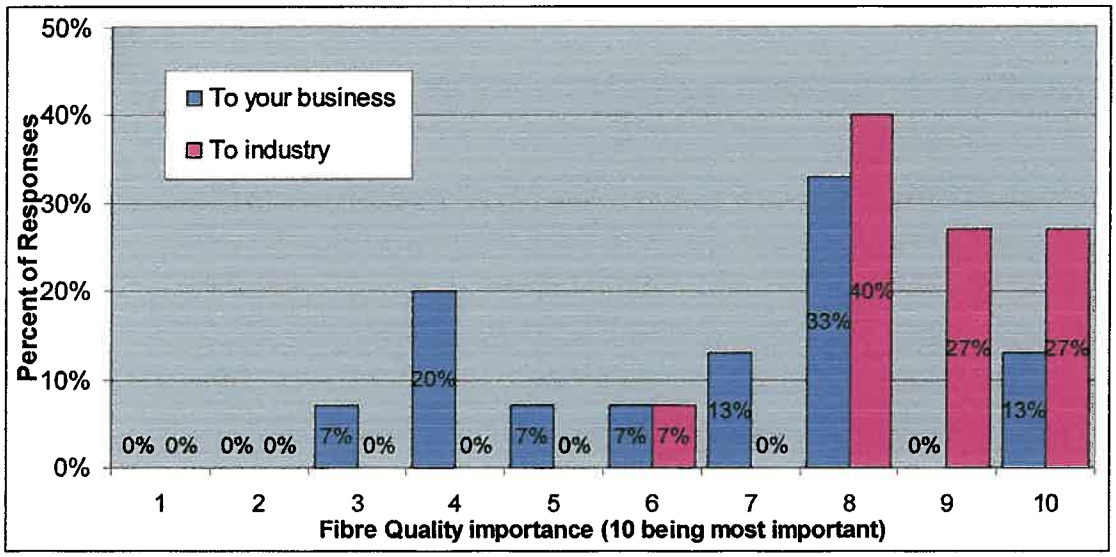
To develop and foster relationship, contractors and growers are in constant contact during the season and in the off season. 70% of contractors are visited daily by the growers whilst on the job. The remaining contractors are visited less frequently due to the number of years

they have been doing the job. A relationship is developed that the contractors appreciate what the grower expects and the grower believes the contractor will do a reliable job (Table 2).

Growers keep in close contact with contractors during the off season. Soon after the completion of the job they will catch up to discuss the outcome of the crop and deliver yield monitoring data if it has been collected. 86% of contractors are in contact more than three times during the off season to ensure the security of the job, determine acres planted and potential dates the crop will be ready. Contractors often visit the growers at least once towards the end of the growing season to see the crop and work with the grower to make yield predictions. If the contractor wishes to negotiate the price, it is often done whilst on farm.

Fibre Quality

Figure 12 - How important is fibre quality to your business and to the broader industry?



In order to gauge how important fibre quality is to a picking contractor, they were asked to rank fibre quality in terms of importance on a scale of one to ten, with one meaning nothing and ten being the most important consideration to their business. Although there were varied responses, the importance of it to the broader industry was consistently ranked

higher. The level of importance to picking businesses ranged from three to ten with an average of 6.7, while importance to the broader industry ranged from six to ten with an average of 8.6.

Reasons for the individual rankings and the difference between rankings was varied. 59% ranked fibre quality greater than seven (Figure 12). If a contractor suggested fibre quality was important to their business it was generally because it ensures the security of the job as the industry is very competitive so it is important that everything is done well. It was also commented that they can not improve the quality of the cotton presented but they can have an impact on it. Picking for quality would give the grower more confidence not only in the contractor but in the crop as well which will encourage them to continue to grow cotton.

A score of less than seven was given by 41% of contractors (Figure 12). If the contractor ranked quality as of little importance, it was usually because "they were paid by the acre, not for quality" and because they believed they had little impact on quality. Furthermore, the comment was made that "yield is king and it pays".

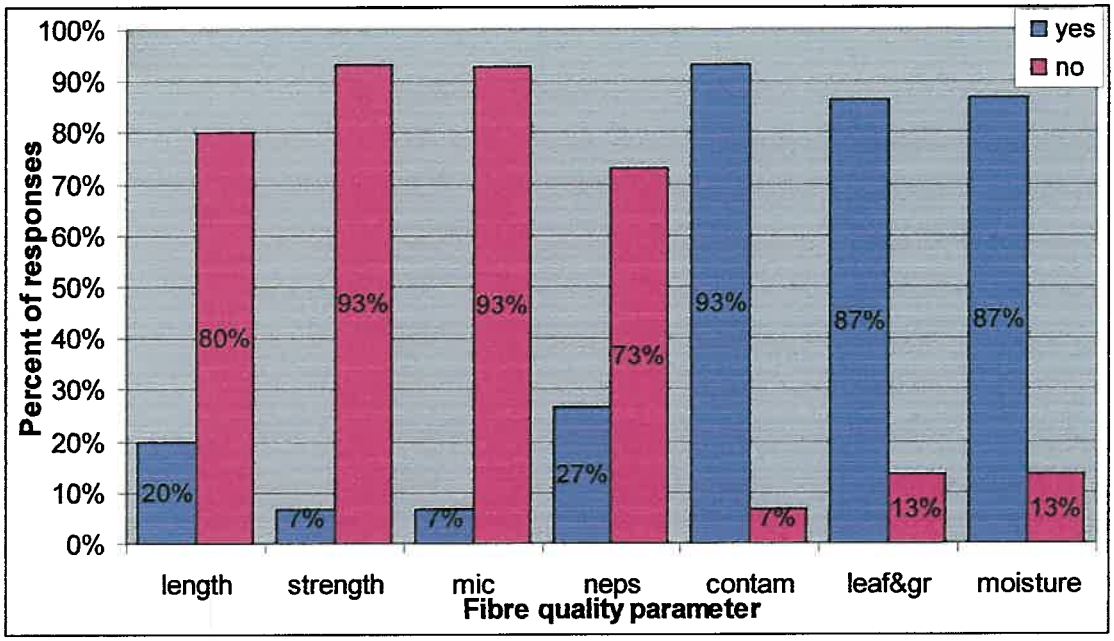
The majority of contractors agreed that fibre quality was important to the Australian Industry as a whole, with 94% ranking it as at least eight out of ten in terms of importance (Figure 12). Most contractors were aware that Australian growers produce a superior quality product and therefore quality was highly regarded in the industry.

Perceptions – what impacts fibre quality?

Generally picking contractors consistently believe that agronomy or "growing" and defoliation have the biggest impact on fibre quality. Varietal selection and ginning were also mentioned. It is agreed that contractors pick what is presented and that quite often they pick crops that are not ready to be picked and that poor picking conditions were often a result of a grower requesting the crop to be picked too early. Most contractors work with the grower to ensure they are happy with the job and change machinery settings and picking conditions as much as possible to suit the grower. This includes the trade off

between maximum yield and minimum leaf, ensuring bar heights are set to minimise spindle twist and traveling in first gear.

Figure 13 - Does picking impact on fibre quality?



Does picking impact on Fibre Quality?

Generally picking contractors feel that they cannot have an impact on the physical components of the individual fibre, such as length, strength and micronaire, but felt they could impact on what was delivered to the gin in a module, such as contamination, leaf and moisture.

Growers who rely on picking contractors had a good understanding of fibre quality but not necessarily what impact picking has on each parameter. Generally they agreed that the contractors did the best job possible and aimed to minimise the impact they had on fibre quality during the picking process. The competitive nature and low profitability of the industry ensured the contractors are professional and efficient.

Many contractors (approximately half) commented that growers request the crop to be picked when it is not ideally ready. The comment was made that a contractor can pick for ten days on the one farm and the crop picked on the tenth day was the only paddock really

ready to be picked. Weather predictions and the availability of contractors often stimulate growers to pick crops early, fearing rain or that the contractor will move on and not return for some time.

Length

80% of picking contractors believed that they could not impact fibre length and that this was determined by the grower. If contractors felt they could impact length, it was by physically breaking the fibre as it is removed from the boll.

Strength

Generally contractors believed they had little or no impact on strength and were confident that the strength of the fibre was determined by variety and agronomy.

Micronaire

Although they had heard of micronaire throughout the industry, many contractors were not sure what it was. When explained, it was generally agreed that it was determined through the growing process. Grower contractors had a much better understanding of micronaire and what impacts it.

Neps

Approximately half of the picking contractors surveyed were not familiar with neps. Grower contractors were familiar with neps but not necessarily with what causes them. When explained that neps were caused by fibre wrapping around seed coat fragments or through any mechanical interaction with the fibre, 73% of contractors still believed that they could not impact nep count. Of the 27% of contractors that suggested they could impact neps content, the majority mentioned spindle twist. Growers who rely on contract pickers generally understood what neps were but didn't necessarily understand what impact picking had on neps.

Contamination

Contractors generally agreed that they could have an impact on contamination. Contamination is discussed in detail below.

Leaf and Grade

In general contractors believed they could have an impact on trash in the sample but felt they were confident that their machinery was set up correctly and to the specification of the grower, for example doors tightened to maximize yield, minimise leaf and eliminate bark. Growers request an extremely clean pick for which contractors tighten doors resulting in more trash in the basket. Further more, growers requesting the crop to be picked too early, or before the crop was fully defoliated and at an ideal stage to harvest resulted in more trash.

Contamination

What contaminates?

Generally contamination was grouped into two categories; organic and inorganic, both of which the contractor believed they could impact. Contractors considered leaf, bark and green bolls to be contamination and believe that the level of contamination of these is due to the timeliness of picking, success of defoliation and machine set. Provided the machine was set up to specification agreed upon with the grower, the contractor believed he had little impact on trash in the basket.

Other contaminants that were commonly mentioned were inorganic contaminants. Contractors agreed that they had a major impact on the level of inorganic contaminants in the module. Examples included:

- Fire was consistently mentioned as a contaminant and contractors believed that without naked flames (which were not tolerated), wet cotton can cause fires.
- Hydraulic oil through busted hoses was a commonly mentioned contaminant. Cotton that was sprayed with oil is always removed from the module or the basket.
- Tools associated with fixing machinery can be lost and assumed to end up in a module.
- Module Tarps and timber blocks were also regarded as common contaminants.

- Generally rubbish from lunches was seen to be the most common contaminant. Lunch wrapper and drink cans either thrown directly into the builder or left lying around the farm.

Minimising contamination

Every contractor is very conscious of ensuring they do not contribute to contamination. The importance of not contaminating the module is stressed during the induction and training process. Minimising rubbish is very important with most contractors providing rubbish bins on each module builder platform, while some write staff names on each piece of lunch wrapper so the contaminator can be identified. Contractors believed that staff issues associated with contamination can be addressed and therefore can be minimized.

Reporting Contamination

If contractors deem the contamination significant, or that they could not remove the contaminant (such as a lost tool) or the contaminated cotton, they will report it to the grower and ensure the module is marked. Generally, if there has been an oil leak in a module or a suspected lost tool, the contractor will report it. If the contractor feel they have removed the contaminant, it is unlikely to be reported.

Growers who rely on contractors appreciate being advised if there has been contamination (such as oil or fire) or suspected contamination (such as a lost tool). This enables the grower to mark the module and notify the gin that there is contaminated cotton on its way.

Module size & placement

When placing module builders to begin picking, careful consideration is given to fibre quality, access and OH&S. It is ensured that module builders are placed on level ground that is cleaned of rock or any other material that will contaminate the module. Contractors ensure the modules can be easily accessed by an infield loader or chain bed and are not endanger of being swamped during rain. Proximity to power lines is also considered.

The length and width of modules are predetermined by the size of the module builder. The height of the module is a function of the module builder operator and direction from the

grower. While it is important to consider legal road height, there is pressure from growers to ensure modules are of significant weight to minimise transport costs. Some growers threaten to charge contractors the difference in freight if the modules don't average a certain weight.

Concerns

Profitability and reliability

"At the moment we are paying for the privilege to pick cotton"

Picking contractors major concern is the lack of profitability of their business. This is a function of a number of things.

Reduced planting and lack of water – resulting in fewer acres to spread between contractors has created fierce competition. Reduced acres have also seen a surplus of machines enabling growers to have a number of contractors on the farm at once to pick the crop in a shorter period of time. Unfortunately, cotton picking machinery is very specialized and cannot be used in any other crop in years when cotton acreage is down.

Shortened picking window - in the past contractors could start in central Queensland and pick right through to southern New South Wales giving them an opportunity to make a significant amount of money over a few months. In recent time with varietal advancements and the altered Bollgard® planting window, it is not uncommon for these regions to be picking simultaneously.

Declining value of machinery – unlike land-owners, contractor's machinery is declining in value each year. Because of this, contractors have to make money as though go as they don't have an asset at the end. This is also amplified by the low trade-in value and price of second hand picking machinery. Many contractors are picking cotton as their machinery is almost worthless so they might as well make money with it. Although the aging fleet has no known negative impact on fibre quality, it is important that it is properly maintained so the job can be carried out efficiently with minimal interruptions from breakdowns.

Staff & OH&S

Contractors are generally concerned about availability, quality and experience of staff. In most cases operational efficiency is at its limit and regulation of working hours will apply further pressures. Seeking staff that are willing to stay after their first pay cheque is a challenge and some contractors are looking to incentives to keep staff interested.

Contractors appreciate the need to be OH&S compliant and each operation is working at different levels to develop an OH&S package for their business. The majority of the businesses believe that they are showing due care but aren't confident that their current policy is robust enough to withstand the challenge of a claim from a regulatory body such as Work Cover.

Industry perception of contractors

Cotton Pickers are generally concerned about their perception in the broader industry even though picking is an integral part of the processing chain. Contractors agree they need a collective voice, which the Australian Cotton Pickers Association provides. Increased awareness of the lack of profitability and issues faced by the industry would be well received.

Research, Development and Training Opportunities

OH&S and Staff Training

Contractors see the primary opportunity for development in the industry in staff training and OH&S. The most commonly suggested package that would improve the efficiency of picking operations would be the development of a standard, recognized Employee Agreement that included basic working conditions, a OH&S policy, induction package and basic staff training.

Contractors could adjust this document to suit their operation and be confident staff are theoretically ready to start the job and that the document would be robust in the case of an incident.

Many contractors and corporate farms have developed or started to develop a similar package. As a result, compilation of this information, with review from Work Cover or a similar organisation should not be laborious or time consuming.

This process could also include updating the current Harvest Safety Video that is in circulation and potentially develop a video that provides operating instruction for the machinery. This could be done in collaboration with the machinery manufacturers.

This package could also include some basic guidelines about fibre quality including minimizing contamination and fire and machinery set up and maintanence.

Road transport

Developing straight forward, cross-state legislation for movement of oversized machinery would provide clear transport guidelines for contractors. At present, most contractors are doing the best they can with the information that is available to them. Although the differences in interpretation of legislation between states are quite well known, there are numerous discrepancies in interpretations between towns in the same area. What one law enforcement officer will allow, another will fine for in a neighbouring town.

No movement of oversized machinery on public holidays in Queensland is an issue. Although the road traffic is often increased on public holidays, it is unfortunate that the reduced cotton picking window often includes the four day weekend for Easter. It is suggested that Easter Saturday and Sunday are relatively quiet on our roads as people move to their destination on Friday and return on Monday. The opportunity for wide load movement on one or both of these days will enable contractors to move in the instance of finishing a job, running into green cotton or rain.

Fibre quality

It is important that growers are continually made aware of the impact of poor defoliation and the impact of picking too early on fibre quality. Although growers are most content when modules are in the gin yard, picking too early can have a dramatic impact on trash content and fibre maturity. Publication and extension of current research into the impact of timeliness on picking, as well as constant interaction between the grower, contractor and consultant at picking time will show the impact picking too early has on fibre quality.

It is equally important to ensure contractors are well informed about the impact of picking on fibre quality. Showing contractors fabric samples that have been contaminated and explaining the economic loss along the line due to the contamination demonstrates the importance of continuing to minimise contamination.

Furthermore, explaining what are and what causes neps and outlining the potential impact would also be valuable. Once again showing examples of "neppy" fabric that have not been finished well and explaining the reduced value of these fabrics will increase awareness of the need to ensure machinery set up has minimal impact on nep count.

This basic awareness raising exercises could be a 30 minute presentation with fibre and fabric samples at several ACPA meeting throughout regions.

Conclusion

This project has identified that contractors run efficient operations that are suggested to be unprofitable due to lack of continuity, price per acre and declining value of machinery. Machinery is well maintained and relationships are developed with clients to ensure as many acres are covered as possible.

Complying with OH&S legislation will continue to prove time consuming and costly but it is recognized as important to ensure the safety of seasonal staff. This cost is far outweighed by the loss of productivity and the personal damage caused as a result of an insufficient OH&S policy in the workplace. Training and induction varies greatly between businesses,

and ranges from very comprehensive to almost non-existent. Incorporating existing frameworks would make the process of developing a standardized employment agreement relatively straightforward.

Clear concise transport legislation and realistic considerations of movement on public holidays will enable contractors to move between jobs in the safest possible and will enable them to capitalise on the reduced period of picking.

Increased grower and contractor awareness of the impact of picking on fibre quality is required. Lack of knowledge of fibre quality has resulted in the current situation which will not change until growers and contractors are more informed.

Further development of the Australian Cotton Pickers Association, together with input from industry organizations and an improved understanding from the growers will see the viability of these businesses improve. Formalised staff training and induction, simplified road transport legislation, increased awareness of fibre quality and increased rates will ensure there are contractors in business to pick the Australian crop and maintain its quality.

Recommendations

1. Development of generic adaptable staff induction and staff training packages.
2. Well organised, resourced and executed information sessions to inform growers, contractors and staff on the impact of picking on fibre quality. This could be delivered as an accredited training package or developed as a BMP module.
3. Development of generic safe operating procedures for machinery operation.
4. Compilation of clear, concise guidelines for transporting oversized machinery.