

BSES Limited



**FINAL REPORT – SRDC PROJECT BSS279
IMPROVING EXTENSION CAPACITY**

by

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SD06009

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SUMMARY

The extension staff in the Burdekin district are both fresh-faced and full of new ideas. One of their largest hurdles to jump is the implementation of science into the real world. Growers are some of the hardest nuts to crack, and the attendance at this conference provided some useful insight on how to make inroads with the local industry. The staff members that attended the conference gained from the experiences that other extension officers (change practice agents) have utilised in their everyday lives.

The conference also allowed for networks to be formed with extension staff from other industries and countries to allow the cross flow of information and for bouncing ideas between parties. This has led to the use of alternative extension tools to promote rapid adoption of technology.

As part of the activity, two papers were prepared; one presented on benchmarking sugarcane harvesting performance by Dale Chapple, and the other on adoption of double-disc-opener planters as a poster paper. Both the presentation and the poster session allowed for discussion to take place on how we are managing change, what have we learnt from our experiences to date, and how can we do it better in the future.

Some of the key learnings that were discussed at length with other participants were:

- Increased use and reliance on new technologies, eg GPS, GIS, SMS mobile messages and email;
- Trend towards web-based training;
- Moves towards small groups to increase practice change;
- To achieve greater change practice, investors will incorporate extension in R&D projects and practitioners will need to consider the social milieu in which their target customers operate;
- Greater necessity for small-scale farm-based trials that the property owner/end user manages and learns by;
- Celebrate success, “what have you been doing well”, and “what do you want to do”.

The key learnings from the conference have been discussed with local industry staff to encourage a more positive outlook towards change management. Discussions revolved around how can we do things better locally, and how can we improve the use of the Burdekin Cane Productivity Initiative and BSES' PROSPER project to maximise the impact of research and development. The rapid adoption of the use of double-disc-opener cane planters is one of the big positives to have been driven successfully by CPI and local RD&E.

1.0 BACKGROUND

It has been recognised that the relative inexperience of some extension staff in the Burdekin needs to be addressed in order to add further value to the success of the CPI/Prosper program. One way of addressing inexperience is to provide opportunities for staff to learn from experiences gained in extension practice in other agricultural industries. The 2006 APEN (Australasia Pacific Extension Network) Conference provided an opportunity for Burdekin staff to learn from other industries.

The theme of this conference was 'Practice Change for Sustainable Communities: Exploring footprints, pathways and possibilities'. We see engagement with the community as the next important step in extending the success of the extension program in the Burdekin, particularly in furthering area adoption of best practices for environmental management.

The conference exposed the Burdekin extension staff to the latest research and methods in the extension and communications arena that are necessary to further the change process. Increased skills that will be applied within the Burdekin CPI/PROSPER program have come from learnings gained from attendance at this conference and have enhanced adoption of better management practices by growers in the region.

2.0 OBJECTIVES

The project aimed to build the capacity of local extension staff in the Burdekin region through:

- Enhancing the skills of Burdekin extension by learnings gained from other agricultural extension programs;
- Presenting papers on different aspects of the CPI/PROSPER program in the Burdekin to the conference;
- Forming networks and potential partnerships with other agricultural extension professionals;
- Gaining knowledge from the conference that can be applied through local extension activities;
- Disseminating knowledge gained to other Burdekin extension staff.

3.0 CONFERENCE ATTENDANCE

Our trip to the 2006 APEN conference included attendance at the conference and workshops. Other activities included pre- and post-conference field trips of the Beechworth area in northern Victoria. In addition, there were social outings each night, an introductory meet and greet dinner, and movie, a formal conference dinner, and live entertainment.

The pre-conference tour included visiting a small family-owned and operated boutique winery and microbrewery, as well as visiting the world-renowned Brown Brothers' winery.

The post-conference tour included a visit to a firewood collection point run by the community. Also included in the tour was a visit to local prime lamb farm. This property has teamed up with a small number of other properties to sell a premium lamb product (Rutherglen Premium Lamb) to local customers and restaurants in Victoria. The property also has been replanting trees along the natural waterways to reduce soil erosion, limit rising watertables and salinisation of the landscape, and potentially utilise this renewable resource for firewood.

At the conference, each day included three workshop activities exploring the learnings from the previous keynote speaker or subsequent concurrent paper sessions. Workshops A and C were broken into streams of interest based on the papers being presented at the conference. The streams included: approaches, methods, and tools; multiple scales of practice change; partnership/networking and institutions; social context; evaluation/reflection; sustaining the practice. Workshop B was titled assimilation-integration of ideas. During this workshop, attendees broke into groups with similar backgrounds: private providers; natural resource management; training and education; research; agriculture and community development.

4.0 PARTICIPANTS' LEARNINGS

Key learnings and major trends from the workshop A (group Approaches, Methods and Tools) were:

- Increased use and reliance on new technologies eg, GPS, GIS, SMS mobile messages and email;
- Trends towards web-based training;
- Moves towards small groups to increase practice change;
- Engaging farmers earlier in project development phase instead of waiting 2-3 years, and trying to build a communication strategy early (who needs to know and when do they need to know it);
- There is no one method that works for everybody – need to create your own.

Key learnings and major trends from workshop B (Agriculture) were:

- Create a structure for professional development for extension personal – greater collaboration, co-learning environments, clearer career paths;
- Need to balance our technical skills with our psychology skills to understand social factors that leads to great practice change occurring;
- Aim for continuous improvement;
- To achieve greater change practice, investors will incorporate extension in R&D projects and practitioners will need to consider the social in which their target customers operate.

Key learnings and major trends from workshop C (approaches, methods and tools) were:

- Greater necessity for small-scale farm-based trials to learn from and be managed by the property owner/end user;
- Celebrate success, “what have you been doing well”, and “what do you want to do”;
- Aim to influence non-decision makers;
- Learn from experienced people;
- Inform stakeholders of the importance of extension.



Figure 1 Mandi McLeod (Sullivan Consulting Group, New Zealand) discussing her paper ‘They all learn the same.....don’t they? An evaluation of the learning style preferences of the NZ Dairy Industry’



Figure 2 Dale Chapple, Laura Schibrowski and Ryan Matthews at the conference. Laura was the recipient of the APEN Award for Excellence in the Young Professional category 2006

5.0 BENEFITS TO INDUSTRY AND COMMUNITY

The knowledge gained from attendance at the conference will contribute to the following benefits to industry and community:

- Increased adoption of farming practices to minimise environmental impact, increase productivity and profitability. One of the main improvements in farm sustainability has been the research conducted by the Sugar Yield Decline Joint Venture (YDJV). The findings of this research project have been implemented only slowly by the Burdekin industry. Local extension staff are aware of the positive benefits that could be achieved from the adoption of this research. The knowledge gained from the conference attendance will improve the greater adoption of the principles of SYDJV.
- Improved community awareness of the positive aspects of sugarcane farming practices that are environmentally responsible. There are many environmentally sustainable practices currently undertaken by sugarcane farmer that are not effectively promoted to the community. The outcomes of the conference provided avenues that could be explored to promote the industry in a positive light, which will benefit all sectors of the community. Industry promotion has begun with a number of students, from primary school through to university students, visiting the district. The students are receiving exposure to the practices that growers are currently undertaking to improve their environmental image.

6.0 COMMUNICATION OF LEARNINGS

- The two papers that were prepared for the 2006 APEN conference has been sent to fellow extension and industry staff in the Burdekin District (Appendix 1 and 2).
- Learnings from the conference have been discussed at Pre-Planning sessions for the Burdekin CPI/Prosper group meetings.
- Outcomes of the conference were discussed at the local BSES Extension monthly meeting to inform other local extension staff.

7.0 ACKNOWLEDGEMENTS

We thank SRDC and BSES Limited for partnering in this project and giving us the opportunity to attend a very informative conference.

APPENDIX 1 – Paper presented to the conference

Benchmarking sugarcane harvesting performance to improve profitability and efficiency: The importance of social research to improve the probability of project relevance and success

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Abstract

APPENDIX 2 – Poster presentation at the conference

Rapid adoption of double-disc-opener planting in the Burdekin sugar industry

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Abstract

During the last 10 years, the Australian sugar industry has experienced extensive changes due to economic and environmental drivers. These factors, combined with positive research, development and extension, have acted as a catalyst for the industry to embrace change. One of the most rapidly embraced changes has been the adoption of double-disc-opener planters (DDOP). The principle behind the DDOP system is significantly different to the standard 100-year old planter, because it enables no-tillage and minimum-tillage plantings. This contributes to a sustainable cropping system through immediate savings in costs and long-term improvements in soil health. DDOPs were first trialled in the Burdekin region in 2001 with small areas being planted for trial purposes. In 2002, 370 ha were planted to DDOPs this area remained stagnate for 2 years then the area increased six fold to 2200 ha in 2005. A range of extension techniques were used to encourage adoption, including travel to other regions/industries, funded trial sites, paper-based media, one-on-one consultations with key players, and grower-groups meetings. Researchers and engineers were invited to participate in grower lead meetings and lead bus trips to demonstration sites. The biggest influence in the rapid adoption of this new form of planting was comprehensive prior research and demonstration of the benefits of this system to the wider community. This was only possible due to the open cooperation between funding bodies, RD&E providers and growers. The positive attitude of growers involved with the new system of farming continues to provide the extension officer with excellent spokespeople and catalysts for adoption.

Three Key Learnings;

- Use of large-scale grower demonstration sites. This gave the growers an opportunity to witness several operations occurring throughout the season and gave growers more confidence in the results.
- Timeliness of adoption. The introduction of DDOP coincided with a downturn in the Australian sugar industry. This method of planting has been shown as a cheap means of planting cane, while still delivering acceptable yields.
- Grower participation/driving force for change. The growers that were involved with the DDOP system were innovative and positive about the method and wanted to make the system work.

Key Words

Positive grower attitude, grower lead research, sugarcane

Introduction

Since 1999, the Queensland sugar industry has faced a combination of depressed market prices, disease outbreaks, drought and low yields, all of which have dealt major economic blows to the industry. These have driven the industry to look for ways of making rapid change. The biggest driving force behind the rapid adoption of new ways of planting sugarcane has been the research results of the Sugar Yield Decline Joint Venture (SYDJV). This 12-year project has been looking at ways of reducing the subtle yield decline that has been plaguing the industry for the past half a century. The information gathered over the past 12 years has been promoted by various extension methods across the industry. One highly successful outcome of the SYDJV was the development of a double-disc-opener planter (DDOP). This new method of planting sugarcane has been increasing in popularity over the past 3 years, with some large-scale planting occurring in the Burdekin Irrigation Area (Ayr). In the Burdekin region, the biggest achievements in adoption have been gained through a combination of extension methods aimed at encouraging growers to undertake their own on-farm trials.

Background

What is a DDOP? Sugarcane DDOPs have been modified by BSES Limited researchers and is loosely based on the units used in cereal industries. This opener uses two large-diameter (660 mm or greater) coulter discs to slice through any stubble or surface trash and open a slot wide enough for a single cane billet (Robotham and Chappell, 2000). The billet is placed at an optimum depth below the soil surface that will minimise stool tipping and allow for rapid germination. Excellent soil-to-billet contact is also achieved when using a cane DDOP. Figure 1 shows the wholestick DDOP used in the Burdekin region in 2004.



Figure 1. Single-row wholestick DDOP.

The planter in Figure 1 was modified by BSES and Burdekin Productivity Services with cooperation from the owner. It was used by 10 growers in 2004. These growers planted additional areas in the 2005 season by borrowing the same planter again, hiring a contractor, or using a similar planter that they modified themselves. By allowing the grower to borrow the planter and use it on their own properties, extension officers were able to overcome the common argument of 'it will not work on my place'. Such an attitude is to be expected when it comes to trialling new equipment in an industry that has existed with very little change to farming practices in the last 25 years.

Extension methods and results

Paddocks where growers trialled DDOPs were used extensively as demonstration sites. During 2004, six bus trips were arranged to show growers the results of these sites. These visits were tailored to match the grower with a trial site that was in close proximity to their farm and so reflected similar soil types and growing conditions. Promotional material was prepared for each trial site, clearly illustrating the steps that the grower had taken in order to be successful with a DDOP.

To complement the bus trips and field tours, information on the SYDJV and use of DDOPs was heavily promoted through group meetings of the Burdekin sugar industry's Cane Productivity Initiative (CPI). The meetings comprise of growers in the same productivity group, meaning that they have similar soils and growing conditions. The use of DDOPs and the findings of the SYDJV project were topics of lively discussion at many CPI group meetings. Growers and extension officers were able to use these meetings to discuss issues of concern, provide support and work-out possible solutions.

To cater for the growing interest in DDOP and SYDJV, we organised a 1-day workshop where the four principal researchers involved with the SYDJV presented their findings. This gave growers the opportunity to question the researchers and facilitated conversation about how the results could be demonstrated locally. The workshop raised many questions about the new farming system, and sparked significant interest in the grower community. The presentations by the researchers prompted growers to trial DDOPs, and this has led to three local planting contractors investing in the new planting technology.

Local growers were disappointed that minimal experimentation had been conducted by the SYDJV researchers in the Burdekin area. To address this deficiency, we established a full-scale local trial. The trial tested six of the most common cane cultivars grown in the area, planted them with a DDOP and used three row configurations. This trial effectively demonstrated that the DDOP system could be used for planting through standing fallow crops, such as soybeans, with no cultivation (Figures 2 and 3). This trial impressed the local sugar industry, which is actively looking for rotational crops that will suit their farming style. Bell *et al.* (2003) found an improvement in crop yield by planting with a DDOP in standing green-manure stubble compared to the conventional farming system in Bundaberg. Many factors can affect the adoption of such a major farming system change, which is why it was important for the trial to be local and include different cultivars and row configurations. Innovative growers were invited to attend the planting

of the trial, and we captured the valuable discussion and use it to help promote adoption. Both the growers and us gained insights into the kind of practical difficulties that growers might face in adopting DDOPs. Showing the mistakes made and the difficulties encountered made the trial more realistic to growers and gave them confidence in the results. Four bus trips and eight grower meetings have been conducted on the BSES trial site and the results of the trial have been disseminated in various publications.



Figure 2. Planting at BSES Burdekin through standing soybean stubble in 2005.



Figure 3. Growers were invited to see the demonstration of the DDOP planting through a standing soybean fallow crop at BSES Burdekin.

A tool that has proven successful in promoting the new planting system is the local newspaper's fortnightly rural lift-out. This lift-out is read not only by growers, but also by the wider community, and helps explain what the industry is doing. Newspaper articles also assist in making local businesses aware of new technologies in which the farming sector is investing. Extension officers regularly submitted articles about DDOPs and the SYDJV to the *Australian Canegrower* magazine, *BSES Bulletin*, local Canegrowers Newsletters and local BSES newsletters. These forms of communication ensure that those growers not attending CPI meetings get the opportunity to keep up to date.

BSES, Burdekin Productivity Services and the growers were not the sole drivers for this rapid change. BSES and participating growers actively sort industry funding via the Sugar Research and Development Corporation (SRDC) and Queensland Department of Primary Industries and Fisheries (DPI&F) to fund many trials and machinery investments. An example of this was one cooperative farming group who worked with extension officers to source funding from the DPI&F to invest in machinery modifications. The funding enabled the growers to transport a double-disc-opener billet planter, built in Mackay, to the Burdekin for the planting of a large-scale demonstration site in 2004. The establishment of this particular site undoubtedly contributed to the rapid transition to DDOP of the growers in the surrounding area. The funding also allowed the cooperative group to build a bed former that was instrumental in allowing them to convert easily to the new system. In 2005, we and the cooperative group used their remaining funds to purchase a new double-disc-opener billet planter for the district. The availability of this planter has meant

that not only the cooperators but surrounding growers could adopt the new technology easily. It is estimated that almost 250 ha have been planted with this planter.

Industry funding provided the opportunity for several key innovative growers and extension officers to travel to Tully, Proserpine, Mackay and Sarina. By doing this they were able to experience first hand what other farming enterprises in the sugar industry were trialling. The neighbouring districts of Mackay and Sarina were visited several times. Whilst in Mackay, Burdekin growers took the opportunity to interact with a Mackay-based engineering firm (Hodge Industries) that manufactures DDOPs. These opportunities provided growers with the chance to discuss some of the finer points of the planting operation. These discussions and trips gave the Burdekin growers confidence to go ahead and trial the system on their own with full support of BSES extension officers and the manufacturer.

Burdekin growers also visited the northern cane growing district of Tully as part of an SRDC-funded travel and learning opportunity. This trip reinforced and assisted participants in allowing them to make valued judgements on the best way forward for their planting system. The result was that those key innovative growers who attended the trips ended up being among the first in the district to plant using DDOP. By providing growers with an experience from another district, extension officers were able to encourage them to think outside the square. Without the cooperation of funding bodies, researchers and growers this rapid change in farming would not have been achievable in such a short time frame.

Conclusion

What began as a saving in the paddock for other industries has now become the latest advancement in the sugar industry. Naturally, there were going to be numerous problems in adapting a planting technology from another industry to suit the sugarcane cropping system. These problems were overcome by using a combination of prior research and development with varied extension techniques. As a result of the extension techniques used to promote DDOPs there has been a six-fold increase in the area planted to this method (2200 ha) in the last 3 years. Targeting key innovative growers, setting up strategically situated trials on growers' farms and conducting travel and learning opportunities were the three main extension methods that have contributed to the rapid adoption of DDOPs. Having key grower involvement was a highly valued resource, providing additional momentum and support. Such a resource should be utilised much more frequently.

Financial support from various funding bodies also contributed significantly to the successful introduction of this new technology. By having funding for growers to trial DDOPs on their own farms, extension officers were able to remove the risk associated with major change. The funded travel and learning opportunities to other sugar growing areas were advantageous in building the capacity of many key Burdekin growers. These trips contributed greatly to their confidence and offered them the chance to challenge their own thinking. The funded grower trips provided a forum for innovative ideas that has been of benefit to the whole sugar industry.

Grower tours and grower trials were effectively combined with an extensive promotional campaign. Newsletters, rural bulletins, journals, local newspapers, and strategically placed in-field demonstrations were used to create interest and highlight to the wider farming community the benefits of DDOP.

Three key learnings:

- Use of large-scale grower demonstration sites. This provide the growers an opportunity to witness several operations occurring throughout the season and gave growers more confidence in the results.
- Timeliness of adoption. The introduction of DDOP coincided with a downturn in the Australian sugar industry. This method of planting has been shown as a cheap means of planting cane, while still delivering acceptable yields. This was a good selling point to assist in the adoption and establishment of trials.
- Grower participation/driving force for change. The growers that were involved with the DDOP system were innovative and positive about the method and wanted to make the system work.

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