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**FINAL REPORT - SRDC PROJECT BSS272
CONTROLLED-TRAFFIC STUDY TOUR OF
THE BIRCHIP CROPPING GROUP BY THE NSW
FARMING SYSTEMS STEERING COMMITTEE**

by

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SD05008

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SUMMARY

Peter McGuire led the NSW Farming Systems Steering Committee and others on a study tour to the Birchip Cropping Group, Victoria and farms serviced by that group.

Key learnings from the project include:

- Greater knowledge about GPS steering systems, base station requirements, signal limitations and user requirements;
- Participants are convinced about the benefits to soil health of zero tillage;
- Participants have identified where cost savings can be made from a zero tillage, controlled-traffic system;
- Awareness about the issue of herbicide resistance.

The study tour provided our group with the opportunity to meet and interact with leading farmers from other cropping systems and experience some of the extension methods used by BCG. As a result of this Travel and Learning opportunity, participants have a greater knowledge and confidence in controlled traffic and GPS guidance.

1.0 BACKGROUND

The Farming Systems Steering Committee was established as part of SRDC project NSC005 and is leading the implementation of controlled traffic in the NSW sugar industry. The committee also has a responsibility for evaluating GPS guidance systems for use in the harvest of whole cane for co-generation. The committee sought to visit another cropping system to further their knowledge of controlled traffic and GPS guidance. The steering committee consists of eight farmers, the NSWSMC Agricultural Services manager, two BSES extension staff, and the project officer. Where a member of the committee was unable to attend, other farmers who were likely to share their learning experience were chosen. Alex Gartmann, Manager Birchip Cropping Group (BCG), agreed to host the group and provide farmer contacts from BCG members.

2.0 OBJECTIVES

The major objectives of the travel were:

- To increase our confidence in adopting new farming systems;
- To transfer ideas on better soil management practices to the sugar industry;
- To evaluate opportunities for savings in time and input costs;
- To hold discussions with the management and board of the Birchip Cropping Group regarding their approach to research and extension in order to:
 - Integrate successful features of the Birchip approach into the NSW R,D&E system;
 - Use elements of their approach to revitalise the locally focussed 'CaneCheck' groups in NSW.

3.0 ITINERARY AND PEOPLE MET

Sun 17th 8:30 am MEET AT VIRGIN TERMINAL, GOLD COAST
 9:25 am Dep Gold Coast - DJ982
 11:45 am Arr Melbourne, Virgin Blue booking

Drive to St Arnaud (2 hrs). Vineyard tour & Winery visit
Overnight at Country Road Motel, St Arnaud Cnr Bendigo & Ballarat Rds

Mon 18th Postlethwaite's farm (near St Arnaud) – GPS & zero tillage system
 Alan Ph 5497 8228, Trevor - 0418 180 085, Neil – 0407 547 848
 BCG herbicide resistance – Mark Phelan (BCG).
 Lunch at Donald
 Farm visit – Seaweed farm at Donald. Peter Sheridan 5497 1238 & Leo
 Tellason
 Visit Gold Acres spray equipment factory at St Arnaud
 Overnight at Country Road Motel, St Arnaud

Tue 19th Dep 8:00 am Travel to Birchip (1hr).
 9:15 Duck raising at Doug Mitchell's farm 5399 0508, 0417 334 453.
 Lunch
 2:00 pm Meet with farmer directors and staff of Birchip Cropping Group.
 Presentation on NSW sugar industry & FS trials (Bob & Nathan)
 4:30 Tony Fahey (DPI) Precision Agriculture.
 5:00 meet billets
 6:30 Dinner with BCG staff, directors & billets.
 Overnight - Birchip

Wed 20th AM Farm visits with billets
 Lunch in Birchip
 PM Inspect farming systems trial with Fiona Best & Warwick McLelland. Feedlot Tour

6:00 BCG function "Who's the Boss Now" then dinner.
 Overnight – Birchip

Thu 21st Travel to Horsham (1.5 hrs)
 Controlled traffic systems at Dean John's (0428 508 633) near Horsham
 Travel to Melb (3.5 hrs)

Fri 22nd 9:20 am Dep Melbourne Virgin Blue DJ981
 11:15 Arr Gold Coast



Birchip travel & learning participants:
 Front - John Hirst, Rick Beattie, Kevin Twohill, Bob Aitken
 Back - Garth Hibbard, Nathan Ensbey, Phillip Banier, Mark North, Chris Shannon, Anthony Durrington, Alan Munro, & Peter McGuire (behind camera).

4.0 KEY LEARNINGS AND KNOWLEDGE GAINED

4.1 Zero tillage and controlled traffic

Soil benefits

Neil Postlethwaite explained that before they adopted zero tillage, their "farm was blowing away". Soil moisture is the crop limiting factor in the Wimmera. When

Steering kit - \$25,000 with Glomas boards and 35 W output
- \$9,500
Field computer - \$22 – 25,000
It takes 2 days labour to fit a steering kit to a tractor.

Information about AgGuide systems

AgGuide:

- can handle curved rows;
- can break the swath width to handle drains, tow paths, etc;
- can use dual frequency to allow for much shorter 'blackout' events (this is likely as a haul out loses signal after passing under a harvester elevator.)

4.3 Herbicide resistance

Major problems have emerged with Group A herbicides. Rates of glyphosate (group M herbicide) have increased from 0.6-0.8 L/ha to 1.0-2.0 L/ha. Cutting rates has been a major reason that resistance has emerged. These problems are likely to occur in the cane industry.

4.4 Birchip Cropping Group

The Birchip Cropping Group (BCG) is a farmer-driven agricultural organisation operating as a not-for-profit incorporated association. They conduct applied research and extension on all the major crops grown in the region. The Group's purpose is to investigate the critical success factors that ensure sustainable and profitable crop production systems. BCG is run by a six farmer-member board and a CEO. The staff comprises 13 full-time employees, 2 part-time employees and 4 contract positions. They have 520 farm businesses as members. The annual cost for a farmer is \$220; retention rates are over 90%. BCG services an area that contains 40% of Victoria's grain and mixed farms.

Extension methods

The Victorian DPI was described to us as being "paternalistic". BCG seeks to work with farmers. They employ only one extension specialist so "one on one" extension is not generally done. The primary extension activities are major and regional field days and demonstration sites. BCG attracts over 3,500 people to its events each year. They cite their competitors as being golf, the local club and TV, all of which vie successfully for farmers' time.

Community

BCG recognises the value of maintaining strong rural communities to help retain farm families in rural areas. The group has a strong community focus.

Succession planning

While staying at Birchip our group was invited to attend “Who’s the boss now?”

Lyn Sykes (family facilitator), Libby Price (ABC rural presenter) discussed farm succession issues along with Charlie Boyle (WA farmer) who spoke about his own experiences of generational change on his family farm. Discussion on this sensitive topic were quite open in the Birchip community.



Farming systems site



The major BCG demonstration site was the ‘Farming Systems’ trial in which four farmer ‘champions’ managed 1.0 ha plots in a replicated field trial. Treatments included ‘the Fuel burner’ (high inputs) and ‘Hungry sheep’ (included a heavy grazing component). As well as being used for field days, the site operated as a stand-alone site, allowing farmers to visit any time. A sign on the site above gave the layout of the trial, plots near the road were clearly signed and handouts were available on site.

Farmers often don't follow the lead of local successful innovators



Neil Postlethwaite (centre) is a leading exponent of controlled traffic in the St Arnaud area and the approach of the family is well known throughout the region. Despite the obvious differences in soil condition between Postlethwaite's farm and nearby, conventionally farmed paddocks, many neighbours have not adopted their approach. When quizzed on this Neil offered the "square cloud" theory, which means landholders can always find reasons why something will work on another farm but not on theirs.

5.0 PARTICIPANTS FEEDBACK AFTER THE TRIP

	1	2	3
	Name at least one thing you got out of the trip	Did the trip increase your confidence in Controlled traffic?	Did the trip increase your confidence in GPS?
Fmr 1	<ol style="list-style-type: none"> Information about satellite steering is more complicated than I realised. Need specialised equipment but won't get this information from a dealer. Compaction - I was already aware of this. Interesting to see how another industry works. 	Confirmed what I believed. Need GPS to get true controlled traffic in cane.	Already realised the benefits. Now know we need more base stations.
Fmr 2	Visiting Postlethwaite's & Dean John's gave a broader idea and different views on guidance system & what we need to take into account when setting up a system here.	Yes, increased awareness of the benefits.	Yes
Fmr 3	See comments below	Yes	Yes, increased confidence in choosing a system for NSW.
Fmr 4	To see that using GPS & controlled traffic (CT) is not a new thing & that others are using it successfully.	Definitely increased	Definitely increased
Fmr 5	<ol style="list-style-type: none"> Encouraged by the CT + zero tillage + GPS guidance systems we saw; it is very similar to the way we are headed. Saw nothing to say that we are on the wrong track. Don't think that the BCG are doing much different from us; we may even have the edge in some areas. Compared to the systems we saw with 10-11 crop options and marketing decisions plus unreliable rainfall – ours is a simple system. We have it lucky. 	Yes	Yes, increased confidence for whole of crop harvesting for co-gen. Identified some issues for our application.
Fmr 6	<ol style="list-style-type: none"> I can see that CT is going to be the way to go. Found out a lot about GPS like distance from base stations. Enjoyed "Who's the boss now". We should have one here. 	Yes	Yes, but I'm sceptical how it will work here in wet conditions.

	4. We should put up signs at our controlled traffic demo sites like BCG.		
Fmr 7	<ol style="list-style-type: none"> 1. Zero tillage & CT saved Postlethwaites over 20% in sowing costs. 2. P's didn't need big tractors because of CT & zero till. 3. The Farming System would have been better if the same crops were used throughout. 4. It was pretty dry down there. 	Yes	Yes, could be a problem standardising on one brand.
Fmr 8	From Postlethwaite's I was convinced that CT is the way to go; there is better moisture on softer ground. Our farm will change over (to CT) now.	Yes	Yes
EO 1	<ol style="list-style-type: none"> 1. A sense of optimism about cane compared to cropping in the Mallee & Wimmera – we're assured of getting a crop 2. Got some ideas from the Birchip group about extension eg could use a farming systems type demonstration site with farmer champions for something like different weed control practices. 	Yes	Yes, but still have lots to learn.
EO 2	<ol style="list-style-type: none"> 1. Doing the economic analysis of the farming systems trials too early can give the wrong answer. 2. Highlights were Postlethwaites & Dean Johns. 	Yes	Yes
EO 3	<ol style="list-style-type: none"> 1. The main thing was getting some more information about GPS, questions to ask GPS suppliers. Now I have contacts to get independent advice. 2. Confirmed in my mind about controlled traffic, how it is implemented in broad acre cropping & how to relate it to cane. 3. Learned more about GPS coverage. 	Yes – not many doing it in broad acre.	Yes, realised that it is possible to change the software without relying on the dealer.
EO 4	<ol style="list-style-type: none"> 1. Improved my understanding of the benefits from controlled traffic & zero till. 2. Realised that we will probably need at least twice as 	Yes	Yes

	<p>many base stations as originally planned in order to get satisfactory GPS coverage.</p> <ol style="list-style-type: none"> 3. BCG have most of their impact on a core of members but less impact outside that core. 4. The outcomes of farming systems comparisons vary greatly with crop choice, season & prices. Longer term benefit. 5. The “square cloud theory” offered by Neil Postlethwaite explains why some farmers don’t adopt apparently better farming systems (<i>Your rain/soil is different than mine</i>) 6. Farmers using CT & zero till found continue to find more benefits as time goes on. 7. For GPS we will need a dual frequency system here to cope with signal loss during harvest. 8. Herbicide resistance is likely to occur in the cane industry in the near future. 		
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Comments from Mark North:

GPS Both Postlethwaite and John’s visit gave us exposure to users of GPS equipment and the pro’s and con’s of three different systems Ag Guide, GPS Ag and Trimble

Issues

1. **Correction age**, the error experienced as the field unit moves from the base in spite of repeaters.
2. **After sales service**, the ability of some field units to allow programming of dead zone, cross track and heading gain by operator whilst others rely on service personal and service equipment.
3. **Networks**, eg Russian and European systems.
4. **Signal**, Different aerial , signal types and strengths.

Weed control in zero tillage fallow. BCG's presentation of trial results on Chemical weed control. Dean John's Case system and GOLDACRES visit.

Issues

1. **Chemical resistance.** The need to rotate chemical groups.
2. **Equipment.** Rotating shielded sprays, pulsating nozzles, Hydraulic drive spray pumps.
3. **Glyphosates.** Rates and mixes with different chemicals, adjuvants, oils and ammonium sulphate crystals.

Controlled traffic & soil health.

Issues

Taking into account soil types (the visits) confirmed our views that separating traffic and growing areas combined with zero tillage and crop rotation shows dollar savings and improved production. Showed the need to develop zero tillage cane planter suitable for local conditions.

BCG Trials & philosophy.

Issues

1. **Trials.** Long term approach, carried out with champions overseeing each type of trial with their preferred farming system and involving the wider community and supporting industries.
2. **Philosophy.** Approach that will address issues to help the whole community be sustainable. Eg Environmental, social, economic and agronomic.

6.0 BENEFITS TO INDUSTRY



Controlled traffic farming and GPS guidance is now accepted practice by many farmers in the Wimmera area. T & L participants believe this opportunity will help the implementation and adoption of these practices here. The visit to Birchip was one of many activities aimed at rolling out new farming systems in NSW. Independent survey work has shown a very high awareness of the farming systems work. Adoption of the new system is proceeding well.

Interaction with the BCG staff & board reinforced the value of on-going field demonstrations to showcase new practices.

7.0 COMMUNICATION OF FINDINGS

To date, findings have been communicated mostly via personal communication with participants. The 12 T & L participants included mill directors, members of two Productivity Boards, executive members of NSW Canegrowers, as well as four extension staff. Most participants were also members of the Farming Systems Steering Committee.

Two farming systems field days were held in June. Our experiences at Birchip were shared on those days with around 60 farmer attendees.

An article based on the study tour will be prepared for the *BSES Bulletin* for industry-wide circulation.

8.0 IMPLICATIONS AND RECOMMENDATIONS ON TRANSFER OF KNOWLEDGE GAINED

1. **Farming systems steering committee.** The steering committee should continue its lead role in promoting controlled traffic and GPS guidance.
2. **GPS guidance.** The Farming Systems Steering Committee should engage an independent expert when they compile a tender document to establish GPS base stations through the NSW sugar industry. Issues to be considered are: topography, likely down time, compatibility with other GPS systems, reliability, ease of use, research backup and local technical support.
3. **Extension methods.**
 - NSW sugar industry extension staff should make greater use of farmers to organise and run extension activities.
 - Field demonstration sites should continue as the major extension medium.
 - Extension staff should collect suitable cost and yield data to allow cost benefit comparisons.
4. **Herbicide resistance.** Advisory staff should make farmers aware of the risk of local weeds developing herbicide resistance and stress the importance of maintaining recommended herbicide application rates.
5. **Succession planning.** A recent survey of NSW cane farmers indicated that 65% of those surveyed considered themselves “approaching retirement”. Local Productivity Boards should arrange a forum on farm succession.

9.0 ACKNOWLEDGMENTS

This travel and learning opportunity provided a unique opportunity for a group of opinion leaders to look outside their own industry and gain from the experience of some leading farmers in the Wimmera and Mallee areas. My sincere thanks go to SRDC for both the financial support that made this study tour possible and to BSES who helped fund Bob Aitken and me on the trip. The support and input of Alex Gartman, Manager BCG and Fiona Best, Extension Leader, is much appreciated. Thanks also to the many people in rural Victoria who were so welcoming and generous with their time and knowledge.