

FINAL REPORT

JRA 001: TOWARDS LONG-TERM SUSTAINABLE SUGARCANE FARMING IN THE JOHNSTONE RIVER CATCHMENT

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Date **August 2001**

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ABSTRACT

Cane farmers are important stakeholders in the Johnstone River Catchment. Their engagement in the sustainability debate is essential, however, at times they appear to be isolated from it. The Johnstone River Catchment Management Association (JRCMA) saw the need for their engagement and applied to The Sugar Research and Development Corporation (SRDC) for a grant to do an action research project to achieve that end.

Growers meeting in small groups discussed all aspects of cane growing with the aim of producing a booklet of guidelines for best management practices for the catchment. Growers were invited to speak freely but challenged to be certain that the practices they nominated were sustainable and demonstrable on their own farms.

More than 100 growers participated in the discussions over two years and a booklet entitled “Growers perspective of best management for sustainable cane farming (Documenting practices in the Johnstone, Moresby and Liverpool Creek Catchments)” was published in best management practice format. The project received wide acclaim and The Honourable Rod Welford; Minister for Natural Resources, Environment and Heritage launched the booklet in April 2000.

Demonstration of best practices for sustainable farming from a grower’s perspective were achieved through a major field day organised by the JRCMA and through a series of video clips of many practices throughout the catchment.

“The Most Significant Change Approach” also known as “The Story Method” was used to determine changes growers perceived were occurring in the farming, agency and general communities as a result of this project. Focus group technique was also used to gauge the effect of the project on the general community and agency groups.

INTRODUCTION

Environmental awareness has increased in the community over the last 20 years. However, as farmers and others have become more aware of environmental and off-farm impacts, the farmers' terms of trade (prices received as a percentage of prices paid) have declined sharply from over 200% in 1952/53 to 81% in 1990/91 (Cavaye, 1999). This is reflected in the consensus among northern cane growers that a family cane farm needs to be at least 5,000 tonnes to be sufficiently profitable, and even farms of that size struggle in years of low price and poor weather. A generation ago a family could prosper on a 2,000 tonne assignment. As a consequence, growers sometimes have to utilise techniques that they would not consider ideal, e.g. plough-out and replanting in the same season instead of planting after fallow.

Expert or agency groups who are not directly involved in the daily running of a farming business are on occasion requested to assemble best management practice guidelines. In these guidelines factors of business necessity and farmer preference are sometimes neglected and motherhood statements can be included. Growers are generally more practical than their advisors and demand that business sustainability be considered as an important part, if not the most important part of a sustainable agriculture. In addition farmers demand scientific justification for restrictions placed upon their activities and they look for compensation for actions that provide communal value at an economic cost to them. The differences between the two groups can become exacerbated when the expert group writes best practices guidelines for the practitioner group. The practitioners then have no ownership of the ideas and suggested practices but they are expected to implement them.

The Johnstone River Catchment Management Association (JRCMA) saw the need to attempt reconcile these difficulties. It engaged officers from two of its stakeholders, the Bureau of Sugar Experiment Stations (BSES) and the Department of Natural Resources (DNR) to prepare a submission to The Sugar Research and Development Corporation (SRDC) for funding for a project in which growers themselves would prepare guidelines for best practices for sustainable cane farming in particular areas of the Johnstone River basin. The project was funded in 1997 and a steering committee formed which had representatives from Canegrowers, Queensland, BSES, DNR and the Mourilyan and South Johnstone Cane Protection and Productivity Boards. An Extension Officer was appointed in January 1998 to facilitate the project.

OBJECTIVES OF THE PROJECT

The aim of the project was to facilitate the adoption and integration of best management practice guidelines into sustainable farming systems. Grower and community ownership of any outcomes was paramount. Several processes were necessary to achieve these outcomes; some will not be manifest for some years. In summary the processes required were:

- Sampling the whole community for its attitudes on the sustainability of sugarcane farming in the basin
- Developing guidelines for sustainable cane farming according to the growers
- Determining demonstration sites of best practices in the basin on growers' farms
- Determining as possible the influence of this project on community attitudes towards sustainable agriculture during the life of the project
- Putting in place mechanisms that allow the process to continue beyond the life of the project

METHODOLOGY

The methodology is described in the accompanying booklet entitled “The Process of Developing Best Management Practices for Sustainable Cane Farming from a Grower’s Perspective”. It describes an eleven-step program, which is as follows:

1. Development of the idea by stakeholders of the JRCMA
2. Identification of a funding body
3. Writing of the project proposal
4. Appointment of a management committee and extension officer
5. Sampling the community’s attitudes to sustainable cane farming
6. Formation of farmer groups, developing meeting agendas and conducting meetings
7. Writing the booklet of best management practices as described by cane farmers
8. Launch of the booklet by the Minister for Natural Resources, Environment and Heritage
9. Demonstration of best management practices on farm as direct view and as video clips
10. Feedback as to the project worth and success
11. On-going commitment to the continuation of the process

The booklet of the methodology was distributed widely within the wet tropics to people and departments who could benefit from knowledge of the details of the methods used in this important initiative in natural resource management. Copies were sent to the Department of Natural Resources and Mines, the Environmental Protection Agency, all Canegrowers Organisations, BSES offices, Catchment Coordinating Committees and Cane Pest and Productivity Boards.

OUTCOMES

1 Grower group formation

The Management Committee recognised that within the catchment there are a variety of conditions, which affect farming practices. To cater for this and to encourage a large participation whilst maintaining the small group technique, eight groups were identified for the catchment. These were Red Soils, Sandy Soils, Clay Soils, Tidal Reaches, Urban Reaches, Johnstone River, Silkwood and Japoonvale. The selection of groups based on different soils is self-explanatory, but the other divisions need explanation. The Tidal

Reaches are lands subject to tidal influence. The Johnstone River refers to farms along the Johnstone River itself. Urban Reaches refers to farms that are adjacent to townships or settlements. Japoonvale is an isolated area at the headwaters of Liverpool Creek. Silkwood represents an area where there is more burnt cane than elsewhere in the district.

The groups formed in April 1998 and have maintained their existence since.

2 Community attitudes to cane farming in the Johnstone River basin prior to the project (1998)

Whole community involvement was initiated by firstly surveying the attitudes of the local population towards the sustainability of cane growing in the area. These were determined through focus group discussions and a questionnaire. Three groups of people were surveyed:

- Professional people and agency representatives
- Other people not cane growers
- Local cane growers

The community attitudes of professional people and others were assessed at the beginning of the project by the use of the focus group technique. A questionnaire was used with the cane growers.

Participants from the local community who were not cane farmers recognised the economic importance of cane growing to the catchment area as well as to the whole of Queensland. They recognised that cane farmers had taken the lead in attempting to develop their industry and make it more sustainable, environmentally responsible and friendlier to other users of the catchment. This was shown by the wide adoption of green cane harvesting and trash retention, care with chemical usage and a general recognition of the importance of the local environment. However, there were causes of concern among the participants. The diversification into other crops whilst improving farm and district profitability, had caused more environmental degradation than cane growing. In addition the conversion of cane lands close to mills to other crops, threatens the viability of mills. Mills have responded to this problem by bringing in cane from outlying areas but this has increased costs and created problems with long-haul transport.

Suggested actions for cane farmers and the industry to improve sustainability of cane farming from non-cane farming participants included:

- Plant more riparian vegetation
- Growers should seek more education
- Lobby for Governments to offer incentives for more sustainable agriculture rather than threaten penalties for breeches or apparent breeches of legislation
- Co-ordinate drainage
- Research best management practices, rather than just talk about them
- Return unproductive land to nature
- Reduce chemical usage

- Get bigger to survive

Initial farmer perceptions about sustainable cane growing were assessed at the first grower meeting of each group. Growers were given a written questionnaire regarding their awareness of best management practices and the guidelines that were then available and their opinions about them and how they might maintain control of their industry.

87% of respondents felt they had at least a reasonable idea about best practices for their area. 90% considered they used best practices more than half of the time. 39% were not aware of the guidelines for best practice prepared by the Johnstone River Catchment Management Association, which had been published four years earlier. 93% thought that sustainable sugar farming was an issue of medium to major importance. Only 63% of growers felt they had a good deal of control over the influence of outside agencies, with 37% feeling they had lost control of their industry.

Growers' suggestions as to how they could maintain control of their industry included:

- Be aware and therefore minimise any detrimental effects of farm practices on neighbours
- Form grower groups to determine the best management practices
- Use the current best management practices
- Retain all good agricultural land in production
- Reason with outside bodies such as Department of Natural Resources and Mines (NR and M)
- Codification of a common law right of ownership of their land
- Exercise good financial control
- Retain some environmental areas on properties

3 Development of best management practice guidelines

Growers met regularly in their groups and notes were taken at each meeting and interim reports were prepared for the project Management Committee. From these notes and reports a draft booklet in best practice format was prepared in early 1999. The booklet was reviewed by the Management Committee and comments sought from various organizations including BSES, NR and M, the Department of Primary Industry (DPI), the Environmental Protection Authority (EPA), Canegrowers Organisation Queensland, catchment coordinating committees and other primary producer groups like the banana growers. In co-operation with the Management Committee, ideas from these various committees and organisations were included in the draft booklet.

The draft was sent to all growers in the catchment and all were invited to public meetings (one in each of the eight districts) in early 1999. Many of these public meetings were well attended, with more than 30 people coming to one meeting. Comments from these meetings were noted and important alterations were made to the draft booklet both in layout and content.

The altered booklet was discussed at the grower group meetings and a final copy was prepared. The booklet entitled “Growers perspective of best management for sustainable cane farming (documenting practices in the Johnstone, Moresby and Liverpool Creek catchments)”, Stewart, 2000, thus represented the opinions of the groups with appropriate input from the Project Management Committee, agencies and other growers who had not been part of the group process putting it together. A copy of this booklet forms part of this final report.

The booklet is a 90 page loose-leaf document with 18 chapters. The chapter headings are: Farm planning and record keeping, New land, Drainage, Levees, Planting-fallow/replant, Fire breaks, Cultivation, Erosion, Riparian/river bank management (other than a drain), Ameliorants, Fertilisers, Harvesting, Chemicals and herbicides, Pest controls, Varieties, Social considerations, Farm wastes and Biodiversity. The loose-leaf format was chosen so that recommended practices can be easily up-dated, enabling the booklet to be a living document.

4 Demonstration of best practice

Practices described in the booklet are all current practices (year 2000). To demonstrate that these methods are sustainable it is necessary for growers to open their farms for observation and to demonstrate the sustainability of these methods. This was emphasized at all meetings.

Opening a farm for demonstration can be an imposition on a landholder. It is not practical on many farms and some practices need to be seen over a period of time rather than at a single visit. The growers at group meetings decided that video footage should be used to capture current best practices in action, as well as direct view demonstrations. Video recording offers the following advantages:

- It allows activities that occur over time to be compressed
- It allows many sites to be “visited” that could not be otherwise
- It allows farmers to maintain their privacy whilst still exhibiting their practices

Video Production

A professionally finished video forms part of the final report of this project. Its contents include:

- A description of the project area and an outline of the project
- Levee banks and flood gates
- Drainage practices
- Planting including trash management prior to planting
- Pest control
- Chemical safety
- Amelioration
- Fertilising

- Harvesting
- Management of mangroves and riparian areas on farms

Roving Field Day

The Johnstone River Catchment Management Association organised a roving field day in November 2000 to demonstrate some of the best practices of cane farming as well as other activities of interest to cane farmers. The Minutes of the Johnstone River Catchment Management Association for January 2001 reporting on the field day read as follows: “Bob Stewart considered that the Roving Field Day, held 17 November 2000 was very successful with approximately 70 people attending. Farmers were happy to attend due to poor weather conditions preventing farm work being undertaken. Various sites were visited including non-sugarcane sites e.g. direct seeding and creek revegetation. Feedback received from farmers was impressive, with the day generating a lot of discussion amongst the farmers.

“Further, it is intended that an additional field day will be organised after the next harvesting season”.

A copy of the flyer entitled “Roving Field Day” used for advertising the Roving Field Day is attached.

5 Action learning outcomes

The nature of this project prompts the question: How have growers and others changed as a result of this project? Change in this instance refers to changes in attitudes, beliefs, actions and commitments.

A method to measure qualitative change has recently been presented. It is called “The Most Significant Change (MSC) approach” or the “Story Method” (Dart *et al*, 2000). The process involves the collection of stories of change at the field level (typically from farmers or extension officers) and then the selection of the most significant of these (with reasons for the selection) by the farmers themselves or a steering committee. The process is participatory and works best if the participants decide which sorts of change are to be recorded. These stories are not testimonials - They are stories of real events of change in action or attitude accompanied by reasons for their selection.

At the story sessions to gauge changes, growers in their groups indicated they had not yet perceived major effects of this project. Most growers thought that it was too early for results to show up. Yet, a number of stories emerged at the sessions and two stories stood out. One showed a thawing of relations between authorities and growers, which reflected the spirit of trust shown in this project in which growers catalogued their practices for all to see. The other story indicated that some in the community still hold to the paradigm that any local fish kill is always the result of agricultural runoff.

Story 1: Tidal Reaches

There are signs of more cooperation between growers and regulatory authorities. The recent agreement between the Canegrowers Organisation and Queensland Fisheries Service, which offers a district-wide permit for cane farmers to clean tidal drains if they have attended a Fisheries Accreditation Course (Christiansen, 2000) is an example of thawing of relations between authorities and growers and a trust offered to growers - which has been lacking. Although this type of agreement is not a direct result of this project, it reflects its spirit.

The emergency registration of Zinc phosphide for rat control is a similar story. A spirit of cooperation is emerging throughout the industry.

Story 2: Urban Reaches

The attitudes of the local community do not seem to have changed much. A fish kill occurred at Warrina Lakes in April 2000, following heavy rain. The report in the local paper suggested the cause be attributed to run off from a local cane farm, but no officials came to investigate the fish kill. Yet it is more likely the kill was caused by run off from a disused dump than from a cane farm.

Story Selection criteria

These two stories were selected for the following reasons:

- They demonstrate action not just ideas
- They demonstrate whether the spirit of this project is present or not in the stories

6 Influence of the project on community attitudes

The story method projected grower insights to community attitudes at the time of the completion of this project. However a direct comment from the community and growers as to their personal opinions was also necessary to complete the aims of the project. Meetings to review the project were conducted during May 2001. The Focus Group technique was used, as it was for the community attitude meetings held at the beginning of the project. Five groups were interviewed; the number of people attending each meeting is shown in brackets:

- A well-attended farmer group (12 people)
- A poorly attended farmer group (2 people)
- The management committee (5 people)
- Agency representatives (2 people)
- The man-in-the-street (2 people)

The focus groups addressed four questions:

1 As farming complexity increases, there is a need to find a way to integrate decisions into a sustainability context. Was the project a good idea?

2 What does the project do to promote sustainable sugarcane production?

3 How well did the project achieve the above?

4 The project employed group extension techniques and engaged growers in the sustainability debate to increase ownership. Do you think this type of extension is valuable in the current climate or do you think money is better spent in one on one extension about specific problems with the extension officer promoting agency lines?

Results

Q1 All participants considered the project a good idea; some thought it excellent. The cost of \$240,000 or about \$10 per hectare of the cane growing area was considered trivial for the good that can come from it.

Other comments:

- The community driven aspect was a feature. Even if the right answers are known by an authority (they are not always known) the community must arrive at its conclusion by a process, not by imposition
- The aims were right, the growers need to integrate sustainable agriculture into their farming systems, not start farming all over again
- The project provided a forum for an exchange of ideas and because of the considerable time allotted, it provided an opportunity for deep reflection

Q2 The project was an action learning project. It concerned itself with ideas and planning. The actions for an improved sustainable agricultural should come later.

Participants offered the following as outcomes of the project that will promote a sustainable agricultural:

- Started a move towards a culture for sustainable agriculture within the cane farming community. This is important because there is a good deal of inertia in cane farming due to the long crop cycle of 4 to 6 years
- Sustainable agriculture is necessary and it could be imposed on the farming community from higher authorities sooner or later. This project recognised this and has gotten growers involved in controlling their own industry
- The project highlighted the need to attract more young people into the industry
- The group process employed did many things to assist the sustainable agriculture process:

It provided an ownership of the ideas of sustainable agriculture

It provided an opportunity for ideas building

It provided a valuable substitution for one-on-one extension, which is becoming less and less available

The process provided enough time for participants to reflect! Really important

- Outcomes are known to the general public so all community is involved and aware of grower actions in developing a more sustainable agriculture
- Emphasized economic aspects of sustainable agriculture, which is an imperative for practitioners
- Project outcomes have challenged agencies and green groups in some areas to prove the farmers are wrong
- The demonstration farms, demonstration video and the on-going commitment to the continuity of the project all promote sustainable agriculture

Q3 The community expected changes in practice to be minimal at this stage because the project is too young and the economic climate is unfavourable for capital expenditure, however they acknowledged changes in thinking and attitude and some practices by some growers.

- Growers are talking about sustainability in a positive light
- Less criticism of cane farmers by “greenie” and agency groups
- Agencies (e.g. BSES) are now seeking growers opinions and asking for their opinions on problems rather than simply telling
- Growers are less careless and more aware of environmental issues
- More fallow is being used
- Growers are showing more concern for riparian areas
- A definite ownership of the issue has emerged
- Growers are more concerned about their neighbours, especially with respect to smoke drift accompanying burning off
- Growers have flagged to the community that they have a genuine care for the environment
- Young farmers should take to the change to sustainable agriculture well. However, they will seek to control the agenda just as this project has sought to empower them to do

Q4 The use of group process was an essential feature of this project.

- The group process was excellent
- The use of group techniques was a great tool for developing ideas. One-on-one extension is needed for fine-tuning and assistance with putting the ideas into practice
- JRCMA was the appropriate organisation in which to sit the project. It has community concerns as well as concerns for sustainable agriculture. It has presented its own guidelines for sustainable cane farming in the past

General Comments and Recommendations:

- There is a five-year lag time with cane farming due to the perennial nature of the crop. It is essential that growers are pro-active in the sustainability debate

- The timing of the project was unfortunate, with the economic downturn and the succession of poor crops. However, participation was still good, which is a sign of the acceptance of this type of project
- Economic conditions are bad for the industry and it is difficult for farmers to manage land as they would like and as the community demands with the present poor prices. Farmers “mine the soil” because they have no other choice
- It is essential the general public is kept informed about this work so that it is aware of the economic plight of many growers. Sustainable agriculture is a community problem and its implementation cannot be left only to growers
- Growers need to increase their sizes to survive. However, very big farmers are the worst ecological managers. Corporate farmers show some obligations to the community by maintaining natural resources, however, profit is still their primary motivator

7 On-going commitment to the process

The job description of the Catchment Coordinator for the Johnstone River Catchment Management Association now includes a function to maintain this project. Yearly meetings of the original groups are stipulated to discuss any serious updates on the practices that are considered sustainable and best. If significant changes occur for particular practices, new chapters will be written by the Coordinator and sent to each grower by the JRCMA as an up-grade.

CONCLUSIONS

This type of extension project aims to help growers to help themselves. It is not a productivity project but rather one of empowerment in which growers are assisted in taking charge of their own destiny. In this case growers were helped to prepare guidelines for best management practices for cane growing. This allowed them to produce a set of guidelines that reflected the necessities of every day farmers rather than practices considered best by those who do not rely on farming for a living or who are not large scale land managers themselves.

For this sort of work to proceed the presence of an extension officer is imperative; not necessarily to offer expert opinion but to call and facilitate meetings, keep notes, and generally run the project to a schedule. In this particular case it was necessary for the extension officer to write the booklet of best management practices after listening to the growers and then offering it back to them for their approval.

The project achieved its objectives. The stories that are emerging indicate some successes in the changing of attitudes. There is a general perception in the community that growers are adopting a more sustainable agriculture. A mechanism for the project’s continuance is in place.

Essentials for grower group extension projects

To be successful a project such as this has many needs. The most important are:

- Adequate funding for an extension officer and meeting costs
- Supporting people with a passion for the project's concept.
- An existing supporting network that people trust, which allows the project to have credence right from the beginning e.g. BSES and the Productivity Boards
- Experienced people who can nominate and coerce growers to participate
- People who can lobby for government support
- A dedicated extension officer who is sympathetic to grower causes
- An organization such as Integrated Catchment Management group to manage the project and ensure its continuation

ACKNOWLEDGEMENTS

The author acknowledges that the project could not have proceeded without the dedicated help of the JRCMA and the Project Management Committee and the growers. The author thanks SRDC for its financial support.

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ACRONYMS USED

BSES	Bureau of Sugar Experiment Stations
DNR	Department of Natural Resources (Now NR and M, see below)
DPI	Department of Primary Industries
EPA	Environment Protection Authority
JRCMA	Johnstone River Catchment Management Association
MSC	Most Significant Change approach (Story method)
NR and M	Department of Natural and Mines
SRDC	Sugar Research and Development Corporation

LIST OF ATTACHMENTS

- Booklet: “Growers perspective of best management for sustainable cane farming (documenting practices in the Johnstone, Moresby and Liverpool Creek catchments)”
- Booklet: “The process of developing best management practices for sustainable cane farming from a grower’s perspective”
- Flyer “Roving field day”
- Video “Demonstration of current best practices for cane farming in the Johnstone River Catchment in 2001”