

FUTURECANE—A MAJOR QUEENSLAND EXTENSION INITIATIVE THAT ACCELERATED THE ADOPTION OF IMPROVED FARMING SYSTEMS

By

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Abstract

In 2004, Queensland Department of Primary Industries and Fisheries (QDPI&F) collaborated with BSES Limited (BSES) to launch a major extension initiative called FutureCane. FutureCane was a three year State-wide extension program with the aims of promoting a sustainable and competitive cane growing sector, facilitating change in the sugar industry and assisting members of the cane growing sector to see a clearer picture of the future. State and regional steering and management committees were put in place to overview and implement the program. The main field focus was the accelerated adoption of new farming system components identified by the Yield Decline Joint Venture (YDJV), including various combinations of legume break crops, controlled traffic and reduced tillage, with an emphasis on profitability. QDPI&F provided the expertise on economics and the agronomy of break crops such as soybean, while BSES provided the expertise on cane growing. Extension methods employed included farm demonstrations, farm case studies and whole farm economic analysis. Baseline surveys were carried out to determine the current practice and progress was reviewed annually. Although uptake was relatively slow initially, the development of a Farm Economic Assessment Tool (FEAT) hastened adoption by emphasising the focus on improved profitability rather than productivity. By 2007, significant areas of cane were being grown under the new farming system throughout the Australian industry. The area using legume break crops increased by 4020 ha, controlled traffic increased by 20 133 ha and the area of reduced tillage plant cane increased by 17 071 ha. The program demonstrated the value of working collaboratively on an industry-wide basis to achieve results. This paper outlines the management structure of the FutureCane program focusing on the Farming Systems module and the practice change that occurred in the Australian sugarcane industry during the period 2004 to 2008.

Introduction

In 2004, the Australian Government unveiled a \$444m sugar rescue package for the country's struggling sugar industry (AAP, 2004). At the same time, the Queensland State Government passed the Sugar Industry Amendment Bill 2004 relating to major reforms for Queensland's sugar industry, and the State's sugar package was made available. The State's package had three focus areas: Sugar Industry Change Management Program (\$13 million); Sugar Industry Innovation Fund (\$10 million); and a Farm Consolidation Loan Scheme (\$10 million). Implementation of the package relied on partnerships between the Queensland Department of Primary Industries and Fisheries (QDPI&F), industry, the Queensland Department of State Development, Trade and Employment (QDSDTE), and BSES Limited. The QDPI&F contribution to the Sugar Industry Change Management Program was FutureCane, which was designed to

promote a sustainable and competitive cane growing sector. Within QDPI&F, FutureCane was regarded as an Adjustment Program likely to have a better longer-term impact than any short-term financial support.

The focus of FutureCane on a more sustainable and competitive cane growing sector was very topical in the Australian industry in 2004. The industry was reeling from the impact of low sugar prices and low sugarcane yields partly due to yield losses from the disease orange rust (Magarey *et al.*, 2003).

Juffs *et al.* (2004) reported a general perception within the industry that the existing framework and direction of research, development and extension of results appeared not to be delivering best practice and innovation or achieving an acceptable rate of adoption. This led the CSR Company to engage management consultants, McKinseys, to guide the Cane Productivity Initiative, a major group extension project based on adult learning principles, in CSR mill areas.

Vanclay (2004) cited 12 legitimate reasons for non-adoption of new technology for natural resource management among Australian farmers: (1) Too complex; (2) Not easily divisible into manageable parts; (3) Not compatible with farm and personal objectives; (4) Not flexible enough; (5) Not profitable; (6) Capital outlay is too high; (7) Too much additional learning is required; (8) Risk and uncertainty is too great; (9) There is conflicting information; (10) Don't see that there is a problem (lack of appreciation of the problem); (11) Lack of physical infrastructure; (12) Lack of social infrastructure.

Sundermeier *et al.* (2009) surveyed farmers in the Western Lake Erie Basin Watershed in Ohio, USA and found growers adopted conservation tillage because it saved time and fuel. Extension was made more effective by recognising economics and using the popular press when delivering findings.

Declining sugar yields in Australia had been recognised since the early 1990s, when the sugar industry became concerned that sugar yield per harvested hectare had reached a plateau and was declining. This prompted the formation of the Yield Decline Joint Venture (YDJV) in 1993 to identify causes of yield decline and develop solutions to it (Garside *et al.*, 1997).

During the period 1970 to 1990, the sugarcane cropping system in Australia had become much more intensive with a general move to more ploughout-replant with frequent, aggressive tillage and less area fallowed (Willcox *et al.*, 2000). The more intensive cropping system also coincided with the introduction of larger harvesting and haulout equipment, which normally had track widths wider than row spacing, thereby increasing soil compaction (Kidd *et al.*, 2007).

Work during the first seven years of the YDJV showed that breaking the sugarcane monoculture using grain or green manure legume species (Garside and Bell, 2001), reducing compaction (Braunack *et al.*, 2003a) and minimising the amount of tillage during the fallow and in-crop (Braunack and Magarey, 2002) can individually increase the productivity of the subsequent sugarcane crops, improve soil health and rainfall capture (Bell *et al.*, 2001) and reduce production costs (Braunack *et al.*, 2003b).

Perhaps more importantly, results were also suggesting the synergistic effects on productivity and profitability of successfully integrating these individual components into a new farming system (Bell *et al.*, 2003; Garside *et al.*, 2004). However, while confidence in the ability to design a more profitable and productive sugarcane cropping system was growing, adoption of the key components of the new farming system was very slow.

In October 2004, the YDJV held three regional workshops with extension officers and farmers throughout Queensland to update industry on their findings and to hear problems being encountered in the adoption of the new farming system (Agnew, 2004, Pers. Comm.). The YDJV workshops identified the 12 top issues that were knowledge gaps hampering the adoption of the new farming system as:

- (1) Cane varieties to suit wider row widths;
- (2) Economic comparison between controlled traffic systems and existing systems, including case studies of farms that have made the change;
- (3) Canegrub management;
- (4) Marketing and communication plans;
- (5) Harvesting issues including effects on cane loss, extraneous matter and soil compaction;
- (6) Extension officers' agronomic knowledge of the break crops such as soybean;
- (7) Weed control and herbicides applicable to the new farming system;
- (8) Application of controlled traffic for furrow irrigation systems in the Burdekin;
- (9) Dynamics of soil moisture;
- (10) Precision billet planter;
- (11) Maintaining soil health/microbes, including growers understanding of soil health;
- (12) Compaction impacts over time in controlled traffic situations.

The establishment of FutureCane

The FutureCane extension project was established in 2004 as the Queensland Department of Primary Industries and Fisheries' (QDPI&F) \$5.2m contribution to the State Sugar Package, and was timely as it helped to initiate a major roll-out of the YDJV research findings.

The task of the FutureCane project was to bring together people with the skills to put together and implement a program of work to overcome the knowledge gaps identified by the YDJV workshops and provide the economic information to hasten the adoption of the improved farming system. The project team combined the expertise of farming systems agronomists, agricultural economists, and trade and business development officers to meet specific needs of Queensland sugarcane farmers. The FutureCane project was structured such that QDPI&F and BSES Limited staff members worked in partnership to deliver services, each providing their unique skills in a complementary manner to the sugar industry.

FutureCane was set up as a three year State-wide extension program with the aims of promoting a sustainable and competitive cane growing sector, facilitating change in the sugar industry and assisting members of the cane growing sector to see a clearer picture of the future. Outcomes envisaged were:

- (1) Understanding within the delivery team of farming systems Best Management Practice for cane production in each of the four growing areas across the State;
- (2) Raised awareness of the benefits of adopting a farming systems approach;
- (3) Design and development of a workshop program to build understanding of benefits, costs and risks of moving to a farming systems approach;
- (4) Growers with a better understanding of benefits, costs and risks of moving to a farming systems approach; Growers with the capacity to make necessary changes to their system;
- (5) FutureCane services delivered in partnership with other service providers, and in conjunction with other sugar related programs.

The project was overviewed by a FutureCane Steering Committee chaired by the Executive Director Industry and Investment, QDPI&F. The Steering Committee had representatives from BSES Limited, Queensland Department of State Development and Innovation, CANEGROWERS,

Department of Natural Resources, Mines and Energy, Queensland Environmental Protection Agency, Sugar Research and Development Corporation (SRDC) and the Australian Sugar Milling Council. The FutureCane project leader and the FutureCane strategy coordinator were also members of the Steering Committee.

The FutureCane State Operational Plan had ten key Strategic Areas/Sub-Projects:

(1) Program management; (2) Farming systems; (3) Establish Regional Delivery Service/Staff Training; (4) Communications Strategy; (5) Industry Liaison; (6) Business Planning; (7) Change Management; (8) Industry Structures/Business Alliances and Partnerships; (9) Industry Reform and Adjustment Support; (10) Trade and development /Marketing.

A FutureCane Management Committee was also established, principally to coordinate the activities of BSES Limited extension officers and QDPI&F agronomists in the Farming Systems Sub-Project. The Committee was chaired by the Adjustment Program Coordinator from QDPI&F, and consisted of QDPI&F and BSES FutureCane project leaders, representatives of the YDJV and the relevant research program leaders from both agencies.

Farming Systems focus

Hastening the adoption of the improved farming system identified by the YDJV was the principal focus of the FutureCane project. While the improved farming system had the potential to increase the productivity of the subsequent sugarcane crop, improve soil health and rainfall capture and reduce production costs, there was also opportunity to diversify farm incomes and improve farm profit by growing break crops such as soybean for grain in some districts (Garside and Bell, 2007).

The key Actions in the FutureCane State Operational Plan under the strategic area, Farming Systems, were:

- Inform key stakeholders and cane farmers about FutureCane (its services and benefits) and appropriately involve them in the local needs analysis assessment for FutureCane,
- Identify all activities and stakeholders involved in the same field of FutureCane activities in each regional delivery area e.g. CANEGROWERS, Millers, Central Agencies, SRDC, Productivity Boards,
- Provide clients with easy access to technical expertise,
- Provide, where appropriate, one-on-one support, particularly in new areas with 'early adopters'.
- Develop a specific Farming Systems Educational module which was linked to existing and proposed business planning activities,
- Develop region specific economic models of farming systems,
- Develop a Sugar enterprise activity plan involving a change in the farming system,
- Document current knowledge relating to best farming systems practice in cane production for each growing area,
- Provide FutureCane staff with ongoing technical support from other units within QDPI&F (e.g. Plant Sciences, Bio-security),
- Provide access to technical expertise on complementary crops, including crop agronomy, marketing opportunities and gross margins etc.
- Provide cane farming clients with ongoing support through appropriate use of discussion groups/cell groups and/or other processes,

- In each region, identify or establish groups of growers, advisers, cane productivity companies and consultants to implement and assess proposed changes to sugarcane farming systems,
- Establish one on-farm commercial paddock in at least three of the Mill areas where all components of the new farming system (permanent beds established at spacings to enable controlled traffic adoption, fallow cropping, min./zero tillage planting of cane and legumes) were adopted,
- Initiate on-farm R&D programs to develop confidence in the practicality and benefits of systems change and facilitate adoption,
- Assist landowners with the growing of complementary crops outside their experience and assess their financial performance,
- Gross margins for complementary crops developed and incorporated with marketing information for publication,
- Conduct field days, workshops and bus tours as extension tools for rotational cropping and tillage practices,
- Promote farming systems at external field days,
- Develop a Newsletter to promote activities, YDJV results and ongoing extension activities or provide FC supplement to existing regional newsletters.

Industry Liaison Officers

The Queensland Government (Palaszczuk, 2004) recruited Industry Liaison Officers (ILO) as local 'sugar industry champions' in each district. ILOs had networks in their local sugar industry and worked with the FutureCane teams to promote FutureCane activities, gather local information on sugar industry needs. They also helped to identify opportunities for collaboration between different sectors in the industry and organised venues and resources for FutureCane activities.

Local Management Groups

Local Management Groups (LMG) were set up in each of the four cane growing areas: Far North; Herbert/Burdekin; Mackay; South East Queensland. Staff involved in the LMGs included Business Development Officers, QDPI&F agronomists, BSES extension officers, Industry Liaison Officers, Agricultural Economists, Financial Counselors and Trade and Market Officers. The LMGs developed work plans for each area in conjunction with local industry and overviewed their implementation.

Results and discussion

FutureCane officially commenced in July 2004, although many staff started in November 2004 and the last staff member did not commence until May 2005. While this late start meant there were missed opportunities during the first year, workshops were held throughout the State in conjunction with the YDJV team to promote a common understanding of the improved farming system. This saw a development of momentum for the project that encouraged farmers to look at new farming systems.

During the first year, there were some concerns that increasing the area fallowed may decrease overall production from a mill area and therefore threaten mill economic viability. These fears were largely allayed by developing a key message that 'Profitability will be followed by Production'.

In the long run, improving the profitability of the cane growing enterprise by growing cash break crops in the fallow should make the cane growing business more sustainable and reduce the losses from land not growing cane.

These concerns expressed early in the project highlighted the need for the group to be able to clearly demonstrate the impact of changing farming systems on farm profitability. From a farmers viewpoint (Loeskow *et al.*, 2006), the major impact of some of the components of the improved farming system was to reduce costs. Minimal tillage reduced fuel costs, legume break crops reduced nitrogen fertiliser usage and good fallow management reduced weed control costs for the sugarcane enterprise. To demonstrate the impact of these changes on farm gross margins and profitability, the Farm Economic Analysis Tool (FEAT) was developed by FutureCane economists (Stewart and Cameron, 2006).

FEAT was developed primarily to compare the economic performance of different cane farming systems. The tool does this by calculating several different economic performance indicators used in the agricultural sectors, e.g. gross margins, break-even yields and prices etc, and presents them in a whole-of-farm context. The focus of the tool is to look at Return on Investment when minor or major changes are made to the farming system.

FEAT was used to conduct a number of Case Studies (e.g. Halpin *et al.*, 2008) and was also used extensively by FutureCane extension officers and agronomists. Copies were also made available directly to growers wishing to compare a number of farming system options using their own data. Much of the success of the FutureCane project was due to the widespread availability of FEAT, which allowed demonstrations of the savings that accrued from reduced tillage and the overall value of the increased income from grain legume break crops. This capacity was especially powerful when combined with 'personalised' data relating to farms within an individual growing area, or in many cases with data from the investigator's own property.

Cane growers traditionally have made decisions based on production rather than profitability. When they saw little change in production as a result of the change in farming system, they tended to be reluctant to adopt it, not realising that the biggest impact was in profitability not production. FEAT overcame this problem.

Mid-term review

A mid-term review of the FutureCane project was commissioned to assess the performance of the project and outline areas for improvement and modification. The review was carried out in May 2006 and reported that 'FutureCane is performing well, delivering benefits to the industry and challenging those who are listening. It would also be fair to say it is doing remarkably so, given its very short life.'

The reviewers also noted that 'Its success is related to: (1) good leadership and management; (2) high quality staff; (3) a good working relationship between the participating agencies; (4) clear dovetailing of FutureCane with other industry programs; (5) a robust information base; (6) useful tools; (7) diverse and appropriate methods; (8) a main focus on industry progressives'.

The mid-term review suggested a number of changes to improve or modify the project, with the FutureCane Steering Committee endorsing a series of actions to facilitate change implementation. Specific recommendations were as follows -

- Improved consultation with all stakeholders at the levels of Steering Committee and regions.
- Facilitate reviews of the report by all regional groups so they may identify and commit to ways of improvement most suitable to their circumstances.
- Explore the feasibility and desirability of aggregation of the BSES part-time contributions into full-time commitment.
- Development of a strategic communications program to ensure all influentials are well aware of FutureCane, its bases and objectives, to widen awareness and encourage change by all growers, and record learnings of the project to date so that successors may be supported through them.

- Continue to support the first tier of innovators so they may implement the changes, and co-opt their support in reaching out to the growers who are sensitised but not yet changing.
- Consider establishment of, for example, awards for profitability and innovation, funded by industry or allied commercial interests.
- Continue to challenge growers by use of activities which take them out of their own circumstances, and expose them to relevant things outside their business, such as through bus tours to other areas and other industries.
- Look for and use all available ‘hooks’ to attract attention of growers, such as succession planning, the lifestyle benefits available from adoption of FutureCane recommendations, high fuel costs, water scarcity etc.
- Capitalise on interest in farm systems to introduce business analysis and management, and vice versa.
- Work with industry agencies to undertake an industry-wide benchmarking exercise to underpin and encourage ongoing beneficial change.
- Help build the capacity of all service providers so they may encourage and assist growers to change.
- Design and offer programs of activities for specific groups within the grower segment e.g. new and younger growers, women, large farms etc.
- Continue development and promotion of FEAT.
- Strengthen FutureCane’s attention to natural resource management and forge collaborative arrangements and activities with relevant agencies and groups.
- Undertake a risk analysis of the supply chains of the various complementary crops suitable as break crops, so to identify gaps and plan for their remediation.
- Review and redirect the activities of the ILOs to gain higher value through better matching of their skills to industry needs.
- Ensure all staff were fully familiar with the YDJV results as they continue to build through ongoing research, including FutureCane trials.
- Consider providing staff with the opportunity to enhance their capabilities in facilitation of change management and capacity building.
- Manage the risks associated with the identified threats to the project.

Farming system change

The level of adoption of new farming system principles in the various cane growing regions was monitored throughout the project. The area of fallow legumes, controlled traffic and zonal tillage in 2007–08 compared to 2003–04 is shown in Table 1.

Table 1—Change in farming practice (hectares) from 2003 to 2008.

Farming practice	Year	Wet Tropics	Herbert	Burdekin	Central	Southern
Fallow legumes	2003–04	1850	300	1100	500	550
	2007–08	2365	510	400	900	3250
Controlled traffic	2003–04	300	100	2400	2000	4400
	2007–08	6033	1100	3300	12 700	6200
Zonal tillage	2003–04	1000	1000	520	500	3409
	2007–08	2300	4200	7000	1500	8500

The area of fallow legumes increased most markedly in southern Queensland, due largely to the development of soybean and peanuts as grain crops. This development was aided by the initiation of projects such as Grain in Cane (Bundaberg CANEGROWERS) and the involvement of local agribusinesses, as well as through the extension activities of FutureCane.

The negative result in the Burdekin was largely a seasonal effect due to wet weather and a late finish to crushing in 2007, which left little opportunity to establish break crops before the onset of the wet season.

The area of 'controlled traffic' was measured by quantifying the area planted to row widths of 1.8 m or greater, row spacings that effectively matched the wheel spacings of harvesters and haulouts.

While some of this area was established without the benefits of GPS guidance, most of it was and, during the period, a system of base stations necessary for differential GPS was set up in all areas.

The subsequent adoption of auto-steer using GPS guidance on planters, tractors, harvesters and haulouts is still continuing.

The area of zonal tillage (reduced tillage) increased in all areas. While central Queensland appears to be behind in terms of growth in zonal tillage, this changed significantly in 2008–09 with large areas planted using reduced tillage system.

Arrival of sugarcane smut—a further catalyst for change

The sugarcane smut disease was detected near Childers in June 2006 and by November 2006 had also been found in Mackay. The economic impact of sugarcane smut on the Queensland sugar industry was assessed and ways to facilitate economic recovery were identified in a report tabled in Parliament in February 2007 (Watson, 2007).

Recommendation 6 of this report stated that the FutureCane FEAT model should be made available to all growers and be backed by sufficient technical support to implement this decision tool effectively. The FEAT model was also able to assist in the broader on-farm agronomic decisions required to maintain economic viability as growers transitioned to resistant varieties.

The recommendations from the Watson Report saw the FutureCane project superseded by the Sugarcane Smut Economic Recovery Strategy in July 2007. Skills and resources developed as part of FutureCane were redirected to help growers prepare for and recover from the smut outbreak (Gillard, 2008). The Queensland Government committed \$3 million over three years to:

- Support access to, and training in, economic decision-making tools such as FEAT to assist in complex decision making required to change over to smut-resistant varieties over the next few seasons
- Extension of the best farming systems practices to assist farmers in maximising soil health, minimising input costs and managing the transition to smut-resistant varieties.

Reasons for FutureCane's success

The principal reasons for success of the FutureCane project were:

- Staff from the respective agencies working together to deliver quality advice on both the break crop and sugarcane components of the improved farming system. QDPI&F agronomists brought knowledge of break crops such as soybean and peanuts to the project and BSES Limited extension officers contributed knowledge of cane growing. Knowledge was shared at regular regional and State-wide meetings and through cooperation in the delivery of extension activities.

- The guidance of the YDJV team was also a key component in the correct interpretation of research results as they came to hand throughout the project. The inclusion of YDJV representatives on the FutureCane Management Committee was the key to the close working relationship that developed.
- The development of the FEAT computer program to demonstrate the impact of farming system changes on farm profitability. Many of the benefits of the improved farming system were cost savings with sometimes little overall increase in farm sugarcane production and were therefore difficult to demonstrate. FEAT gave extension officers and growers a tool to explore options.
- The inclusion of Industry Liaison Officers in local management groups gave the local industry more ownership of the project. The ILOs used their local networks to encourage more growers to attend FutureCane extension activities.

What could have been done better?

The mid-term review highlighted some areas where the project could have been better implemented, with the key areas involving relationships with local industry in the early stages of the project. For example, some local sugar industry groups felt that they had little input into the direction of the FutureCane program in their area.

Some millers felt that the emphasis on break crops meant there would be less sugarcane to crush. Some CANEGROWER groups felt that agencies external to the sugar industry (i.e. QDPI&F) were attempting to gain the kudos for work already commenced by the industry in some regions.

More involvement of local industry in the formative stages of the project would have given local industry a clearer view of the objectives of FutureCane and the project would have received local support much sooner. As it was, the support was earned through the successes of the project.

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**FUTURECANE—UNE INITIATIVE MAJEURE DE VULGARISATION
QUI A ACCELERE L'ADOPTION DES NOUVEAUX SYSTEMES
DE PRATIQUES CULTURALES AU QUEENSLAND**

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**MOTS-CLÉS: FutureCane, Vulgarisation, Économie,
Pratiques Culturelles, Baisse De Rendement.**

Résumé

EN 2004, le Département des Industries Primaires et des Pêcheries du Queensland (QDPI & F) a collaboré avec le BSES Limited (BSES) pour lancer une initiative majeure de vulgarisation appelée FutureCane. FutureCane est un programme de vulgarisation de trois ans concernant tout le Queensland avec les objectifs de promouvoir une industrie sucrière durable et compétitive pour faciliter le changement et d'aider les planteurs de canne à avoir une meilleure vision de l'avenir. Des comités de direction et de gestion nationales et régionales ont été mis en place pour avoir une vue d'ensemble et mettre en œuvre le programme. L'objectif principal dans les champs était d'accélérer l'adoption des nouvelles pratiques culturelles identifiées par le comité de Recherche sur la Baisse de Rendements (YDJV), incluant les différentes combinaisons de cultures de légumineuses, le contrôle du trafic et la réduction du travail du sol, en mettant l'accent sur la rentabilité. QDPI & F s'est occupée de l'économie et de l'agronomie des autres cultures telles que le soja, tandis que BSES a fourni l'expertise sur la culture de la canne à sucre. Les méthodes de vulgarisation employées comprenaient des démonstrations sur les fermes, des études de cas individuels et des analyses économiques globales. Des enquêtes de base ont été menées pour déterminer la pratique actuelle et le progrès a été revu chaque année. Bien que l'adoption du nouveau système a été relativement lente au départ, le développement d'un instrument d'évaluation économique pour les fermes (FEAT) a accéléré l'adoption en mettant l'accent sur une amélioration de la rentabilité plutôt que sur la productivité. En 2007, d'importantes superficies de canne à sucre ont été cultivées avec le nouveau système à travers toute l'industrie cannière australienne. La superficie sous culture de légumineuses en rotation a augmenté de 4020 ha, le contrôle du trafic a augmenté de 20 133 ha et la superficie replantée avec une réduction du travail du sol a augmenté de 17 071 ha. Le programme a démontré que le travail de collaboration entrepris sur une base à l'échelle industrielle a donné des bons résultats. Ce document décrit la structure de gestion du programme FutureCane en se concentrant sur le module des nouveaux systèmes agricoles et le changement qui s'est produit dans l'industrie australienne de la canne à sucre pendant la période 2004 à 2008.

FUTURECANE—UNA INICIATIVA DE EXTENSIÓN MAYOR EN QUEENSLAND QUE ACELERÓ LA ADOPCIÓN DE SISTEMAS DE MANEJO DE CULTIVO MEJORADOS

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Resumen

EN 2004, el Departamento de Industrias Primarias y de Pesca de Queensland (QDPI&F por sus siglas en inglés) colaboró con BSES Limited (BSES) para lanzar una iniciativa de gran extensión denominada FutureCane. FutureCane fue un programa de extensión estatal de tres años que se realizó con el objetivo de promover un creciente sector cañero que fuera sostenible y competitivo, facilitando el cambio en la industria azucarera y apoyando a los miembros de este pujante sector para que visualizaran una imagen más clara del futuro. Se establecieron comités estatales y regionales de dirección y manejo para dirigir la implementación del programa. El enfoque principal en campo fue la adopción acelerada de algunos componentes de los nuevos sistemas de cultivo identificados por el Esfuerzo Conjunto de Caída de la Productividad (Yield Decline Joint Venture, YDJV, en inglés) incluyendo varias combinaciones de cultivos de leguminosas de rotación o intermedios secuenciados entre cosechas, control de tráfico y prácticas culturales reducidas, con énfasis en la rentabilidad. QDPI&F proporcionó el expertaje en economía y agronomía de cultivos intermedios como la soya, mientras el BSES proporcionó su experiencia en el cultivo de la caña. Algunos de los métodos de extensión que se emplearon incluyeron: demostración en los campos, estudios de caso de fincas y análisis económicos completos de las mismas. Se realizaron encuestas de línea base, donde se determinaron las prácticas originales y se llevó un monitoreo del progreso anual. Aunque la respuesta fue muy lenta al principio, el desarrollo de una herramienta de monitoreo del campo (Farm Economic Assessment Tool, FEAT en inglés) apresuró la adopción al hacer énfasis en el enfoque de mejorar la rentabilidad en lugar de la productividad. Para 2007, se estaban cultivando áreas significativas de caña bajo el nuevo sistema de cultivo en toda la agroindustria australiana. El área con leguminosas se incrementó en 4020 ha, el control de tráfico se incrementó en 20133 ha y el área de prácticas culturales reducidas en caña se incrementó por 17071 ha. El programa demostró el valor de trabajar en colaboración a nivel de toda la industria para obtener los resultados. Este trabajo describe la estructura del manejo del programa FutureCane enfocándose en el módulo de Sistemas de Cultivo y el cambio de práctica que ocurrió en la agroindustria australiana en el período entre 2004 y 2008.