PROJECT: ENHANCING THE VIABILITY AND COMPETITIVENESS OF CARIBBEAN SUGAR INDUSTRIES

CFC/ISO/24

Project Executing Agency: Sugar Industry Research Institute of the Sugar Industry Authority of Jamaica

Collaborating Agency: Caroni Ltd, Trinidad & Tobago

Supervisory Body: International Sugar Organisation

Starting Date: January 2004

Completion Date: December 2006 (Extended to June 2008)

Financing:

Total Project Cost: US$2.538 million

CFC Financing: Grant of US$1.5 million

Counterpart Financing: US$1.038 (in kind)

Project Completion Report

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Ocho Rios

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PROJECT OVERVIEW

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BACKGROUND & CONTEXT

The idea of a sugar cane project in Jamaica, funded by the Common Fund for Commodities (CFC), was born out of the author's participation in a "Roundtable Discussion on Commodity Development in Latin America and the Caribbean Region," held in Guatemala, in 2000. That invitation to Jamaica's Sugar Industry would no doubt have been influenced by the fact that the meeting would include a "Symposium on Challenges and Opportunities for Organic Sugar." At that time, with Jamaica having already taken tentative steps in the production of organic sugar, perhaps the more important outcome of the meeting was the creation of awareness of what was then a relatively obscure organisation to sugar interests, the CFC, and its role in financing commodity related projects. This knowledge in fact came precisely at a time when funding was being sought to conduct a thorough investigation into the phenomenon of yield decline in sugar cane then preoccupying scientists in Jamaica, the Caribbean and indeed the global cane growing community.

Immediately on returning home, outlines for a project to conduct studies on Yield Decline were drafted and sent to the CFC for assessment. The response from the Fund was that it was not in favour of financing purely research projects. Work was then done to modify the proposal to meet the Fund's criteria:

1. A project should not be based purely on research
2. It should be geared at benefiting small holders (as against a single large farm)
3. It should foster rural development
4. It should be environmentally sustainable
5. Findings should be of relevance to a region or group of countries rather than to an individual entity or country
6. It should meet the approval of the relevant international commodity organization, in this case, the International Sugar Organization

In close collaboration with the CFC Project Manager, the project was redrafted to reflect those concerns. It was decided to widen participation in the proposed project to include other members of the Sugar Association of the Caribbean (Barbados, Belize, Guyana, St Kitts, and Trinidad & Tobago). However, it was then discovered that, of these countries, only Jamaica and Trinidad were Members of the CFC. Accordingly, the project was fashioned around Jamaica primarily, with Trinidad as Collaborating Agency. Others of the SAC group, it was envisaged, would benefit from result dissemination. At the same time the project's scope was widened to "Enhancing the viability and competitiveness of Caribbean Sugar Industries" with a study on Yield Decline being just one of its components.

In its final configuration, the project's aim was to enhance the competitiveness of the industries by way of an increase in income to farmers (especially smallholders) through the use of improved varieties, improved agronomic practices and cost reduction strategies.

Funding

Overall cost of the project was budgeted at US$2.538 million of which $1.5 million would be provided by the CFC in the form of a grant. The remainder of $1.038 million would be counterpart funding, primarily in the form of local technical and operating expenses.

Project Agreement

A project agreement was approved by CFC's Consultative Committee in January and ratified by the Board in April, 2003. In giving its approval, the Board stipulated that 15% of the funds should go towards efforts at Crop Diversification. This

component was tacked on to that to do with investigations on Yield Decline, which already involved use of alternate crops in rotation trials with sugar cane.

On November 21, 2003, the formal Inception Meeting between the CFC, ISO, SIRI and the Sugar Industry Authority (SIA) was held in Jamaica. Ms Eltha Brown represented the CFC and Mr Lindsay Jolly, the ISO. SIRI's team comprised various members of staff who would take responsibility for different aspects of the project. Ambassador Derrick Heaven represented the SIA. Work Plans under the Project were presented and discussed and answers provided to questions pertaining to various aspects. Certain recommendations were put forward by SIRI for reallocation of funds to conduct the various activities and these were later formally presented to and approved by the CFC. The first deposit of US$120,000 was received in January 2004, permitting the start up of work.

Trinidad & Tobago

By the end of 2003 at the time of signing of a Project Agreement however, Caroni Ltd of Trinidad and Tobago, the Collaborating Institution, was undergoing radical restructuring. Personnel and support services critical to that country's participation were lost and in the end Trinidad never got involved in the project.

This project was eventually launched in January 2004 against the backdrop of concerns within sugar producing countries within the English speaking Caribbean about the future of the industry. Looming on the horizon were the twin prospects that:

(1) a challenge before the World Trade Organisation (WTO) to the legality of preferential sugar markets in Europe for ACP sugar producers (under the Lome/Cotonou agreements) may succeed and

(2) proposals emanating within the EU itself for promulgation of the Everything But Arms (EBA) treaty would see the opening up of access to the EU market for Special Preferential Sugars (SPS) to Lesser Developing Countries (LDC), to the detriment of current ACP producers.

Since then, the WTO has ruled against the maintenance of preferential markets and the EU has responded by introducing a stepwise reduction in sugar price resulting in price being lowered by 36% between 2006 and 2010, in keeping with measures to its own beet producers, while maintaining the quota under the protocol. Then in September 2007 the EU denounced the treaty under which ACP countries have been selling sugar to Europe and this becomes effective in October 2009.

The net result has been that the project was executed in an atmosphere of gloom. In short order, St Kitts, a partner within the Sugar Association of the Caribbean, closed its one remaining sugar factory while Trinidad divested state-owned land to private interests and dismantled the organisational structure of Caroni Ltd accounting for the lack of participation by the latter.

Diversification

This trend towards diversification was largely in response to developments in the EU market. Other Governments within the Caribbean region were also intensifying efforts to divest the respective industries, where state owned, to private ownership and sought to encourage development of renewable energy production, in the form of ethanol and/or electricity. In the case of Jamaica, these efforts are ongoing. The Jamaican Government has also put forward the possibility of further rationalisation by way of factory closures. Talk of this sowed seeds of uncertainty in the minds of cane growers resulting in reluctance to properly invest in the enterprise as, traditionally, wherever factories close, there tends to be a falloff in production as cane supply becomes further removed from the receiving factories. In Jamaica transportation costs, based on imported oil, tend to be prohibitive as mountainous terrain presents formidable barriers to road transportation between cane growing areas.

History

Jamaica's sugar industry, one of the oldest in the Western Hemisphere, began with sugar cane being brought to the island by Columbus in 1494. Initially, under Spanish occupation, sugar was produced largely for local consumption. After the British took possession of the island in 1655 and with development of the trans-Atlantic slave trade to provide labour, exports rapidly developed so that by 1805, when just over 100 000 tonnes were produced, Jamaica had become the world's largest exporter of sugar. In a period during the 18th Century when Jamaica became regarded as the "Jewel in the British Crown" Jamaica exported 18% of the World's sugar supply (Segmental Info System, Jamaica Guide). However, by the time production peaked at just over half a million tonnes in 1965, major cane growing nations such as Cuba, Australia, Brazil,

India, Colombia, Thailand, USA etc had emerged relegating Jamaica's production to relative insignificance.

At its peak, the Jamaican industry produced sugar from 18 factories and cane occupied some 60 000 ha. Today (2007) the number of factories is down to seven and cane is grown on just about 35 000 ha.

From a position of near total dominance of the Jamaican economy during the 19th Century, sugar has now declined to approximately 3% of Gross Domestic Product as it has been eclipsed by other sectors such as tourism and other services, the distributive trade and mining (bauxite mainly).

Falling Production

With Jamaica becoming an increasingly high cost producer, and sugar being no longer the prized commodity of old, production has been falling steadily since the 1960's. The industry has suffered from a lack of investment leading to factories operating on what is now, in some cases, obsolete machinery. Increased input costs have tended to erode profitability. There has been failure (and in some instances inability) to adequately maintain, replace or upgrade field machinery and transport equipment so that operations become more and more inefficient.

With dwindling profitability there has been reduced attention to agronomy leading to lower yields. Consequently, cane yield has fallen from roughly 80 t/ha in the decade of the 1960's to 75 t/ha in the 1970's, 65 in the 1980's to currently approximately 60 tc/ha. Much of the falling standards in agronomy result from a lack of timeliness of operations. Growers may apply fertilizer but this is often at lower than recommended rates and months after the recommended time of application. Weed control is often neglected or carried out long after the critical time thus allowing cane growth suppression. Drains are often not adequately maintained resulting in waterlogged conditions and suppression of growth. Irrigation cycles which used to number 8-10 per crop in the dry zone, now rarely exceed 3 per crop – even on major estates. Inter-row cultivation, once standard practice, is almost a forgotten practice.

The industry also suffers a measure of productivity loss associated with the change from green to burnt cane harvesting in the 1960's (a practice introduced to facilitate mechanical cane loading). Soils therefore no longer enjoy the benefits of moisture retention, return of organic matter and weed suppression associated with trash blanketing. The replanting cycle, traditionally once every six years, is now closer to 10 or more years for most of the industry. The boost in productivity usually associated with replanting is therefore substantially lost.

Even as industry yields have declined, there are still remaining pockets of excellence. Worthy park and Cambria farms in St Catherine perhaps enjoy yields unprecedented in their histories and frequently top the tables at or above 90 tc/ha.

Reduced cane area

The economic downturn manifests itself in more and more farms going out of production and becoming idle. Area reaped has slipped from some 60,000 in the 1960's to over 35,800 ha in 2000, to approximately 30,000 in 2007, Table 1. Sugar output has correspondingly dropped from approximately 500,000 t, to 216,869 and just over 163, 670 tonnes in 2007 over the same period (reaching a low of 124,571 t in 2005, following Hurricane Ivan in 2004).

Hurricanes

A recent spate of hurricanes has only exacerbated the problems. Hurricane Ivan struck in 2004 and was followed by Dennis, Emily and Wilma in 2005 and then Dean in 2007. Impact on the industry has been variable but cumulatively the effect has been demoralising. In addition to crop damage, these have delivered telling blows to infrastructure (factory and farm buildings, electricity transmission lines, pumping and irrigation facilities, homes etc) and morale.

Uncertainty

Difficult to quantify, but of undeniable significance, is the level of uncertainty hovering over the industry for the last several decades. Each time there is talk of factory closure; growers withhold or delay use of inputs. Attempts at maintenance are at best half hearted. Expectations of factory divestment have similar consequences as Companies adopt a deliberate strategy of spending only in essential areas. There is also a strong negative psychological impact from developments in the international arena such as the loss of preferential markets, the promised reduction in sugar price on the EU market and more recently the denouncement of the treaty under which sugar is sold to Europe etc. All such developments discourage investment and effort in cane production.

Table 1: Recent output of the Jamaica Sugar Industry			
Year	Area reaped (ha)	Cane Milled (t)	96° Sugar Produced (t)
2000	35,824	2,038,138	216,869
2001	35,002	2,243,137	204,968
2002	33,611	1,988,519	175,252
2003	30,581	1,789,654	153,157
2004	31,234	2,007,404	183,868
2005	27,583	1,389,447	124,571
2006	29,973	1,764,292	147,315
2007	35,099	2,017,631	164,387

PROJECT IMPLEMENTATION

The Sugar Industry Research Institute, which spearheaded the Jamaican phase of the project, was the designated Project Executing Agency. The project was divided into 6 components each the responsibility of specific members of the Institute's staff who then functioned as project leaders. While only these project leaders may be mentioned in this report, it should be noted that the overall result is the collaborative effort of almost the entire Institute's staff from various subject area specialists, laboratory personnel to administrative officers. However, since the project's emphasis was on growers on small holdings, special mention must be made of the Extension Department which had the responsibility to identify and sensitise various potential participants in the various cane growing regions. Once the grower was selected, the Extension Officer often found himself having to organise and supervise diverse operations including land preparation, to procurement and supplying of inputs, to the monitoring and harvesting of plots.

Responsibility for the various components was distributed among the Institute's staff as follows:

(I) Establishment of nurseries of improved varieties of seed cane – Component leader: Malcolm Bennett-Easy

(II) Farmer participatory evaluation of improved cane varieties – Component leader: Malcolm Bennett-Easy

(III) Farmer participatory training in improved agronomic practices – Component leader: Derek Little

(IV) Pilot testing of a pivot centre irrigation systems – Component leader: Lancelot White

(V) Applied research and development into factors affecting yield decline – Component leader: Uriel Green

(VI) Financial and economic evaluation of optimum farm modules for viability – Component leader: Cecil Woolery

Each project leader was given the latitude to devise and execute his component within the parameters set out in the project document. With the emphasis on the smallholder, attempts were made to involve as wide a range of growers and in as many cane growing communities, Fig.1, as possible. An important criterion for eligibility was that the grower should display a detectable commitment to being a cane farmer and have a track record of being cooperative and following instructions from SIRI's Extension Service.

Certain components of the project, such as crop diversification, demanded expertise in areas in which the Institute had little hands-on experience. This was addressed by collaborating with various subject area specialists in the Ministry of Agriculture. That agency also was instrumental, in some instances, in providing seed of alternate crops, and in pointing to probable sources at other times. In the case of Sea Island cotton, seen as a potential viable substitute for, or as a feasible crop in rotation with sugar cane, an invaluable collaborative relationship with the Jamaica Agricultural Development Foundation (JADF) was developed as also with an entomologist from the University of the West Indies (UWI) who was doing work in control of cotton pests. Similarly, the UWI provided assistance in the area of soil nematode analyses. Meanwhile, SIRI's own soil and foliar diagnostic services were called on to do all the routine soil and foliar diagnoses for nutrition control. In addition, what is known as a Reduced Tillage Machine (RTM), recently developed by SIRI engineers was replicated under the project. This machine was demonstrated as a technological device for radically reducing land preparation cost without adverse effect on quality of preparation. SIRI also provided the personnel, a tractor and the tube-laying device used in establishing various drip irrigation plots.

Fig. 1: Sweet Potato in Crop Rotation with Sugar Cane, Westmoreland, Jamaica

Fig 2 Carrot in Crop Rotation with Sugar Cane, Westmoreland, Jamaica

Fig. 3: Red Kidney Beans in Crop Rotation with Sugar Cane, Westmoreland Jamaica

Introduction of new irrigation technology (centre pivot) required tapping into water supplies and modification of structures under the control of the National Irrigation Commission (NIC). This required early and continual consultation and cooperation to achieve a smooth interfacing. At times this proved particularly challenging as a number of participating farmers had outstanding debt with that institution.

RESULTS & DISCUSSIONS

Constraints

By law, all contracts valued above J$4 million (US$1 = J$70), entered into by statutory bodies, such as SIRI, must be approved by Government's Contracts Committee. This proved to be a time consuming process which resulted in the contract for supplying and installing the centre pivot irrigation scheme being awarded so late, a whole growing season of potential use was lost. Further delays were caused by the passage of a hurricane shortly after installation had begun.

Of all components, that entailing use of alternate crops proved most challenging Fig 1, 2 & 3. Unfortunately, Sea Island cotton seed supplied for planting in the first two years was of low viability resulting in poor germination and unacceptable field populations. In addition, several other alternate crop plots failed and were abandoned through lack of timely basic care from farmers too timid (it seemed) to act on their own initiatives. Crop failures also resulted from flooding or wind damage during the period of repeated hurricane strikes. Growers tended to display a degree of helplessness and be dependent on the PEA to carry out the most basic functions restricting themselves to only minimal involvement. Along the way, the PEA was forced to shed many of these growers as they showed little capacity to adapt. Nonetheless, the few outstanding examples of successful adaptation provided encouragement that diversification may indeed be profitably achieved. However, many growers, having spent their whole lives in sugar cane, were found to be not readily adaptable to provide the much greater level of dedication and attention to detail required for successful alternate crop production.

Uncertainty

Meanwhile, the project was conducted during a phase of active negotiation for divestment of the Government-owned estates to private interests.

These estates then displayed what may have been interpreted as hesitance towards major development which was easily seen by farmers. This created a wait-and-see attitude among farmers that was not conducive to focussed effort. The PEA often had to step in to rescue plots which were being neglected along with the rest of the farm. To operate within such an atmosphere of farmer uncertainty proved particularly difficult. In some instances, farm abandonment by growers actually set back progress as some originally selected for observation (as in the Farm Viability study – Component 6) went out of production thus interrupting the continuity essential for a meaningful data collection and analysis.

Grower Involvement

After the first year it was found necessary to add another important selection criterion – the participating farmer must demonstrate a willingness to commit some of his own resources to the project. The latter came about as it was observed that some growers were prepared to stand back and depend on the project team to carry out every single operation. It was apparent that such growers were unlikely to gain much from the exercise.

Benefits

The overall goal of this project of achieving a greater contribution from the sugar industry to the economy may not have been met because of unforeseen developments. However, despite the many challenges, the overall impact of the project was positive. The project has resulted in distribution of new improved sugar cane cultivars across the industry in an unprecedented fashion, especially given the climate of uncertainty and indecision. The deliberate targeting of the smallholder allowed participants to enjoy a level of earnings that would have been otherwise improbable and kept afloat farms that perhaps would have succumbed to negative economic forces. At the same time the introduction of modern irrigation systems will have lasting impact, not only for those directly benefiting but to the many that would have been exposed through the process of dissemination of information. Similarly, new technologies in reduced tillage when fully implemented should be a less costly alternative in land preparation. Meanwhile, the walk-behind tractors allow for a degree of mechanisation in areas uneconomic or just simply inaccessible to conventional tractors.

Sustainability

Of major concern was the possibility that the modern centre pivot irrigation system installed would fall into disrepair shortly after the project ended for lack of maintenance. This is a large investment in a 300 meter long machine on wheels with electrical parts, hoses etc which in time will go bad. There are monthly electricity and water bills that must be paid. Its day to day running also comes at some cost. It was necessary to ensure that after the Funds support ceased the system would continue to provide service to the growers.

The approach taken was to form growers involved into a Water User Group to manage the system. The farmers were thus guided into electing an Executive from among themselves, with the SIRI Area Agronomist providing an “oversight” role. Growers agreed to withdrawal of a cess from the value of canes delivered from the project area by the receiving factory. This money was then deposited directly to a bank account and may only be withdrawn by agreement by the group for purposes of operation and maintenance, payment of electricity and water bills. The cess will be subject to review from time to time and adjusted if necessary. This device has resulted in the accumulation of a reasonable financial cushion to carry on operations after the project ends and if maintained should ensure continuity into the foreseeable future.

Lessons learned

A significant constraint impinging on the project and on the performance of the wider industry was the approximate doubling of oil prices from some US$40/barrel in 2004 to over $90 in 2007. Coupled with this was a decline in the value of the Jamaican dollar against its US counterpart from J$60 to the US $ in 2004 to over J$70 in 2007. Together, this triggered a series of increases in input prices, notably in the areas of transportation, fertilizer and herbicides. In the face of price increases (and compounded by hurricanes and droughts) the industry tended to reduce its use of inputs resulting in a failure to achieve the productivity gains which were a goal of this project.

CONCLUSION

The CFC project began against the backdrop of major estates having greater access to modern technology. Growers on small holdings often lagged behind. Major estates tended to be the ones which first received new improved sugar cane varieties and had a structured nursery programme to facilitate rapid propagation. With economic life of a new variety extending over some 15 years on average, by the time it got into the hands of smallholders it was often on the declining end of the performance curve. This project facilitated the new varieties getting in the possession of farmers and estates

Fig. 4: CFC Sugar Cane Variety Nursery plot, Westmoreland, Jamaica

Fig. 5: CFC Centre Pivot irrigating sugar cane, Content, Clarendon, Jamaica

simultaneously. The farmers' preparedness to plant dibbled tops, as against whole stalks, allowed for far more efficient use of planting material than would normally be achieved on estates. As it turned out, the timing of this project was fortuitous in that it permitted development of a momentum in variety propagation and distribution just when activities on Government run estates became curtailed. By the second year of the project the major repository of good quality seed cane of newer varieties in the industry was on farmers' holdings.

Likewise, a number of estates had been adopting the highly efficient centre pivot and drip irrigation systems but these technologies, because they involved heavy capital investment, were largely out of reach and yet to play a part on farmers' holdings. This project succeeded in levelling the playing field somewhat. By grouping contiguous farms to achieve an economy of scale, selected growers have been able to benefit from the greater efficiencies associated with a centre pivot irrigation scheme.

CFC Support

From the time of conceptualising, during the drafting process and throughout its execution the project received enthusiastic and invaluable support from the CFC through the Project Manager, Miss Eltha Brown. The fund proved to be flexible and willing to modify elements of the project as recommended by the PEA. When the three years had elapsed before vital pieces of equipment was received from overseas suppliers, for instance, the PEA had no trouble in gaining an extension of several months to complete field demonstrations.

ISO Support

In the person of Mr Lindsay Jolly, Economist with the ISO, the PEA found an extremely receptive and helpful partner. His reliable support assisted in smooth progress even when the PEA might have not have always adhered strictly to approved procedure, so long as the overall objective was being met. He clearly saw his role as facilitator rather than stern supervisor.

Local Support

Throughout its execution the project received invaluable support and drew favourable comment from the leadership of the Cane Farmers Association and received local press coverage on the occasion of the Mid-Term Review. With the presence of Miss Eltha Brown, Project manager from the CFC and Mr Lindsay, Jolly, Economist, representing the Supervisory Body, the International Sugar Organisation (ISO) the occasion of the mid-term review was used to conduct the official launch of the centre pivot irrigation scheme at Content in Clarendon. The event was well attended and exposed growers not only to modern irrigation schemes (including centre pivot and drip irrigation) but to other aspects of farming including the dual row planting system and nurseries of new sugar cane cultivars established under the project. ✯