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Agricultural crop diversification in Belize

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Belize has a narrow range of traditional export crops - namely sugarcane, citrus and bananas. The Belizean economy is highly dependent on foreign exchange earnings from sugar. The cutbacks in the US preferential quota and the deterioration in the price for sugar on the international market have resulted in sugar's contribution to export earnings declining steadily from 60% in 1978 to only 43% in 1986. Given the need to diversify Belize's agricultural base, a Commercialization of Alternative Crops Project (CAC) was initiated in June, 1986 by the Ministry of Agriculture and the United States Agency for International Development. The Belize Agri-Business Company (BABCO) is the nonprofit organisation responsible for administering the CAC Project until June, 1990. BABCO's agricultural crop diversification strategy has both export oriented and import substitution components.

Keywords: Agricultural diversification; Sugar; Belize

Sugar and its importance to the economy

The agricultural sector in Belize provides approximately 17% of the Gross Domestic Product (GDP), 30% of its national employment and 70% of all domestic exports. (Tables 1 - 3). The sugar industry plays an important role in the economy. Sugarcane is grown on about 60,000 acres by some 4,400 farmers. The industry alone employs one third of the agricultural labour force and, from 1978 to 1986 contributed 51%, of Belize's domestic exports. Sugar's contribution to export earnings, however, has declined from 60% in 1978 to only 43% in 1986.

On a macro-economic scale, sugar's impact on Belize's balance of trade can be traced to its preferential markets in the European Economic Community (EEC) and the United States (US). Much of the decline in Belize's export earnings due to sugar can be attributed to the cutbacks in the U.S. quota and the deterioration in the worldwide price for sugar. In 1983, approximately 65% of Belize's sugar was sold in preferential markets - 41,200 tons to the EEC and 24,000 tons to the US. Since 1983, the US quota has been cut back from 24,000 tons to 16,200 tons effective December 1, 1985. The U.S. quota was further cutback to 8,600 tons effective December, 1986. The reduction in the US quota alone means approximately 50% of Belizean sugar will be sold in international markets at the prevailing market prices.

On a micro-economic scale, the gradual loss of the US preferential quota along with depressed world market prices forced the Belize Sugar Industry Ltd. to close one of its two sugar factories in June, 1985. Milling capacity was reduced by 20%. Approximately 700 factory workers were laid off. Direct effects on sugarcane farmers have been an increase in their production costs accompanied by a decrease in their revenues. Costs of transporting cane to the remaining factory have increased for some 50% of farmers. The 1986 quota reduction translates at farmer level to an estimated loss of US$0.75 to US$1.00 per ton of cane. The farmers are responding to the cost/price squeeze by reducing agricultural inputs in sugarcane and expanding subsistence plots.

Table 1 Structure of employment by economic sector - 1983/84

Sector	Employment (percent)
Agriculture	30.0
Forestry	0.8
Fishing	1.3
Quarrying	0.2
Manufacturing	10.3
Electricity and Water	1.5
Construction	4.9
Commerce	11.2
Transport	5.0
Banking and Insurance	1.4
Government	15.4
Community and other services	18.0
Total Employment	100.0

Source: Central Statistical Office, Ministry of Economic Development

Table 2 Gross domestic product by industrial origin, for the period 1983 - 1985 (current prices)

Industry/Sector	Value ('000 US $)			Percentage Breakdown		
	1983	1984	1985	1983 (%)	1984 (%)	1985 (%)
Primary						
Agriculture	25,265	27,831	24,384	17.0	17.1	14.9
Forestry and Logging	3,053	3,141	2,833	2.0	1.9	1.7
Fishing	4,959	5,019	5,284	3.3	3.1	3.2
Mining & Quarrying	380	380	380	0.3	0.2	0.2
Subtotal:	33,656	36,370	32,880	22.6	22.3	20.1
Secondary						
Manufacturing	16,409	18,000	17,343	11.0	11.0	10.6
Electricity/water	384	4,754	5,170	0.3	2.9	3.2
Construction	8,335	9,384	9,020	5.6	5.8	5.5
Subtotal:	25,128	32,137	31,532	16.9	19.7	19.3
Tertiary						
Public Administration	18,607	18,667	18,759	12.5	11.4	11.5
Services	74,068	80,370	83,667	49.7	49.3	51.2
Subtotal:	92,675	99,037	102,426	62.2	60.7	62.6
Less imputed banking charges	2,446	4,503	3,323	1.6	2.8	2.0
Gross Domestic Product	149,012	163,041	163,515	100.0	100.0	100.0

Source: Central Statistical Office

Table 3 Belize: Major domestic exports, 1978 - 1986

	1978	1979	1980	1981	1982	1983	1984	1985	1986
TOTAL VALUE									
US M$ - (Current Prices)	55.3	60.8	81.9	74.8	59.8	65.1	71.2	64.4	72.8
PRODUCTS					Percentages				
Traditional agricultural exports (total)	72	68	72	71	72	68	66	61	66
Sugar	60	52	58	57	55	52	46	36	43
Molasses	2	3	2	2	2	1	2	1	1
Citrus products	8	7	8	9	12	11	14	19	16
Bananas	2	6	4	3	3	4	4	5	6
Other agricultural exports (non-traditional crops and livestock products)	na	2	2	2	2	2	na	1	1
Total agricultural exports	72	70	74	73	74	70	66	62	67
Fish products	3	7	5	9	10	11	8	12	7
Timber	2	3	1	2	3	2	1	1	1
Garments	17	18	18	14	11	13	21	24	22
Miscellaneous	6	2	2	2	2	4	4	1	3
Total	100	100	100	100	100	100	100	100	100

Source: Central Statistical Office

With this background, the need for agricultural diversification in Belize has been recognized by the government of Belize and the United States Agency for International Development . The Commercialisation of Alternative Crops (CAC) Project was initiated in June, 1986 and will last four years.

Agricultural crop diversification in Belize

Belize has a narrow range of traditional export crops - sugarcane, citrus and bananas - which comprise 65 % of domestic exports. Non-traditional export crops and livestock only comprise 2 % of the gross domestic exports. Historically, limited national resources have concentrated on these few traditional export crops. Agricultural crop diversification, in the Belize context, specifically refers to commercialisation of existing and non-traditional crops for the export and domestic markets.

The major objective of Belize's diversification strategy is to reduce, not replace, economic dependency on sugar. Previous attempts by different groups have been made to enter export production of vegetables and fruits. Crops that have been tried include cucumbers, squash, watermelon, papayas, hot peppers, okra, tomatoes and cantaloupes. Most attempts have not been successful to date because of a number of institutional and economic constraints.

BABCO's approach has been to start with the market linkage. American packers/shippers were subcontracted to grow selected crops which they marketed and which they thought had potential. These

subcontractors were to provide fieldmen to develop the production technology for these crops. The first phase of work was research and development on the crops. Once the technical package was refined, shipping and marketing trials would be done on semi-commercial acreages. The final phase would be commercialisation. The project focuses on the financial feasibility of the crops.

BABCO's crop diversification strategy has both export oriented and import substitution components. First is diversification into non-traditional export crops (i.e. winter vegetables for the U.S. market, and tropical fruit orchard crops). Second is commercializing grain crops and oilseeds for import substitution (i.e. the domestic livestock and poultry markets).

Constraints to agricultural diversification

There are many constraints to commercializing non-traditional crops in Belize. There is limited infrastructure for processing, packaging and storage for non-traditional crops. Export transportation, especially for perishable foodstuffs, is very unreliable since the volumes of production have not justified regular, timely schedules. Adequate information on production technology for Belizean growing conditions is not fully developed. Similarly, information and expertise on post harvest handling technologies are also not readily available. At present, the costs of production for most Belizean diversified crops evaluated thus far are uncompetitively high, primarily due to the high costs of inputs. Important indirect constraints on the diversification process thus far are the lack of credit for non-traditional crops, and the lack of sufficient market intelligence.

In addition, some government policies have negatively affected incentives for diversifying agriculture. One of these is the failure to implement or enforce restrictions on imports of food products which crowd out the small domestic market. This has been one of the primary reasons discouraging off-season production of vegetables. Another policy is placing ceilings on domestic marketing margins which discourages development of a competitive marketing system for local produce, and may even favour imports over local produce. Another policy with negative impact is that of granting exclusive importing privileges to importers of agricultural inputs which raises costs and decreases the produce's cost-competitiveness. A recent policy aimed at controlling the flow of aliens into the country has affected seriously the agricultural labour supply. Casual workers from Mexico, Guatemala, El Salvador and Honduras have regularly supplemented labour needs in the sugar and citrus industries, for example. Many of the crops being considered and worked with are labour intensive.

BABCO - its role in Agricultural Diversification

The Belize Agri-Business Company (BABCO) is the nonprofit organisation established to administer the production oriented aspect of the CAC Project. BABCO is responsible for generating information on production alternatives to attract entrepreneurs to invest in the export marketing and/or domestic processing of non-traditional commodities. Non-traditional export crops under consideration are winter vegetables for the US market and tropical fruit crops for the US, European and Canadian markets. Import substitution crops are oilseeds and grains. The target is to replace 50% of edible oil and fats imports and to produce enough meal to satisfy the present protein animal feed requirements.

BABCO is conducting all crop production work through on-farm trials to facilitate the transfer of technology from the project to the target group of farmers. These crop trials are managed by farmers following technical recommendations from project personnel. The project provides the capital equipment and agri-chemical inputs required for the trials.

Regarding exportable crops, the first season of on-farm trials were conducted on sweet corn, hot and sweet peppers, snapbean, squash, cucumber, eggplant and cantaloupe for the US winter market. Long term production trials were also initiated on tropical fruits including papayas, pineapples, mangoes, starfruit, passion fruit, lychee and rambutan. Regarding import substitution crops, on-farm trials were done with hybrid corn, hybrid sorghum, soybean, and sesame. A total of thirty-three trials totaling 50 acres were attempted with nineteen cooperating farmers.

Several difficulties were experienced in the first round of trials, mostly related to basic agronomic problems (ie. suitable water availability and quality for irrigation during the dry winter season) and socio-economic considerations (e.g. the labor requirements for many diversified crops peaked during the sugarcane harvesting season, resulting in competition for scarce labor resources).

For the second round of crops for the US winter market, marketing and shipping trials will be done for squash, cucumber and papayas. Research and development will continue on snapbean, pickled cucumber, melons, hot pepper, orchard crops and the grains and oilseeds.

Conclusions

Many of the operational difficulties experienced by BABCO in the first year of diversified crop trials are not uncommon, and have highlighted several important factors. Crop diversification is a multidisciplinary exercise, requiring adequate institutional support as well as appropriate government policies to enable farmers to respond to favorable market opportunities.

The importance of establishing linkages between the producers and the marketer is essential. However, although the market linkage is important, the production technology for the crop is essential. In BABCO, the market links were established. However, the production technology was not satisfactorily developed in the first year of on-farm trials. A successful commercial operation requires adequate crop production and market technology.

Understanding farmer attitudes, their constraints, the farming system and how commercialisation fits into their context are critical considerations for maximizing successful farmer participation. Changing a cropping pattern may also entail changes in the farmer's lifestyle. Moving from a relatively labour extensive crop like sugarcane to labour intensive, high risk crops like vegetables requires long-term attitudinal and socio-economic adjustments by the farmer. The exchange of information on work being done in agricultural diversification in regional countries can facilitate the process by avoiding duplication of efforts and concentrating scarce resources in other aspects.

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