

SUGAR INDUSTRY AUTHORITY

ANNUAL REPORT 2007

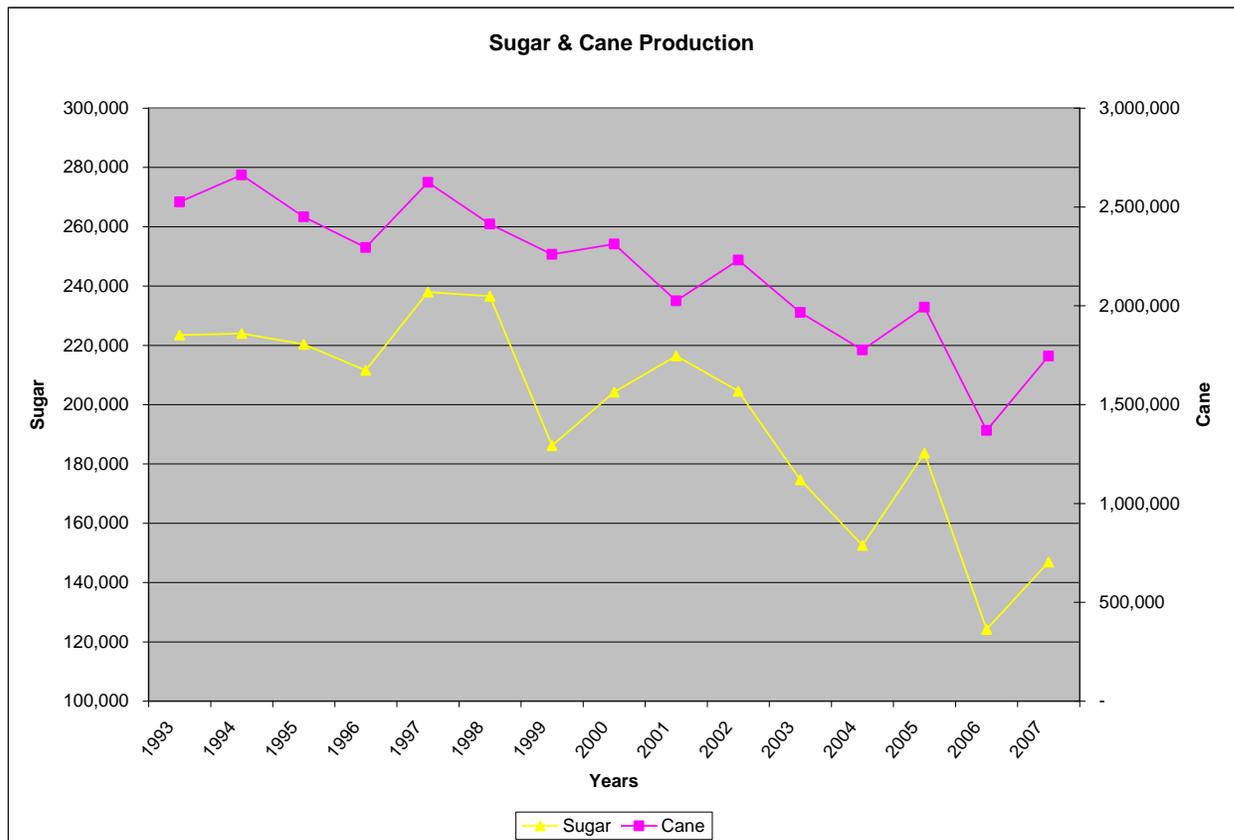
INTRODUCTION

The 2006/2007 crop commenced at Frome Sugar Factory on December 9, 2006 and ended at Long Pond Factory on August 18, 2007. The duration of the crop was 253 days compared with 229 days for the previous crop, an increase of 24 days. The performance of the crop was promising, with significant increases in cane and sugar production, despite the extended rainfall which adversely affected the reaping season.

PRODUCTION

Sugar production for the crop was 164,387 tonnes of 96° sugar, which represents an increase of 12 per cent over the previous year's production of 146,882. (Table 2) The volume of cane crushed, excluding cane to distilleries, was 1,968,009 tonnes, 13 per cent more than the 1,745,286 tonnes produced in the previous year (Table 1).

Chart 1

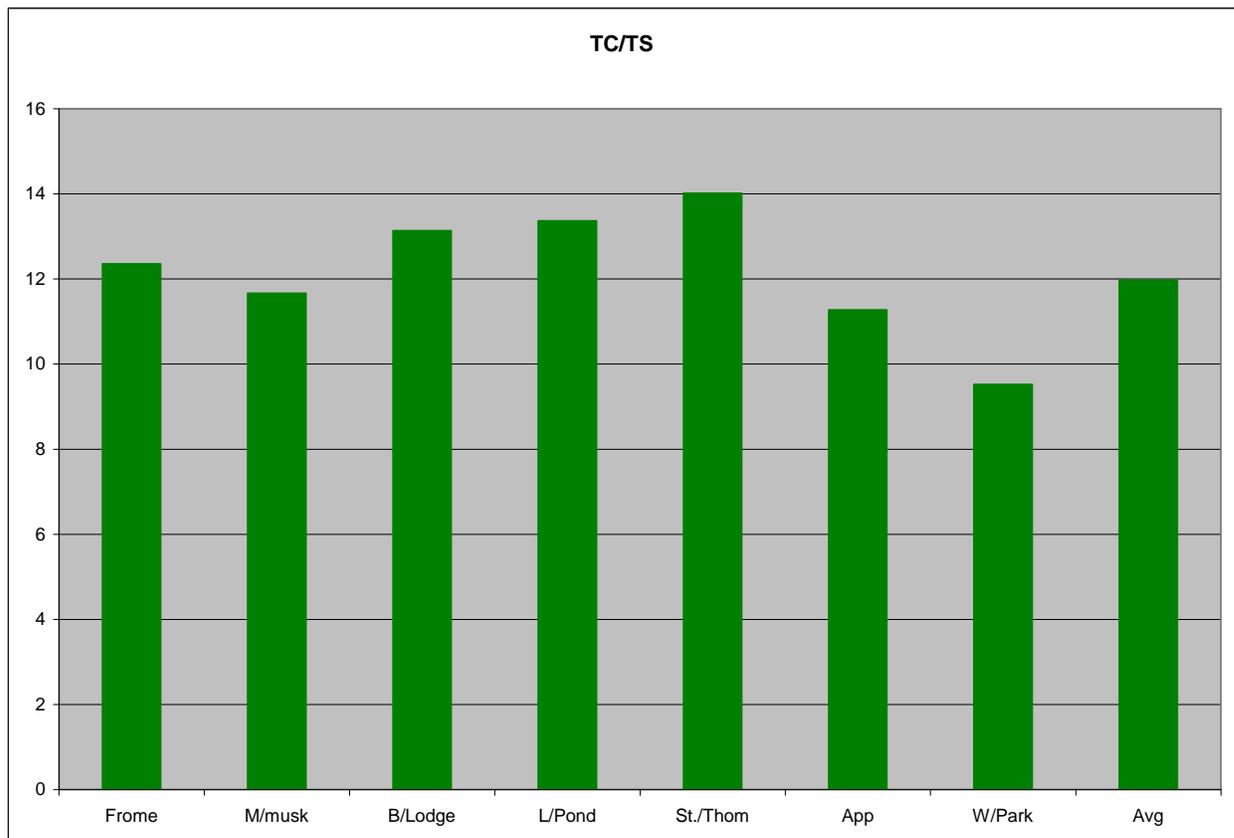


SELECTED PRODUCTION STATISTICS FOR THE 2006 & 2007 CROPS

	2006	2007
Cane Milled ('000 tonnes)	1,745	1,968
Farmers	719	784
Estates	1,026	1,184
96° Sugar Production ('000 tonnes)	146.9	164.4
Hectares Reaped ('000)	29.97	30.79
Tonnes cane/hectare	58.22	63.92
Tonnes cane /tonne sugar	11.88	11.97
Tonnes sugar/hectare	4.90	5.34

The tonnes cane per tonne sugar (TC/TS) ratio of 11.97 represents a marginal deterioration when compared with previous year's ratio of 11.88. The rainfall in the latter half of 2006 was favourable for the growing season. However, the rain continued into the harvesting season of 2007 and this impacted negatively on the harvesting programme and the tonnes cane per tonne sugar (TC/TS) ratio. The TC/TS was also affected by relative inefficiency of the factories as only three factories recorded increase in their Factory Recovery Index (FRI) when compared to the previous crop.

Chart 2



CANE QUALITY

Performances, measured by the Factory Recovery Index (FRI) and the Jamaica Recoverable Cane Sugar (JRCS), were mixed when compared to the previous year. Average FRI increased from 85.97 in 2005/06 to 88.26 in 2006/07 while average JRCS declined from 9.92 to 9.69 during the same period. Only two factories, Appleton and Worthy Park surpassed the standard FRI of 91.00 units with performances of 92.49 and 96.47 units respectively, while Monymusk's FRI was 90.29. Worthy Park with a JRCS of 10.88 was the only factory to surpass the standard JRCS of 10.15.

PRICES

Despite the 5.1% cut in the price paid for sugar exported to the European Union, the industry received its highest price of \$37,936 per tonne sugar paid to growers and millers. This represents a 5.7% increase over the \$35,874 paid in 2005/06. The 5.1% price cut was partially offset buy the strengthening of the Euro against the U.S dollar and the depreciation of the Jamaican dollar to the US dollar. The division of the payment between cane growers and manufacturers according to the split of 62% to growers and 38% to manufacturers was as follows:

		<u>2005/06</u>	<u>2006/07</u>
Cane Growers	(62%)	<u>\$22,242</u>	<u>\$23,520</u>
Sugar Manufacturers	(38%)	<u>\$13,632</u>	<u>\$14,416</u>
		<u>\$35,874</u>	<u>\$37,936</u>

TIME LOSS

The actual grinding time for all factories was 50.35 per cent of total available time. There was no significant difference when compared to last year's figure of 49.51 per cent. Non-factory stoppages, which stood at 30.85 per cent, was the main factor responsible for the significant time loss. The adverse weather conditions towards the latter part of the crop affected deliveries by farmers and estates. Mechanical stoppage, 8.56 per cent was the main factor responsible for factory stoppages of 18.80 per cent. All seven factories found it difficult to achieve the industry standard operating time of 85 per cent. Worthy Park came the closest with 72.56 per cent while Monymusk, Long Pond, St. Thomas and Bernard Lodge operated below 50 per cent.

MARKETING

The total (gross) value of sugar exports in 2006/07 was US\$101,246,334 and this was 12.14 per cent above the value of US\$90,285,685 in 2005/06. The volume of sugar exported was 153,053 tonnes of which 126,767 tonnes of protocol sugar went to the United Kingdom at a value of US\$84,780,383. The amount of 3,382 tonnes of sugar were shipped under the Complementary Quota arrangement at a value of US\$13,802,085,

while 5,987 tonnes were shipped to the United States at a value of US\$2,637,215.

The price per tonne sugar was reduced by 5.1% as stipulated in the new EU sugar regime which took effect on July 1 2006. However, the Euro made significant gains against the US dollar in 2007. As a result the industry was able to realise higher earnings per tonne sugar. The price per tonne sugar increased from US\$648 in 2005/2006 to US\$670 in 2006/2007.

Chart 3 (a)

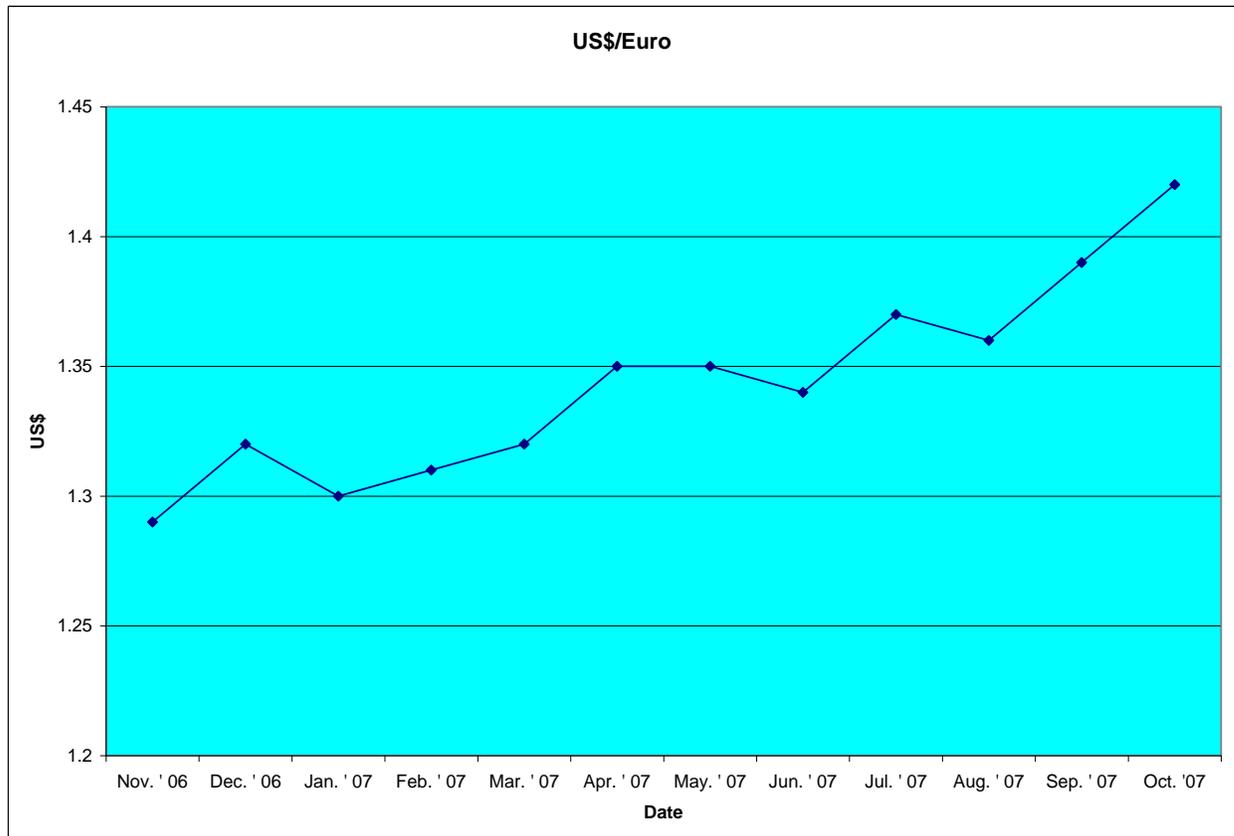
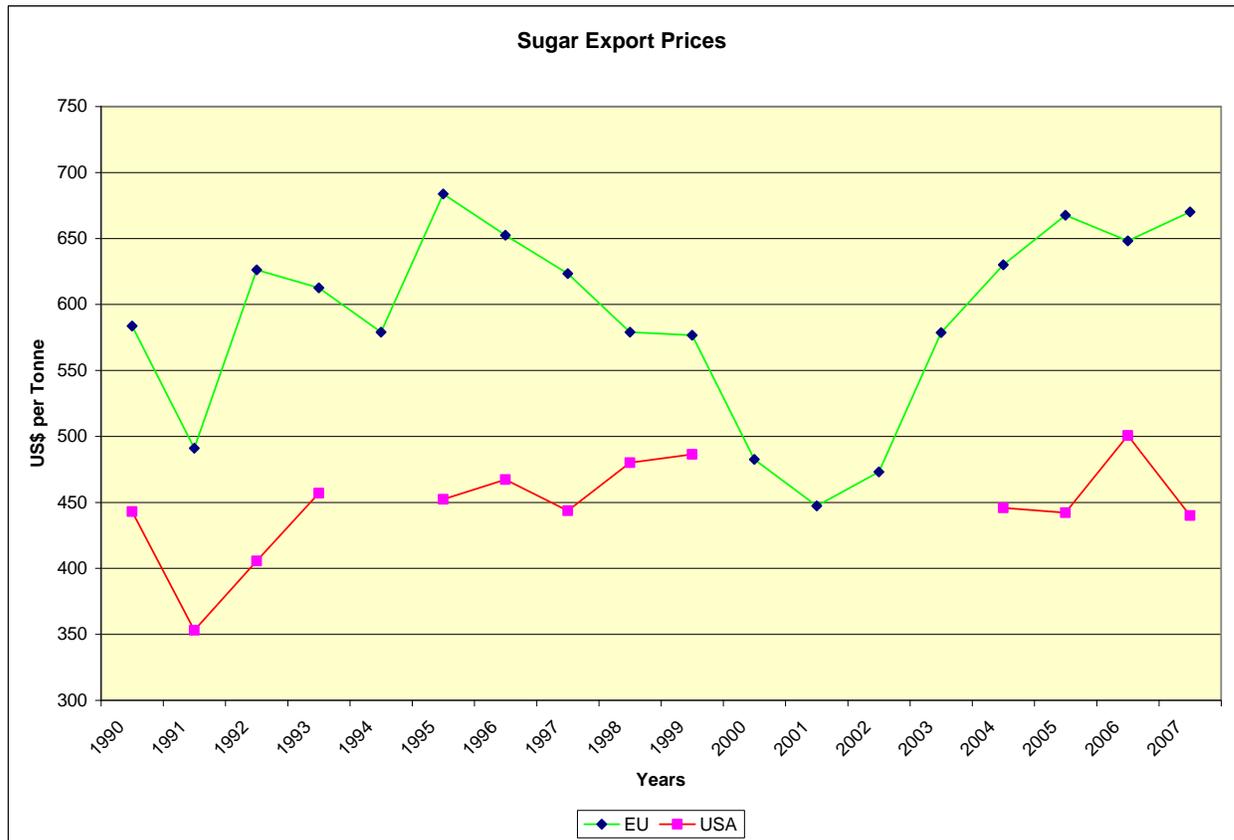


Chart 3 (b)



Local Sales of Raw Sugar

Gross income from the sale (local and export) of sugar and molasses in 2006/2007 was J\$7.77 billion, (see exports in table 6). The amount of locally produced raw sugar sold on the domestic market during the 2006/2007 crop was 3,512 compared with 1,345 tonnes for 2005/06 crop. When sale of imported brown sugar was added to the above, the comparative figures were 54,025 and 55,343 tonnes respectively. The volume of locally produced raw sugar consumed within a crop year is dependent on the level of domestic production because the first objective of the industry is to supply sugar to the preferential markets. Despite the increase in production, it was not sufficient to satisfy the domestic demand.

TRAINING

Certification of Industry Workers

The industry has partnered with the HEART Trust/NTA for the certification of industry workers at Appleton, Frome, Monymusk, Bernard Lodge and St. Thomas. The categories of workers being certified include plumbers, welders, auto mechanics, factory mechanics and electricians.

The certification process involves three stages, namely: assessment of workers; identifying the training necessary to raise the competency of workers to the standard required for certification, and training and testing of workers. Workers who successfully complete the final stage are awarded the HEART Trust/NTA certificate of competence in their respective occupational area.

During the period under review forty- six persons were assessed at Monymusk in Mechanical Maintenance at Level One in areas including use of power tool, use of hand tools, performing routine tasks, performing house-keeping duties, use of graduated tools and occupational health and safety. Fifty-three persons at Frome and forty-one persons at Bernard Lodge were assessed in the above-mentioned categories. At St Thomas Sugar the certification process is at the preliminary stage of a location audit, which is prior to the assessment stage.

Forty-four persons at Appleton have commenced the certification process in the categories of machinist, factory mechanic, welder, electrician and auto mechanic.

The literacy level is not high enough to enable many workers in the certification programme to successfully complete certification. For these workers it may be better to focus on practical training as a means to increase their competence in their trade areas.

Sugar Cane Processing Course at UWI

A Sugar Cane Processing course continues to be offered at The University of the West Indies, through the Department of Chemistry, as one of the core courses in the Applied Chemistry Programme. The course, which is held in the second semester in collaboration with SIA/SIRI, consists of lectures, tutorials, work study and a field trip. Mr. Ludlow Brown of SIA conducted the lectures and tutorials.

During the period under review the students went on a field trip to Bernard Lodge sugar factory where they were able to relate theory to practice. Three students participated in the work study component of the programme. They carried out projects which involved analyzing samples of sugar for colour in addition to samples of molasses for dextran and sarkaran. The projects were carried out at the Central Laboratory in Mandeville.

SUGAR INDUSTRY RESEARCH INSTITUTE

The main role of the Institute is the provision of technical support and research services to the sugarcane industry through its Agricultural, Factory and Central Services Departments. The budget support for the year November 1, 2006 – October 31, 2007 was J\$132.104 million provided entirely by the industry and therefore is not a charge on GOJ budget. Of the budgeted amount, approximately J\$46.2 M (35%) was spent on research activities and a further J\$4.5M (3.4%) on staff training. Of a staff complement of 42 technical officers, 23 (20 male, 3 female) are involved in research to an extent of approximately 40% of their respective work programmes.

Agricultural Services Division

The Department conducts ongoing research in Variety Development, Crop Protection, Agricultural Engineering, Plant Nutrition and Physiology. It also provides Extension Services to farmers through a number (9) of Area Agronomists deployed across the cane producing areas. The Economics and Statistics Department of the Institute provides support through its management under the SIA, of GOJ funded replanting and ratoon maintenance loan programmes and is engaged in collecting and analyzing production and productivity data which guide relevant industry policy.

The Variety Programme: The Variety Development Section, in its continuing drive to develop new varieties for the industry, germinated approximately 40,800 seedlings from fresh crosses received from the Breeding Station. The section is in the process of propagating three new smut-resistant varieties, BJ8783, BT80311, CR892023. This is in addition to five new varieties released in 2005/06 for commercial production. In the routine assessment of foreign varieties, trials were set up at Monymusk, Appleton, Frome and Long Pond.

The Agricultural Engineering: This section assisted in the setting up of a Geographical Information System (GIS) pilot project at Worthy Park to be used primarily to manage its field activities (fertilizer application, irrigation, herbicide application, etc..) and harvesting operations. The GIS/GPS technology was used in the mapping of several hundred hectares on behalf of the Sugar Company of Jamaica and J Wray & Nephew Ltd.

A study was conducted in conjunction with the Ministry of Industry, Technology, Energy & Commerce on the logistics, efficiencies, costs, pricing and quantities of various cane products/derivatives such as molasses, cogeneration, ethanol and rum.

Sugar Cane Nutrition: Follow-up investigations were carried out on soil degradation in the Clarendon plains, comparing land in continuous cane production with lands out of cane for fifteen years. Meanwhile, in projects aimed at restoring fertility, cow pea and poultry manure were incorporated in various plots at Monymusk and studies undertaken to evaluate the effects. In further studies to assess the varying responses of varieties to fertilizer, trials were reaped at Frome, Cambria and Wallens farms comparing responses of BJ8534, BJ78100 and J9501 to nitrogen. The Institute conducted calibration exercises

with its recently acquired hand-held Nitrogen Tester device. This piece of equipment will eventually be used in conducting quick evaluations of nitrogen status of the crop at the field site. This is not meant to substitute for the routine annual soil and foliar analyses conducted by the Institute to guide fertilizer recommendations on estates and farmers' holdings.

Physiology: Demonstrations were carried out with two brands of metribuzin to ascertain efficacy in pre- and post-emergence applications against wild pangola under varying field conditions. There were also demonstrations of the use of various herbicide cocktail in weed control. Studies were conducted with ethephon (Ethrel) used in various situations in attempts to improve sett generation, promote tillering and/or induce cane growth. Weed control being a significant factor in cane yield, a study was launched to evaluate effect on yield of modified weed management programmes. Also training of farmers was conducted on weed management during wet versus dry seasons, with different weed regimes and the role of adjuvants in spray mixtures.

Pathology: With Jamaica having only recently confirmed the presence of ratoon stunting disease (RSD) in the industry, SIRI launched a programme to conduct hot water treatment of new varieties as a means of disease control prior to setting up propagation nurseries for distribution to growers. During the year four new varieties, BJ8783, BJ9186, BT80811 and CR892023 were so treated and established in nurseries.

Two smut trials involving varieties of the BJ93, BJ94, BJ95 series were conducted at Monymusk. The industry was cautioned about further use of BJ8532 which, having gone through formal trials and smut-free production for several years, recently developed a high degree of smut susceptibility. This unusual development raised the question of whether a new strain of smut had emerged.

Internationally Funded Project

A major thrust of departmental activity since 2004 has been the implementation of a project, "Enhancing the Viability and Competitiveness of Caribbean Sugar Industries". Funding for the project(US\$1.5M) was provided by the Common Fund for Commodities (CFC) with counterpart financing (US\$1.038M) in kind provided by the Institute. The project was conducted under the sponsorship of the International Sugar Organization (ISO).

Direct beneficiaries of the project were smallholders who were targeted in an effort to "slow rural-urban drift, maintain the rural environment while improving profitability and quality of life". Nurseries totalling 79.03ha were established which yielded approximately 2,768 tonnes of seed cane (worth ~ US\$ 81,500) which augmented considerably, seed cane from other sources for the 2007-2008 crop. A noticeable feature of this component of the project was that both agronomic and cultural practices on farms where nursery projects were established were improved over previous years and this resulted in increased levels of productivity and potential earnings.

A second component of the project involved the installation of a pilot centre pivot irrigation scheme among contiguous small cane farming holdings covering 55.34 hectares. Yields under the system varied with the degree of attention to farming paid by the respective growers from a high of 109 tc/ha in a well established field to a low of 31.75 tc/ha in one that was badly in need of replanting.

As an alternative to the above technique, ten drip irrigation plots totalling 30 ha were laid down and planted out with sugar cane. All but one of these exhibited impressive growth, the single failure being due to a stolen portion of irrigation main and illicit fire, which together crippled operation on that particular plot. Yields from these plots were outstanding, ranging from 110 to 148 tc/ha, compared with average yield of less than 60 tc/ha from fields grown under commercial practice within the same irrigated belt in 2006.

Other components of the project were:

1. Farmer participatory evaluation of improved cane varieties
2. Farmer participatory training in improved agronomic practices
3. Applied research and development into factors affecting yield decline
4. Financial and economic evaluation of optimum farm modules for viability.

A final Dissemination Seminar to present the findings of the project to representatives of the CFC, the ISO and a number of overseas delegates from member countries of the CFC was held in December 2007. The seminar, which was held in Ocho Rios, brought together participants from Kenya, Uganda, Mozambique, Tanzania, Brazil, Barbados, Guyana, Trinidad and Tobago, Cuba and Belize. The International Sugar Organization, designated the Supervisory Body, was represented by its Managing Director, Dr. Peter Baron, and Chief Economist, Mr. Lindsay Jolly, while the CFC was represented by Projects manager, Miss Eltha Brown. The Keynote address was delivered by Dr. the Hon. Ronald Robinson, Minister of State in the Ministry of Foreign Affairs and Foreign Trade. All major sectors of the local industry were represented at the event.

The seminar was held over a week, the first day of which was devoted to presentations by SIRI officers and discussions of results obtained under various components of the project. The second day was reserved for an International Forum in “**Diversification Options for the Sugar Industry in the 21st Century,**” and comprised panel discussions on “Challenges and Opportunities for diversification of the Sugar Industry” and “Sugar Cane as a Source of Energy.”

On the third and fourth days delegates were taken on field trips to visit CFC project sites in Clarendon and St. Catherine and on tours of the Jamaica Broilers’ Ethanol Plant at Old Harbour and the Appleton Distillery at Siloah.

Over the four years of implementation of the project a number of objectives were realized. They include the establishment of seed cane nurseries of new elite varieties on farmers’ holdings, adoption of modern irrigation technologies on some 200 acres and introduction of growers to alternate crops such as Sea Island Cotton, Scotch Bonnet

Pepper, West Indian Red Pepper, Sweet Pepper etc. which may be used either in crop rotation systems or in diversification from cane growing. Late delivery of Reduced Tillage Machines designed by SIRI and built under the project, as well as imported Walk-Behind Tractors resulted in an extension of time for completion of that aspect of the project to June 2008

In the review carried out by the CFC and ISO, SIRI was commended for the professional manner in which the project was executed and drew special praise for the extent to which project funds accrued directly to the benefit of the farmers – the intended beneficiaries.

Factory Services Division

Instrumentation

A new oven room was designed and constructed at the St. Thomas Sugar Estate to provide more working space and to reduce the load on existing A/C units. The Bernard Lodge Core Laboratory computer room was converted into an oven room in order to increase counter top space for sample analysis. Pre crop training programmes in the “Use and Care of Instruments” were conducted at St. Thomas, Long Pond and Frome Core Laboratories.

At Monymusk Estate, a new Fairbanks Platform in-bound truck scale is being installed at approximately 100 meters from the Core Sampler.

The Ocho Rios Servo Balan scale was upgraded with the installation of a new air compressor unit to correct the low pressure problems that were encountered. The scale unit was also fitted with new solenoids and seals. The in-bound scale at the Marcus Garvey Sugar Warehouse needs considerable refurbishing repairs in terms of excavation work and structural support. Hence it could not be certified by the Bureau of Standards for the up-coming crop.

General servicing and certification of all other truck scales were conducted. All bagging scales and the Bernard Lodge juice scale and Servo Balan were serviced and calibrated. The truck scales at St. Thomas Sugar Company received major servicing and were later upgraded by the Computer Department by installation of the Scalepro program in the system. New computers and printers were obtained and installed while some modifications were done to the format of their weigh bills.

Sugar Samplers

Modifications were effected on the samplers at Frome, Bernard Lodge and St. Thomas Sugar factories. The Frome sampler cylinder was replaced due to air leaks. Bernard Lodge had a similar problem with cylinder air leaks so the seals were changed and the system put back in operation. The sampler at St. Thomas was redesigned and re located above the sugar bins. This new system included timers, solenoid valves and an air cylinder, which was interlocked with the sugar bucket elevator.

General Servicing

General servicing, repairs and calibration of equipment at the Central Analytical Laboratory in Mandeville and at all Core Laboratories were completed for the start of the 2007/08 sugar crop. One High Pressure filtration system, which was obtained for a project to be undertaken by the Sugar Technology Unit, was installed, calibrated and commissioned by the Instrument Department.

Mechanical Engineering

The department successfully completed its work programmes, as it was able to respond to all the requests made by the factories during the 2007 sugar crop. The following duties were carried out during the crop year:

Core Sampler

Out of crop maintenance which entails the repairing or replacing of damaged and malfunctioning components, setting of the press gaps and adjustment of the sequence cycles and pressure switches, was carried out just before the start of the crop at all factories. The core sampler structure at Frome was repainted along with the core laboratories at Frome and Appleton.

An overall average of 87.51 per cent of samples analysed was achieved at the end of the 2006/07 sugar crop. During the crop year the following problems were experienced and corrective action taken

Frome

The #2 and #3 core samplers pressure switches had to be adjusted from time to time. Burst hydraulic hoses were replaced and oil leaks were corrected on all three units. Routine building up of all three shredder hammers was carried out to maintain the required preparation index. Testing of 81.93 percent of incoming cane loads was achieved for the cropping period.

Appleton

This system had a very good operating run, achieving a crop average of 94.56 percentage testing with only a minimal number of hydraulic hoses and fittings sustaining leaks. The core sampler spindle was damaged and had to be repaired. The press solenoid valve coil was burnt and had to be replaced.

Monymusk

Only minor problems such as leaking hydraulic hoses and fittings that had to be replaced were experienced. An overall crop average of 98.31 percentage testing was achieved by

this system. The entire roof of the building housing the core sampler was lost due to the passage of hurricane Dean. This has since being replaced.

Bernard Lodge

The hydraulic press cylinder rod broke and was replaced as were the press solenoid valve and leaking hydraulic hoses and fittings. This unit however achieved a crop average of 87.57 percentage of cane loads tested.

Worthy Park

The system had a very good year of operation as there were no major problems. A crop overall average of 86.59 percentage testing was achieved.

St. Thomas Sugar Company

The core sampler timer, some circuit relays, hydraulic press pump along with hydraulic hoses and fittings had to be repaired or replaced. A 77.17 percentage testing overall crop average was achieved.

Long Pond

The hydraulic press rod broke and was replaced. However, an overall crop average of 97.59 percentage testing was achieved by this unit.

Laser Alignment

Laser alignment of steam turbines and power alternators was carried out at Appleton, Frome, St. Thomas Sugar Company, Monymusk and Worthy Park factories.

Dynamic Balancing

Dynamic Balancing of boiler fans and centrifugal baskets was carried out at Frome, Appleton, St. Thomas Sugar Company, Worthy Park, Long Pond, Monymusk and Bernard Lodge.

Ultrasonic Thickness Testing

This service was utilized mainly by Worthy Park, St. Thomas Sugar Company and Appleton.

Ultrasonic Flaw Detection

This was carried out at St. Thomas Sugar Company.

Vibration Measurements

Vibration measurements were done at Worthy Park, Frome, St. Thomas Sugar Company and Appleton.

Sugar Technology

Research Report: *Industry Wide Polysaccharide Survey*

In 2003 the Sugar Industry Research Institute started investigations into the levels of total polysaccharide (TPS) in C massecuite at the Worthy Park Sugar factory. This was initiated by personnel at Worthy Park who were concerned about the difficulty they experienced in the boiling house due to abnormally high viscosities in the massecuite. The study showed that the levels of TPS remain fairly constant early in the crop but at around mid-March into April the levels of TPS increase and generally show a gradual increase through to the end of the crop. Investigations show that this phenomenon seems to coincide with high amounts of rain (generally greater than 100mm) following a long dry spell. Subsequent studies at Worthy Park Estate looked at cane varieties, rainfall, and the age of the cane as possible factors contributing to the TPS levels in cane. The age of the cane (P value 0.0001) was found to be the most significant factor contributing to the TPS. TPS levels were found to increase with cane age from 9 to 12 months. Rainfall (P value 0.175) was next, TPS levels increase as rainfall levels increased. Variety (P value 0.406) was not found to be a statistically significant factor to TPS in cane. To determine if the processing problems being experienced at Worthy Park Estate was localized to Worthy Park Estate, attempts were made at determining the levels of total polysaccharide (TPS) in other factory areas. The following were the objectives of the project:

- 1 To ascertain if there are, and to what extent there might be differences in total polysaccharide (TPS), starch, and dextran in commercial varieties at the same age, growing in various locations within the industry.
- 2 To determine if the level of TPS, starch and dextran levels across factory Processes were within the same range at different factories.
- To review conditions of cane supply to Worthy Park for the period March 16-26,2007.

The survey concluded that:

- There was no statistically significant difference in TPS levels between the two varieties BJ7504 and BJ82119 tested industry wide in the pilot study.
- Syrup at Worthy Park had lower levels of TPS than in other areas while TPS in C massecuite at Worthy Park was much higher than in other areas.
- Starch, a major polysaccharide at the factory level, was much higher at Worthy Park, than it was at other factories.
- Conditions under which Worthy Park operated during the period of March 16-24, 2007 were less than ideal. Levels of dextran were significantly higher than in former years which suggest that levels of dextran in the process streams could have been a contributor to the processing problems.
- Other polysaccharides (apart from dextran and starch) were possibly implicated in the processing problems experienced at Worthy Park.

Determination of Sarkaran in Sugar Cane Molasses

An attempt was made to determine the presence of the polysaccharide **sarkaran** in sugarcane molasses. This was done through isolation of high molecular weight polysaccharides by alcohol precipitation, hydrolysis of precipitate by a specific enzyme, and analysis of characteristic oligosaccharides using High Performance Anion Exchange Chromatography coupled with Pulsed Amperometric Detection (HPAEC-PAD). Chromatograms obtained for samples were compared with chromatograms obtained for the polysaccharide pullulan used as a standard. Detection of a characteristic component – maltotriose – in both samples and standard confirmed the presence of the polysaccharide sarkaran in varying amount across the factories. It was concluded that sarkaran could be a contributing factor to processing problems such as increased viscosity, poor crystallization rates and gum formation at heating surfaces observed during sugar extraction.

Factory Extension Services

Collaborative Sugar Test

Four collaborative sugar tests were conducted over the cropping period. The general objectives of the test were to:

1. Conduct a comprehensive evaluation of the performance of all factory laboratories with respect to sugar pol and moisture analyses.
2. Standardize the methods of analysis and equipment with respect to polarization and moisture.

3. Provide technical support to laboratories to ensure the highest level of accuracy and precision in results.
4. Establish acceptability limits in data produced using statistical techniques.

The results from all four tests showed SIRI's Central Laboratory producing the highest level of accuracy and precision. Most factory laboratories produced fairly accurate results with reasonable precision. However, on all four occasions the results from SIRI's Central Laboratory were slightly lower than the overall average for pol. The results for moisture continue to show good precision and accuracy with very low standard deviation values for each test.

The results showed that juice pol standard deviation fell within the acceptable standard deviation of 2.21 for all four tests. The JRCS values for all four tests started the year with a low standard deviation of 0.45, but this deteriorated as the crop continued, ending with a standard deviation of 0.88. The efficiencies of shredders in cane preparation, open cell (preparation index) analyses, showed that all the shredders at the core operated above the minimum standard preparation index of 80 % established for the shredders installed at the core labs. The minimum preparation level recorded was 82.84% while a maximum of 97.84% was recorded at one factory on the first test.

While the results showed fair performance by all the laboratories, recommendations were made for PI levels to be maintained at about 85% minimum although the industry standard was 80%.

Mill Test

Mill tests were conducted at six of the seven factories, looking at the overall and individual mill pol extractions. Comparisons were made with what the factory data reported. Most of the results obtained compared well with the factories' results. Areas of most concern at the milling station included the lack of hydraulic pressures on some of the mills in addition to the poor condition of some mill rollers and poor mill sanitation at some stations.

Factory Laboratory Training Workshop

Specialized Training for Factory Laboratory Technicians at St Thomas Sugar Company and Trelawny Sugar company was carried out at the request of the Sugar Company of Jamaica. The training focused on areas involving boiler water testing and treatment, use and care of laboratory instruments and an in-depth look at analytic procedures carried out routinely at factory laboratories.

Core Laboratory Training Seminars

The 2007 training seminars were conducted at six of the seven factories. All seminars were very successful and saw full participation from the core laboratory staff. Topics covered in the seminar included:

- An overview of the core lab performance.
- Use and care of the laboratory instruments
- Analytic procedures at the core
- Preventative maintenance at the core
- Demonstration of the high pressure filtration unit.

Combustion Efficiency Test

Combustion efficiency tests were conducted at Frome and Trelawny Sugar factories at the request of the factory management. These results were submitted to the respective factories.

Process Dextran Monitoring

On request of Bernard Lodge Sugar Company, a NIR polarimeter was loaned to the Factory laboratory for periodic dextran determination of factory products to regulate Dextranase dosage.

Dextranase and Biocide dosing System

As a result of uncharacteristically high levels of dextran in sugar from St. Thomas and Trelawny sugar factories, Dextranase dosing systems were installed to help curb the high levels of dextran in the sugar coming from these factories.

Analysis of processing difficulties at Worthy Park Estate

The Worthy Park factory experienced processing difficulties mid way the crop and requested an assessment of possible causes of the problems they were experiencing. This was done and a report submitted to the relevant persons.

Investigation into High Mud levels at Monymusk

The Monymusk sugar factory developed problems associated with high mud levels in the clarifiers during the course of the crop and investigation was done and a report submitted.

Direct fibre analysis at Appleton

The Appleton factory experienced problems with low fibre early in the crop, as a result of which a request was made for direct analysis of true fibre in cane being received at Appleton to understand the nature of the problem. This was done and a report submitted.

Meetings, Conferences and Work Shops Attended

July-August 2007

ISSCT Congress, Durban, South Africa (Niconor Reece)

November 2007

JAST Ocho Rios, Jamaica (Niconor Reece, Leighton Campbell, Sydney Roman)

December 2007

Training Water HPLC Workshop Boston, USA (Leighton Campbell)

Environmental Monitoring and Management

Introduction

The areas covered during the period under review include the monitoring of trade effluent at six sugar producing factories, attending environmental workshops and seminars hosted by National Environment and Planning Agency (NEPA) and the Sugar Industry Research Institute (SIRI) and making a presentation at the annual conference of the Jamaica Association of Sugar Technologists.

Monitoring of the trade effluent from sugar factories was done in accordance with Section 17 of the NRCA Act 1991. The Act requires that all facilities discharging effluent to a river, stream, sinkholes or land should report to the NRCA on both the qualitative and quantitative aspects of their effluent. The Sugar Industry Research Institute has collected and analyzed wastewater from sugar factories over the period and reports signed by authorized factory personnel sent to the NEPA as required by the Act.

Training Seminars and Workshops

The National Environment and Planning Agency conducted a sensitization seminar on the recently gazetted NRCA Air Quality Regulations (2006) for the months February and March 2007. The seminar focused on:

- Air quality management
- Regulatory approaches to the management of air quality
- Air quality issues in Jamaica
- Key features of the Air Regulations
- Ambient and source monitoring methods
- Pollution prevention
- Air pollution meteorology
- Dispersion and screening modeling
- Air pollution discharge licence application process

The aim of the seminar was to ensure compliance with the provisions of the Regulations. Dischargers of air pollutants will be required to conduct and report on air quality assessments, including making estimates or in some cases measuring the amount of air

pollutants that are released for at least one calendar year in the first instance and annually afterwards. Discharge fees will be charged and used as a cost recovery mechanism for NEPA. Incentives will also be given for emissions generated from renewable fuels such as bagasse. Attendees from the sugar industry included representatives from Bernard Lodge, Monymusk, St. Thomas Sugar, Worthy Park and Appleton Estate.

One-day Seminar

On Wednesday, October 17, 2007, the Sugar Industry Research Institute hosted a one-day seminar entitled **“The NRCA’s Air Regulations(2006): Its Implications for the Sugar Industry.”** This seminar was convened in collaboration with NEPA to further sensitize the industry on this very important issue and to ensure more broad-based sectoral participation. The seminar went very well had participation from all the sugar factories, SIRI and NEPA. The aim of this seminar was to:

- Heighten the awareness of participants on the health and environmental effects of certain air pollutants.
- Increase the awareness of participants of the requirements of the new Air Quality Regulations.
- Enable participants to have a better understanding of how to estimate and/or calculate air pollutants emitted from sugar factories.
- Inform participants about the preparation of compliance plans.
- Inform participants of NEPA’s monitoring programme for air quality parameters and periodic reporting procedures.

A presentation was made by Mrs. Elaine Manning of SIRI on the “Environmental and Health Impacts of Air Pollution,” in which she outlined the major air pollutants, their sources, their human and environmental effects. Three presentations were done by NEPA and included topics such as: “The General Principles of the NRCA Air Quality Regulations(2006),” “The Permit and Licencing Application Process” and “The Development of Boiler Improvement Plans for Sugar Factories.” The Institute also invited a special presentation from Mr. Leslie James, an Environmental Consultant, whose presentation focused on the ambient air quality measurement and monitoring. He also looked at the various types of equipment used for air quality monitoring.

Annual JAST Conference

A presentation was made on the “Environmental Challenges Facing Jamaica’s Sugarcane Industry” at the 70th staging of the annual JAST Conference. The presentation reviewed the various initiatives that have been employed by the Sugar Industry Authority through its research arm SIRI to bring the industry into compliance with its environmental obligations. Initiatives such as the Sugar Industry Action Plan for Environmental Monitoring and Management (1997), the formation of factory level Environmental Committees, the formation of an Industry Environmental Committee (2000) and the development of an Environmental Code of Practice (2004) were instituted. The presentation further highlighted the major environmental issues facing the industry such as matters concerning the liquid effluent from our factories, cane burning and the

emission of air pollutants. Other environmental challenges highlighted were the numerous technical information required for the preparation of the licencing application for the NRCA Air Quality Regulations. This licence application is due by August 1, 2008.

Meetings

On July 18, 2007, a meeting was held with the Agricultural Committee of the Sugar Manufacturers Corporation of Jamaica (SMCJ) and the Ministry of Local Government and Environment (MLGE). This meeting was convened to discuss the concerns of the SMCJ with the contents of National Implementation Plan for the Management of Persistent Organic Pollutants (POPs) as it relates to a proposal to phase out of cane burning and ultimately have 100% greencane harvesting by 2010. Jamaica, under the NIP, has made commitments to reduce the quantity of dioxins and furans generated by the sugar industry due to the burning of cane prior to harvesting. The Ministry advised the committee that the document was on its way to the Chief Parliamentary Council and encouraged the industry to put forward a revised position on the matter as early as possible. The meeting also discussed the matter of conducting an economic feasibility study for the phasing out of cane burning and the return to 100% greencane harvesting as is outlined in the NIP. The issue of funding to do such a study was also discussed. Subsequent to the meeting the committee was informed that discussions with the World Bank to obtain funding for the study were very encouraging. Therefore, the committee was asked to develop a project concept note to be submitted no later than August 31, 2007. This however was not done, as a consensus on the position of the industry on the matter could not be reached.

Upcoming Regulations

The National Environment and Planning Agency (NEPA) has advised that the pending **Trade Effluent and Sewage Sludge Regulations** is expected to be gazetted before the end of 2008. This regulation will require that sugar factories be licenced to discharge waste water from their facilities. The conditions of the licence will stipulate the quality of the waste water that should be discharged to the environment. The necessary fees and penalties will also be determined.

CENTRAL SERVICES

Economics and Management Information

The Department continues to provide information on cane production and related activities. In particular, the yearly update of the cost of cane production (including land preparation, planting, fertilizer and herbicide application, harvesting costs) presents critical information to growers on cane profitability. Equally important, it monitors movements in cane production through its annual survey of cane yields across the industry.

The Department has assumed responsibility, on behalf of the SIA, for implementing and monitoring replanting and maintenance loans to growers. This has assumed increasing importance given the level of funding for this programme which has been made available by government from funding provided by the European Union through its Accompanying Measures.

SIA Loan Programme

Applications

Since the inception of the New Loan Programme in June 2007 a total of 644 applications have been received and processed by the SIA. The Programme is geared toward increased cane production through improved ratoon maintenance and replanting of low-yielding fields. Field operations funded in ratoon fields are moulding, weed control, irrigation and to a lesser extent, drainage in the high rainfall areas.

Due to the late start of the programme in 2007, only a limited amount of replanting could be carried out. Approved applications from last year are therefore being given first consideration this year. Among these are 70 from Frome, with a value of \$23.1M; and 18 from Appleton valued at \$2.1M. However, in light of increased costs of some inputs and the impending price cuts, the agronomists are being asked to review the business plans with the farmer.

Disbursements

Following on satisfactory completion of programmed field activities, disbursements totalling \$81M have been made to 347 farms, *Table 1*. As expected, Frome had the highest disbursement, \$26.5M, followed by the Worthy Park area.

Other than the large estates and some large farms, the programme was able to meet all approved payment requests last year. However, the injection of new funds into the programme this year has enabled outstanding payment requests to be now considered. Special consideration was also given the Development Plan for Mid-Clarendon Co-op.

**Table 1: Disbursements by Factory Areas
– New Loan Programme**

Estate	Total Number of Request	Total Disbursed
Frome	177	26,517,801.77
Appleton	47	5,488,928.00
Bernard Lodge	12	4,241,596.48
Mid-Clarendon	1	8,000,000.00
Monymusk	42	3,801,435.19
St. Thomas	6	10,818,900.00
Trelawny	36	1,689,304.10
Worthy Park	26	20,566,707.76
Total	347	81,124,673.30

Mid-Clarendon Cooperative

In a drive to lift cane production and overall productivity among its members, the Mid Clarendon Co-op submitted a Development plan to be partially funded under the New Loan Programme. The plan speaks to the resuscitation of 249.68 ha of ratoon fields as well as 14.58 ha of replanting. Subsequent to a careful analysis by the SIA’s Loans Approval Committee, a loan amount of \$8M was approved and disbursement made. The title of the premises has been tendered as security.

The SIRI Area Agronomist along with Co-op. field officer will guide the development process. Progressive reports prepared by SIRI Area Agronomist will be submitted to SIA on a monthly basis.

Drip Irrigation

A few growers in the Clarendon areas have expressed an interest in the Drip Irrigation System. Due consideration will be given to such requests, after which business plans will be developed subject to the outcome of technical feasibility exercise and availability of funds.

Equipment Loan

So far there has being one request for equipment loan of \$.2.3M. Preliminary assessment shows the proposal to be financially feasible. Acquisition of the truck in particular, should greatly assist in alleviating the problem faced by Hampden farmers in transportation of their canes to Long Pond.

Loan Repayment

Of the \$36.597M due for the 2007 crop, 67.22% or \$24.600M were recovered (from second and third payments), **Table 2**.

As in the previous two years, Appleton and Worthy Park farmers had a 100% recovery. Trelawny areas showed improved performance with an almost 92% recovery.

Frome and Bernard Lodge performed creditably at 86 and 83% recovery, respectively.

Table 2: Repayments due and percentage recovery, by factory areas, 2007 crop

Factory Area	Amt Due in 2007	Total Recovered	% Recovered
Appleton	1,823,397.33	1,823,397.40	100.00
Worthy Park	888,823.01	888,823.01	100.00
Frome	10,394,234.86	8,950,314.50	86.11
Trelawny	2,838,337.39	2,609,085.82	91.92
Bernard Lodge	4,123,503.54	3,431,564.16	83.22
St. Thomas	3,992,299.28	1,830,937.23	45.86
Monymusk	12,537,404.48	5,066,158.09	40.41
Total	36,597,999.89	24,600,280.21	67.22

By contrast, recovery from Monymusk & St. Thomas continued to be way below expectations – at roughly 40% and 46%, respectively.

With the start of 2008 crop at Monymusk, an exercise is presently being conducted to determine status of farms and ability to meet repayment obligations, and if possible, what remedial measures can be considered.

Disbursements on replanting were constrained by late start of the program coupled with unfavourable weather which impeded land preparation.

Central Analytical Laboratory

The Central Analytical Laboratory continued to support the activities and projects of both

the Agricultural and Factory Services Divisions. Routine analysis on wastewater from the factories, water for irrigation purposes, soils, plant tissue, fertilizers, cane juice, sugars and molasses was continued over the period. In addition, there was continued participation in international collaborative testing programmes for soil, leaf and sugar. Results obtained were not statistically different from those obtained by other participants. This participation ensures acceptability in the international market for testing laboratories and meets international accreditation standards.

There was continued participation in ICUMSA activities and a review of the work to be carried out by the 'Oligosaccharides and Polysaccharides' committee was forwarded to the Referee.

Collaborative efforts with the Chemistry Department of the UWI continued with the joint project for analysing colour in sugar conducted during the summer. Several publications were done during the year as outlined below.

Publication List

'Colour Assessment in Raw Sugar' was presented at JAST. Results obtained in an islandwide study using three different methods to assess colour showed that as the pH of the solution increased there was a general increase in colour.

'Caribbean: Status of biofuels Research and Capacity Building' Paper presented at Centre for Technical Cooperation in Agriculture (CTA), Wageningen, Netherlands, May 2007.

Draft Policy Document *'Biofuels: ACP's response to fossilfuel dependence'* written by Jan Cloin, Raymond Rivalland, Dr. Maureen Wilson and Prof. Francis Yamba; edited by Judith Francis, CTA Headquarters, Wageningen, Netherlands, June 2007.

WORLD SUGAR SITUATION

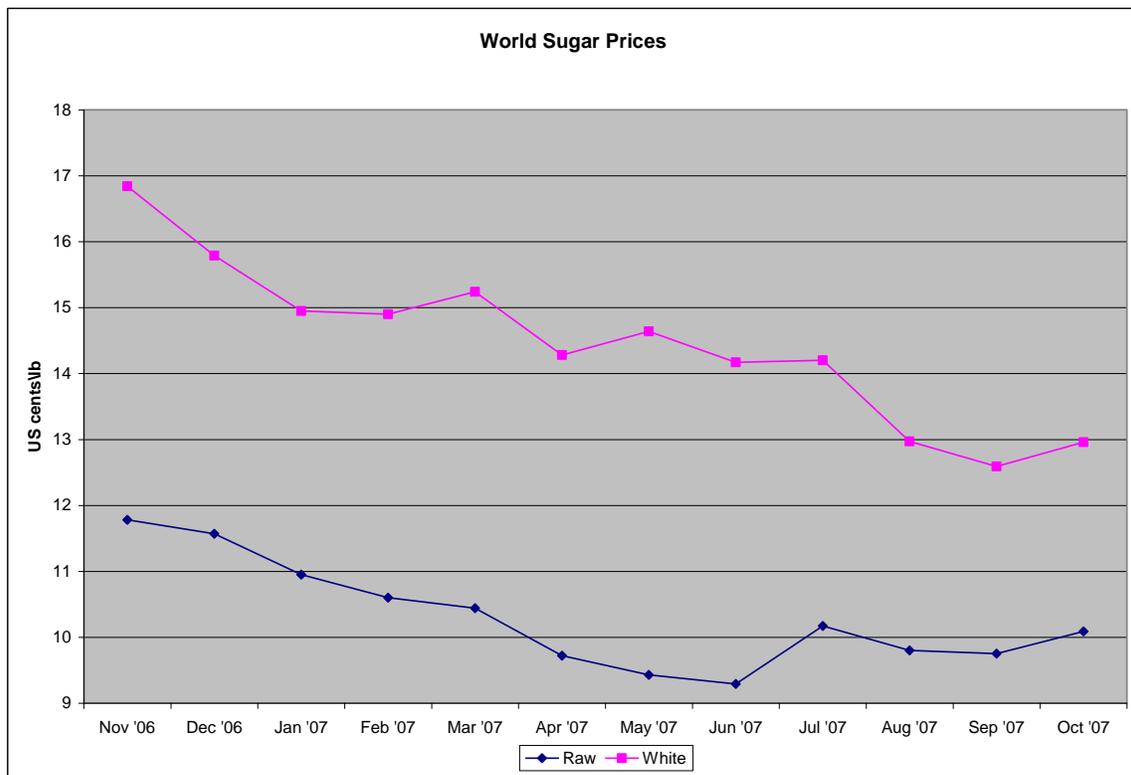
Sugar prices plummeted in 2006/07 with price falling from 18.93 cents/lb in February last year to 11.66 cents in August 2007. This was a result of the nearly 10% increase in production which led to production overshooting demand by several million tonnes. The root of the price reduction was an overreaction to higher prices seen at the beginning of 2006. It was predicted that more cane would be diverted to ethanol production in addition to the demise of the EU as a major white sugar exporter due to reform of the EU sugar regime, leaving a gap that had to be filled by other exporters. Also consumption was continuously increasing at a rate of 2% per year.

All this created the belief that global sugar prices would have remained high and opened the door to profitable investments in both sugar and ethanol. As a result the sector saw significant investments, partly from private equity funds, with the price mills in Brazil

reaching unrealistic highs. In addition governments boosted the sector by giving financial incentives to expand capacities and cane areas. Also, the almost ideal weather condition around the globe led to an unexpected sharp increase in the 2006/07 production leading to a huge global surplus.

The situation remains precarious for sugar exporters, especially as there is a considerable time lag between low prices and a reaction on the supply side, indicating that another surplus next year is not outside the realm of possibility unless adverse weather comes to the rescue of sugar producers and exporters.

Chart 4



THE EUROPEAN UNION

The EU had a significantly lower crop due to reform of the EU sugar regime. EU sugar production fell to 17.2 mln tonnes from 21.0 mln the previous season. Although the reduction was significant it was not in line with the Commission's expectation. To balance supply and demand the Commission estimates that roughly 6 mln tonnes of

production quotas will have to be renounced. However, only 2.2 mln tonnes were given back.

The EU, after a 40 year resistance to reform radically, changed its sugar regulation and the new sugar market regime took effect on July 1, 2006. The aim of the reform is to bring EU production into line with domestic demand of around 16 mln tonnes in white value terms, taking into account the community's external obligations.

The first year of reform saw an impressive restructuring and consolidation of the industry. The closure of seven factories was announced in Germany. Only 6 factories out of 19 will remain in production in Italy in the near future. In Austria, Denmark and Belgium the production will concentrate in only two plants, while Ireland decided to give up production altogether. However, the restructuring did not result in the abandoning the quota in many countries, but in a reallocation between plants so that not sufficient quota was renounced.

Whether a market balance can finally be achieved will also depend on how much preferential sugar will flow into the EU. The impact of the Community's reform on imports is uncertain. The reduction in guaranteed prices by 36% over four years is a hard blow to the ACP and high cost least developed countries which are going to have full access to the EU market from 2009. What will happen after 2009, as far as quantities exported to the EU are concerned, is still subject to considerable controversy.

OUTLOOK FOR 2007/08

There is no quick fix to the current imbalance between supply and demand. The quickest solution would be adverse weather seriously harming 2007/08 production. Production is likely to react to the fall in export prices below the cost of production. Given additional financial incentives to producers to leave the sector, EU sugar production is expected to remain on a downward path. However, given the excellent weather up to the end of august production in 2007/08 could be as high as the previous year.

Early indications suggest that world production for 2007/08 could rise by another 6 to 7 mln tonnes and the fall in world prices will not really begin to take effect before 2008/09. Barring adverse weather that is likely to be the case with current surplus estimates at above 10 mln tonnes. Exporting countries will have to wait for quite a while before the balance between supply and demand is restored. Probably higher ethanol production will reduce the waiting period.

WORLD SUGAR PRODUCTION 2007/08

Production Area	Tonnes (mln)
Europe	26.28
Africa	10.75
North & Central America	19.86
South America	39.53
Asia	67.99
Oceania	4.78
TOTAL	169.19

2007 SALARIES & EMOLUMENTS SENIOR EXECUTIVES

	POST	TOTAL	REMARKS
	CONTRACT OFFICERS	\$	
1.	Executive Chairman	4,900,000	Plus Gratuity and Motor Vehicle
2.	Director of Research, SIRI	2,722,080	Plus Gratuity Motor Vehicle & Lunch Allowance
3.	Director, Finance & Administration	2,778,578	Plus Gratuity Motor Vehicle & Lunch Allowance
4.	Factory Services Manager, SIRI	2,520,000	Plus Gratuity Motor Vehicle & Lunch Allowance
	OTHER SENIOR EXECUTIVES		
1.	Agricultural Services Manager, SIRI	3,650,789	Plus Motor Vehicle & Lunch Allowance
2.	Information & Planning Manager	2,741,283	Plus Motor Vehicle & Lunch Allowance
3.	Head, Extension Services, SIRI	2,832,123	Plus Motor Vehicle & Lunch Allowance