

Sugar News

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Tower Hill Sugar Mill & Power Plant Gear Up for Crop 2015-2016



After the last cane truck delivers sugar cane to the Mill, all factory equipment at Tower Hill must be taken apart, serviced and brought back to full working conditions in preparation for the next crop. Out of crop maintenance is crucial for any factory since necessary improvements, repairs and servicing are carried out to optimize in crop operations, increase overall factory efficiency and reduce mill downtime.

At Belize Sugar Industries Limited, it is no different and personnel are organized in maintenance teams which are assigned to different sections of the factory such as the cane yard, mills, boiling house, other services and capital projects. These teams are managed and supervised by engineers who need to plan and set targets before the crop season ends and work to achieve those targets during the out of crop period.

Once the crop starts, the factory equipment works continuously 24/7 with only a short stop for planned maintenance roughly every two weeks.



Continued in page 4





PSCPA holds its second AGM and is now Fairtrade Certified!

After Crop 2015 ended, Progressive Sugar Cane Producers Association worked arduously with its members to ensure that all preparations for their Fairtrade audit were on track. After the audit, the association worked on all the non-compliances and today the PSCPA is proud to announce that the association is officially Fairtrade Certified!

Progressive Sugar Cane Producers Association proudly held its 2nd Annual General Meeting on October 11th, 2015. The event took place at SIRDI and lasted from the morning to early afternoon with lively participation from all farmers. The members agreed on plans for the upcoming year and many prizes were raffled such as spray pumps, fertilizer, gifts certificates and even livestock.

PSCPA also has an Environmental Officer/Chemist who will be working closely with the Group Leaders in training and capacity building for farmers. PSCPA thanks everyone who helped them in one way or another during their first year. PSCPA is now looking forward to the upcoming crop and to continue with a steady progressive growth!



Farmers at the Closing Meeting with Fair Trade



Farmer Eluterio Gutierrez with his Winning Package

Corozal Sugar Cane Producers Association Providing Technical Support to Members



Farmers during their First Technical Support Session

CSCPA, as part of its commitment to its cane farmers, has recently begun a Capacity Building Program that will provide technical support sessions to help farmers become more productive and sustainable in their farming practices. CSCPA farmers do well with their own traditional methods, however, with the global competition which the industry will be facing in the near future, CSCPA is taking proactive measures to assist farmers in achieving cane farming practices which are sustainable, productive and profitable.

CSCPA's first technical support session began on the 23rd of September 2015 where mostly group leaders got first-hand

information about factors which affect cane cultivation. CSCPA's first session had two presenters: General Manager Ingeniero Hector Estrada from Empresa Bioterra Internacionales which specializes in sugar cane and Ingeniero Rafael Tabic who made a presentation on YARA International Fertilizer technologies.

Both sessions were enlightening and there were many interesting topics covered such as the Soil Nutrition Cycle, Soil Analysis, Foliar Feeding and timely application of Chemicals. The objective of these sessions is to increase productivity yields per acre at a sustainable cost for all cane farmers.



BSCFA Working towards Increasing the Wellbeing of Children and Youth: Fairtrade's Collaborative Approach

Child labor is defined by ILO Convention 182 on the Worst forms of Child labor as "work which by its nature or the circumstances in which it is carried out, is likely to harm the health, safety or moral of the children" and ILO Convention 138 on Minimum Age of Employment. Both Conventions have been ratified by Belize.



BSCFA's Youth Monitors along with International Representatives

Identifying and addressing child labour is a challenging yet important task to industries throughout the world, including the Sugar Industry of Belize. Sugar produced by Belize is mainly for export markets that are increasingly demanding products that are free of child labour.

The Belize Sugar Cane Farmers Association in partnership with Fairtrade International, has been working on the implementation of its Pilot Project which has as some of its specific objectives to identify children in or at risk of being employed in child labour; identify risks to wellbeing of children and youth and also improve their wellbeing and to undertake actions to help reduce the risk of child labour including the worst forms of child labour in sugar cane producing communities.

On October 16th 2015, the BSCFA organized a stakeholder event at the Radisson Fort George Hotel and Marina in Belize City to present findings of our Youth Inclusive Community Based Monitoring and Remediation (YICBM & R) Pilot on Child Labour and Youth



Stakeholder Event Organized at the Radisson

Empowerment and Agriculture Pilot.

In attendance, were representatives from Fairtrade International, Fairtrade America, Tate & Lyle, Embassies of Belize, Government Ministries, Belize Chamber of Commerce and Industry and other Sugar Industry stakeholders. The event was carried out under the banner, "Increasing the Well Being of Children and Youth in and around BSCFA: Fairtrade's Collaborative Approach" and was initiated with opening Remarks by BSCFA's CEO Oscar Alonzo, CEO of BSCFA and Mr. Larry Attipoe, International Development Director of Fairtrade International.

The YICBM&R pilot project was implemented in the villages of Yo Creek in the Orange Walk District and San Victor in the Corozal District, being some key indicators that they are both near the Mexican border and identified risk of child labour. The BSCFA Youth monitors undertook consultations with adults, children and youths in both communities and household surveys. Prior to the implementation of the Pilot, the BSCFA through a partnership with UNICEF received training by UNICEF's International Officer from their Child Labour Section of UNICEF Headquarters based in New York UNICEF Headquarters, for the Board of Directors and further training for its Youth monitors and staff on Child rights and Child protection to better understand the child rights approach and how to conduct interviews with adults, children and youth. The YICBM&R pilot project has been described as innovative since it engages the community, adults, children and youth help to identify the root causes of child labour; It also empowers youth monitors to assist in developing strategies to prevent and reduce the risk of child labour in the sugar cane farming communities.

This is a new approach whose goal is to identify and remediate children found in child labor and ensure that they are not replaced by other children; which is an undertaking that should be further looked into at an industry level to ensure that our Sugar has a competitive edge in the International market. In 2017, the market for sugar will be liberalized in Europe and consumers today are looking to buy sugar from producers who are adhering to International conventions. The feedback from industry stakeholders and other business partners has been very positive. The BSCFA is currently developing specific prevention and remediation projects for these two communities and proposals to present for funding for the Rollout of this project to the rest of the cane farming communities.

The BSCFA has also adopted a proactive approach to decreasing the risk of child labour by implementing an Internal Control System for the monitoring of Child labour with reaping groups of the Association to record information of the workers employed to ensure compliance with their Child labour and child protection policy approved by its members.

BSCFA intends to Rollout the YICBM&R project on Child labour to the rest of its cane farming communities and engage in further youth empowerment in agriculture.



Renovated Playground Area at San Victor Village



Tower Hill Sugar Mill & Power Plant Gear Up for Crop 2015-2016

Continued from page 1

Out of Crop Mechanical, Electrical, and Instrumentation maintenance for the milling plant is carried out in the following areas: cane handling and milling, boiling house (external & internal) and the services sections. We provide below a snapshot of maintenance works carried out this out of crop period in the different areas.

A snapshot on Mechanical Maintenance



Mechanical maintenance during the Out of Crop period is very intensive.

At the cane yard station, all the cane carriers are taken down; as the need arises, slats for these conveyors are evaluated, repaired or replaced. All conveyor runways are also evaluated and refurbished. Cane levelers, cane knives and shredder rotors are also taken down and areas of severe wear and tear are built up with wear resistant welding, and these are re-assembled.

At the milling station, all mill rollers and inter carriers are removed. Carriers are refurbished, drive systems are overhauled, and mill rollers are re-machined to meet the new mill settings. All lubrication and cooling lines are also taken down, cleaned, and refurbished. Mill headstocks are checked for proper alignment, and if required, are re-aligned as these have to withstand the tremendous pressure of cane crushing. Everything then has to be re-installed, for proper operation during the crop.



Employee hard at work at the Fabrication Workshop

The repairs at the boiling house area for any out of crop period are as intensive as the front end. All critical equipment, including pumps, sugar conveyors, juice heaters, clarifier, evaporators, sugar boiling, and sugar curing equipment are opened and thoroughly inspected for defects which are repaired or replaced. This is a critical requirement as any deviation from standards in this area could result in reduction of throughput at the milling station.

A snapshot on Electrical and Instrumentation Maintenance



During the out of crop period, extensive electrical and instrumentation maintenance takes place to ensure all aspects of the milling plant are in full working conditions before the crop starts. This year, several repairs and upgrades are being carried out.

The cane yard section is being integrated to the new control system at the mills to improve cane preparation and milling efficiency.



Control Chair inside State of the Art Tipper Cabin to better control unloading & feeding of cane.

This improvement will increase efficiency for the mill and reduce overall electricity usage. The overall mills control system is also being upgraded to state of the art controls where the machine-human interface will be through the new monitors that will be displaying real time process signals which will increase mill performance and reliability during crop.

The state of the art controls at mill also consist of a new Programmable Logic Controller (PLC) which will be the "Brain" of the milling process improving efficiency, lost time and operation. Twenty 350HP electric motors were also serviced and eleven were completely overhauled based on vibration analysis results to prevent motor failure and down time during crop.

The Control System for the continuous Vacuum Pan in the boiling house was also upgraded.

Tower Hill Sugar Mill & Power Plant Projects for 2015-16 Crop Season

For this year, the company is implementing the following projects which will bring major improvements during the upcoming 2015-2016 crop season:



- A new 40 ton truck dumper (*bottom left picture*) is currently being installed at the Cane yard, with a state of the art control cabin (*top picture*). Also at the cane yard, a redundant crane column will be taken down to facilitate cane offloading.



- At the mill, a weigh-scale to weigh prepared cane before it enters the mill will also be installed. The function of this scale is to control feed to the mill to pre-set parameters and will improve milling operations.



- Also at the milling station, a new rubber mill inter carrier will be installed to feed the #3 mill; this is aimed at increasing mill efficiency (*2nd left picture*).



- To be able to have more juice heating capacity, two additional juice heaters are being installed. These new equipment will aid in having a constant supply of properly heated juice, which is a critical requirement to achieve good clarification of mixed juice, in preparation for the evaporation stage of the process (*2nd right picture*).



- In addition to the new heaters, the bagging scale area will see some major improvement. A new bagging system is being installed for the bagging of Direct Consumption (DC) Sugars in both 50 kg and 25 kg bags. Previously, BSI could only bag DC Sugars in 1 ton and 50 kg bags (*bottom right picture*).

Clearly, there is an arduous out of crop maintenance that takes place at BSI's Sugar Mill and Power Plant. Maintenance periods usually last between 21 to 24 weeks average. This year, the maintenance period will last 21 weeks and maintenance and project engineers are working strenuously to have the mill ready for the 2015-2016 crop season.



FROM Sugar Cane, TO Sugar Crystals

THERE ARE SIX BASIC PROCESSES INVOLVED IN SUGAR MANUFACTURING:

1. Preparation
4. Evaporation
2. Extraction
5. Crystallization
3. Clarification
6. Separation

You can find our Previous Articles in Previous Volumes: Vol 1, Vol 2, Vol 3, Vol 4 and Vol 5



Vacuum Pans used for the Crystallization Process

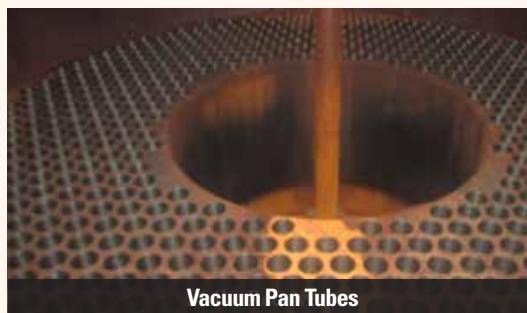
CRYSTALLIZATION PROCESS

In the crystallization process, the resulting syrup from the evaporators must be concentrated further so that the sucrose in solution will form crystals of sugar. The crystallization process happens in several stages called "The Pan Boiling System". BSI utilizes a Three Boiling Scheme whereby three different grades of sugar are produced (A, B, and C Sugar). This is carried out in single effect Vacuum Pans. These Vacuum Pans, similar to the evaporators, are heat exchange vessels that transfer heat from a heating medium (either Vapor from the evaporation process or Low Pressure steam from the Power Plant) via a heating surface (vacuum pan tubes) to the material inside the vessels.

The result of this heat transfer process is the evaporation of water resulting in further concentration of the material to produce a mixture of sugar crystals and molasses called a Massecuite. The Massecuite is discharged into a holding tank called a strike receiver where the material is temporarily stored before moving onto the next stage of the sugar manufacturing process where the sugar crystals are separated from the liquid portion.



Strike Receivers



Vacuum Pan Tubes



ASR Group-BSI Participates in the Independence Parade!



Iranie Garcia, one of the two Sugar Queens who participated for the BSI Float

September is the most celebrated month of the year in Belize with national festivities throughout the month. One of the most awaited events for September is the Independence Day Parade where Belizeans showcase their patriotism through music, colorful floats and vibrant carnival outfits! ASR Group-BSI proudly participated once more in this year's parade in Orange Walk Town.

By participating in the annual parade, BSI seeks to educate the general public about the Sugar Industry which supports the livelihoods and wellbeing of around 15% of Belizeans and contributes greatly to the national economy. ASR Group-BSI takes pride in participating in national activities which foster community engagement, citizen collaboration and participation!



One of BSI's Highlights: The Case Tractor



Rashawn Flowers, Angelli Flores & Mrs. Loraine

BSI's float showcased "Handling and Shipping" which involves the transportation of sugar from the Tower Hill Factory to the ocean going ships that anchor just offshore Belize City. This operation is slow, costly and inefficient as we can only load the ships at the rate of around 700 tons per day.

However, in the absence of a deep water port this method remains the only viable means of transporting the sugar for export. Options to improve our sugar export operations are being explored as significant freight savings can be realized if we can materially improve on the loading rate.

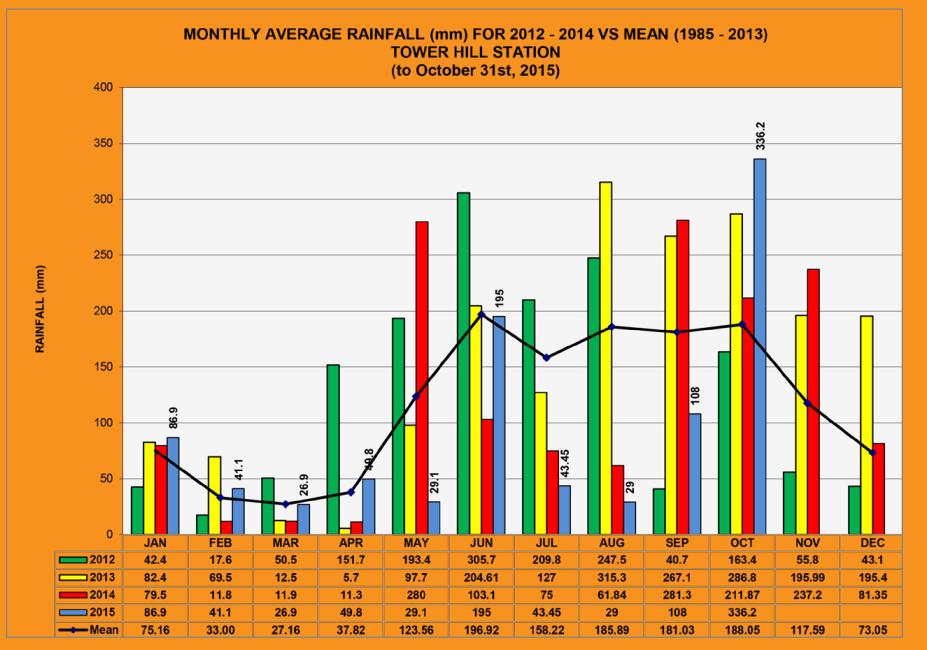


BSI ASR Float showcasing "Shipping & Handling"

The graph shows rainfall recorded at Tower Hill in 2012, 2013, 2014 and up to October 31st, 2015. As can be seen in the graph, we suffered a very serious drought throughout the months of July to mid-September, with an average drop of 60.15 mm below the mean which could possibly be one of the longest crucial droughts experienced throughout the country of Belize. As we may also have noticed, the rains came in large amounts in the month of October which recorded the highest amount of rainfall so far with 336.2 mm

The drought has caused irreversible damage to sugar cane due to the fact that water deficit triggers a negative impact upon growth and development of the crop, compromising crop productivity (Inman Bamber, 2004; Smit & Singles, 2006). Not everything is negative though, this rain that we are now getting will be of great use by the cane being planted since there will be good moisture for sugarcane sprouting and growth.

MONTHLY AVERAGE RAINFALL





Process of Sugarcane Delivery for 2015-2016

The SICB through the SCPC and SIRDI will be monitoring the delivery of sugar cane to the factory to determine the origin of the sugar cane yield. This will provide vital information to ascertain accuracy of the production estimate and field productivity surveys to estimate field production. As part of this process, there will be 3 options to obtain cane field data.

Option 1:



Farmers delivering cane to the factory can identify the parcel from where the cane is coming from using maps stationed at the division queue.



The driver will receive a usual queue ticket which will include the parcel ID Number.



Tickets can then be deposited as usual at the SCPC Ticket Booth at the Tower Hill Factory.

Option 2:



Drivers, harvesting group leaders or farmers can identify the parcels in the SIMIS computers at the SCPC Ticket Booth.



Thereafter, drivers can proceed to deposit the ticket at the SCPC Booth at the Tower Hill Factory as usual.

Option 3:



Harvesting Group Leaders (HGL) can register with SIRDI to obtain their maps with the parcel ID.



HGL can then prepare their own tickets and deposit the ticket at the SCPC Booth as usual.

Cane farmers: it is important for you to have your parcels registered under SIMIS to obtain results. If you don't have them registered, you can register them at the SIMIS/SCPC Ticket Booth at the Tower Hill Factory.

BSI Gives Back to the Community

ASR Group-BSI Donates \$75,000 towards the building of Muffles College High School's Auditorium



The facility was inaugurated in May 2015 and has fulfilled a great need for the high school and the Orange Walk Community. The auditorium now provides a space where positive activities and events can be hosted by the school and members of the community.



**PROUD SPONSOR OF
BELIZE JAGUARS**



**BSI donates \$10,000 BZ Dollars
to Belize's National Football
Team, the Belize Jaguars!**

The donation was given as an assistance for the team to advance to the third round of the 2018 FIFA World Cup Qualifiers.



HOW CAN I HAVE MY SAY?

Contact us. Send ideas, thoughts and suggestions to:

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Contact BSI's Hotline & Farmer Number at: 605-3101

We want to hear from you! Let us know what you want in your newsletter.





Challenges Facing the Industry in 2016

by Mac McLachlan - ASR Group's Vice President of International Relations

As we approach the start of crop, farmers and miller alike have prepared the best they can to make it a successful year.

But some challenges are beyond the control of either. First, the European Sugar market has deteriorated dramatically. Sugar prices fell by an unprecedented amount in the first half of 2015, as the market prepares for the changes in 2017 when beet sugar manufacturers will be allowed to produce as much sugar as they please. This will drive the price down further. No one can predict the market exactly – and it has proven over the years to be cyclical, meaning it goes up and down. For now, we are in a low point, which will make 2016 a difficult year for everyone in the cane sugar industry.



90% of Belize's Sugar Produced is for the Export Market

The weather has also been unkind. With rainfall at half its average in the crucial months for cane cultivation, farmers are anticipating a significant decline in cane yields. We have a lot of stand over cane to crush this year, so the overall picture might not look so bad. But it is likely that from the excellent cane quality and record TCTS levels achieved last year, there is likely to be a decline in sucrose content and cane quality. So a further blow.

But there are things that are within our control. Stakeholders need to accelerate the pace for concluding a Strategic Development Plan (SDP) with the objective of making the industry

sustainable and profitable in the long term.

Those involved in the SDP process have met a number of times, and working groups have reported many ideas. The SDP steering committee will shortly be presented with a log frame setting out the phases needed to achieve this.



Mechanised Harvesting - A viable option as the Industry Moves Forward

These are: improved cane productivity – more tons per acre, increasing farmers' incomes even as cane prices fall, matching mill capacity; reduced costs of harvesting and delivery through more efficient use of cane trucks and field equipment; how the cane delivery process can encourage increased efficiencies to reduce costs to farmers; encouraging a shift to mechanised harvesting where this makes sense; agro-finance suited to cane farmers' needs; improvements to the factory-to-ship logistics process; how to get the right investment climate to encourage mill expansion and thereby reduce production costs making Belizean sugar more competitive to face the new market challenges.

To help support this process, we now have the EU-funded Sugar Industry Management Information System (SIMIS) almost operational. Farmers have co-operated exceptionally well to ensure details of farm sizes, crop estimates and other important crop details are computerized, ensuring fairness

and transparency in crop management. This is an invaluable tool for SCPC and SICB to plan more efficiently. For farmers it guarantees fairness and transparency. For the mill it provides clarity on crop estimates to help plan the milling process.

The Inter-American Development Bank has also come to help us. It has approved a project which will provide independent, highly trained extension officers to provide technical support to farmers to help improve productivity. Independent means that though they will be based at SIRDI, as the technical arm of the industry, they will work directly with farmers, and not get diverted to other matters. Associations will all have a place on the steering committee for this project, to ensure it meets farmers' needs.



Farmer cooperating to provide his field information to be entered in the SIMIS

Working together, industry stakeholders can make this a long term, sustainable and profitable business. But this will require everyone to play their part: farmers to improve productivity, the government to support farmers and the mill to make the investments both need to make, industry institutions to strive for greater efficiency, and the financial and development sectors to continue to support industry stakeholders in this process.