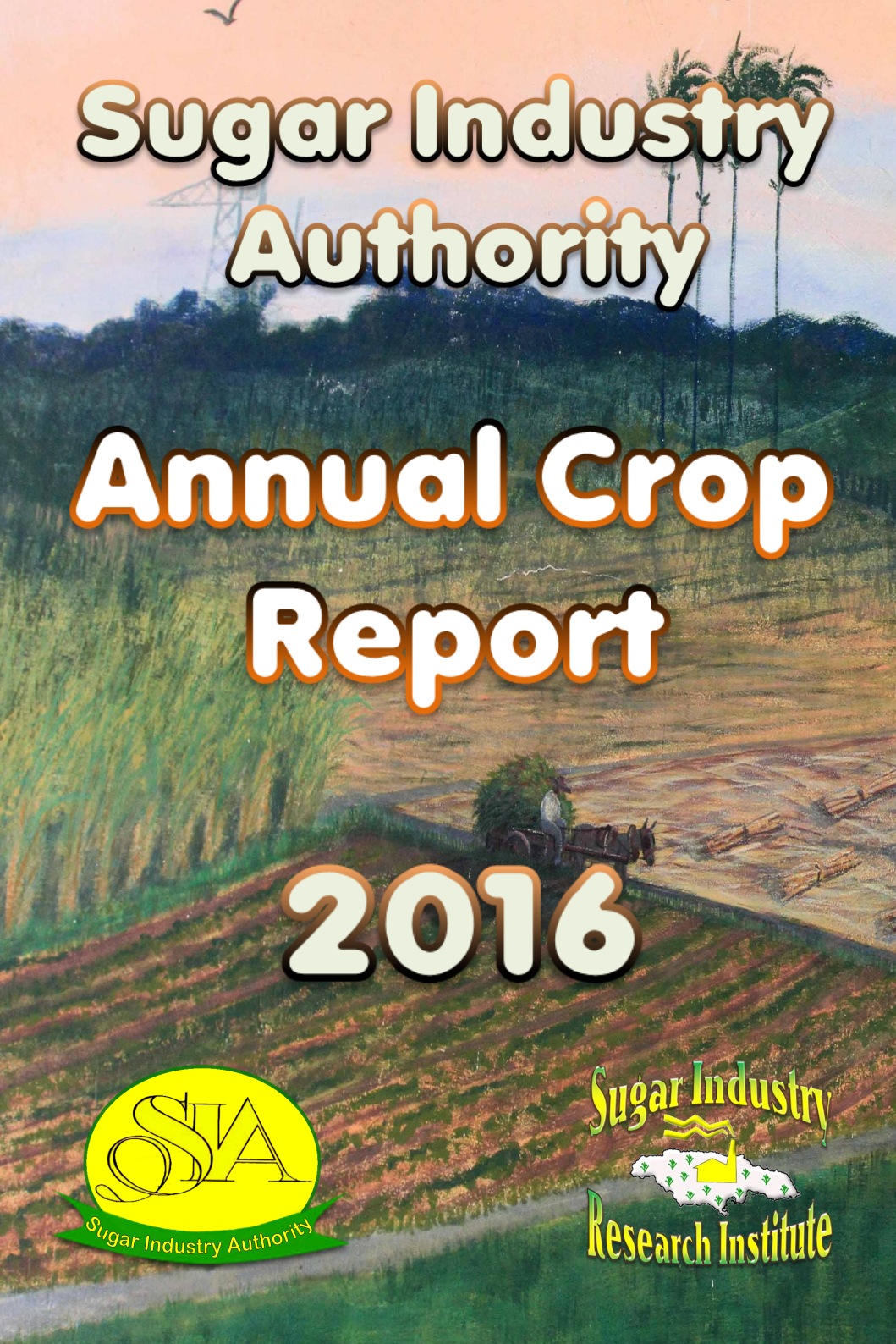
Sugar Industry Authority

Annual Crop Report

2016



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Introduction & Background

Repositioning Jamaica's Sugar Industry

With over 500 years of experience in the business of growing sugarcane, processing and marketing sugar, a wealth of information on the ABCs of this mature Industry is readily available and documented. Experience, they say, teaches wisdom. But how much wiser is the Jamaican Sugar Industry since the Spanish & English traders exploited this valuable crop cultivated primarily for its sugar content, and a spirit generated from the syrupy afterthought, RUM, esteemed to be the real unity among men?

Is the camaraderie or nostalgia reached at a gathering where phials of the spirit flow uninhibitedly, adequate to appease the producers and manufacturers of the primary products? Or, is there now a need to skilfully consider the range of opportunities bottled in the sugarcane plant? For the most part, the real value from the crop has not yet been reaped, since, from all indications, current co-products are used as raw materials to generate other products higher up in the value chain in other jurisdictions.

With the end of the Preferential Marketing Protocol for raw sugar from ACP states; the grave reduction on price given for raw sugar on the world market; and the high cost of inputs needed to grow cane and produce sugar, which industry can survive such onslaught? The nostalgic days are over; hence, it is high time the Industry woke up to the sobering consequences of the loss of value from continued dependence on raw sugar. At the same time, many opportunities exist for sugarcane: co-generation, bio-energy, speciality sugars, fresh juice beverages, juice concentrates to name a few.

Introduction & Background cont.

It cannot be business as usual when cane producers and sugar manufacturers can barely break even, given the level of production and the revenue generated.

There must be a will and a way to turn the Industry around and increase profits and ensure sustainability. To be contented in the current situation, doing the same thing the same way over and over, the outcome will be the same - low levels of revenue, inadequate to cater to development of industry and improved personal lives of stakeholders.

So, where will the change start, and with whom? It must be from stakeholders of the Industry, and I dare say, with policy makers at the national level! Sugar, at one stage, generated revenue to cover a great portion of Jamaica's GDP, and an even greater portion of Agriculture's contribution. The policy regarding land use must ensure that to whom arable lands are allocated, a concomitant return via agricultural productivity and earned revenues follow. Policies should dictate that housing and commercial developments do not encroach on farming communities, with outcry that agricultural activities are inappropriate because of proximity to town centres.

Stakeholders need to create a turnaround agenda, identify the driving forces, allocate needed resources, and then manage the restructuring. For too long the stakeholders have been passengers on the Industry, instead of being drivers and owners. The way forward should revolve around sound research and development, retooling of production capacity, creation of alternate products from sugarcane, and an aggressive product marketing campaign. Where there is a will, there is a way. Set the restructuring machinery in motion and the way will become very clear.

Fig.1: Sugarcane growing areas, and the factories at which milling of canes and extraction of sugar takes place, Jamaica Sugarcane Industry, 2016

Changes at SIA/SIRI

With effect from January 2015, there have been changes in the organisational structure of the Industry Regulator and Research Institute as follows:

- The Organisation now has a CEO as its head
- Board of Directors with Chairman and six members
- CEO is not Chairman of Board
- SIRI is a Division of SIA
- SIRI retains position of Director of Research
- Departments within SIRI: Central Laboratory, Research, Technical Services
- There is no longer an Extension Department at SIRI: interface with growers on a daily basis resides with the All Island Cane Farmer's Association, more popularly known as ALLCANE
- Research Department has four Sections: Cane Production, Environment & Agro Meteorology, Sugar Technology &Variety Development
- The reorganisation is to facilitate SIRI's core function – investigative research to solve identified problems, and to develop and preview new technologies that will lead to sustainability of the Industry

New varieties for 2015/2016

BJ9250

BJ9250 is characterised by its medium to thick stalks and erect growth habit which makes it highly suited for mechanical harvesting and packs to a good payload in carts and trucks.

Its germination is usually very rapid and reliable and it can achieve very high tonnages of up to 100 tonnes cane per hectare with good irrigation or rainfall. It has good sucrose content that makes for high sugar yields.

BJ9250 is best grown on the light, medium, and heavy soil textures across the irrigated and rain-fed areas.

The young internodes are generally slightly purplish-green, becoming grayish as it matures. Cracks are present on the internodes which are cylindrical and slightly zig-zag and are covered with heavy wax.

BJ9250 canopies early and provides, under good management, for fewer herbicide applications that can positively impact reduced costs and the environment.

New varieties for 2015/2016 cont.

BJ9310

BJ9310 is a niche variety for the Wet West. It is free-trashing and highly productive on the clay loam and well - drained clay soils where it can achieve over 100 tonnes cane per hectare. It will lodge with age and high yields.

BJ9310 is characterized by its medium to long, thick internodes, erect growth, and yellowish-green stalk.

The leaves are of medium length, is wider than usual, and dark green in color.

The leaf sheath is pale green with a thin coat of wax. A distinct auricle is present.

Germination is usually very rapid and reliable with good quality cane seed.

Tillering is quite rapid and profuse.

Stalks emerge quite erect but with its broad leaves **BJ9310** provides good early ground cover that may result in fewer herbicide applications.

New varieties for 2015/2016 cont.

BJ9764

BJ9764 is a high-yielding variety that shows adaptation to the high rainfall areas: Frome, Holland, Upper Clarendon and St. Catherine, Golden Grove and Appleton.

It is prominent because of its consistently high cane yield of over 100 tonnes cane per hectare, and above average juice quality under good management.

The young internodes are wine red in colour and changes to purple as they get older.

Young stalks are covered with a thin coat of wax. Cracks are present on the internodes. The root band has a cream to purple colour. Bud grooves are sometimes present on the mature stalks, and a wax ring is well defined on the internodes.

BJ9764 grows well on the light, medium, and heavy soil textures. It is resistant to smut and orange rust diseases and shows tolerance to the cane fly.

The growth ring is quite distinct and varies in colour from pale green to purplish-green where leaf is removed from the stalk.

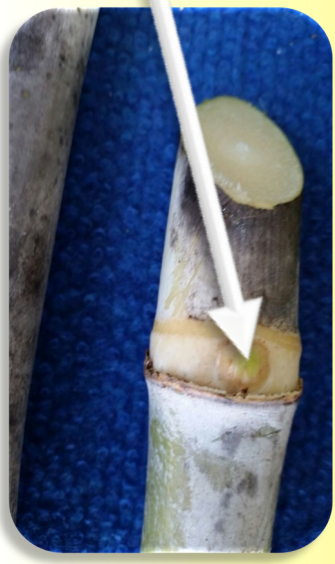
Buds are medium to large and are ovate with small bud wings: cream-brown when young, but gets straw-brown as the variety matures.

Know your varieties

BJ9250

Leaf, leaf sheaths and stalks of BJ9250

Younger bud



Mature bud

Intermode crack

Know your varieties cont.

BJ9310

Leaf, leaf sheaths and stalks of BJ9310

Auricle

Younger bud

Mature bud

Know your varieties cont.

BJ9764

Leaf, leaf sheaths and stalks of BJ9764

Younger bud

Mature bud

BJ7015 Earnings: 1986 – 2015

Introduction

Sugarcane varieties have contributed significantly to the gross domestic product of Jamaica. Sugar as a main product and co-products such as rum, ethanol, molasses, vinegar, bagasse board, nutraceuticals and energy are produced from varieties as a raw material. The earnings are shown for one variety, BJ7015, based only on sugar production.

Interpretation

Earnings from BJ7015 amounted to **12.21 billion** over the period 1986 to 2015. Since only 50% percent of the industry reported then the overall earnings is mostly greater when returns from molasses, bagasse, rum and other by-products are included.

At peak in 1993 BJ7015 occupied 30% of the cane growing area.

Conclusion

The worth of a variety should be based on its total contribution, not only the sugar component.

Recommendations

1. Variety development should be continued to support the Jamaican Sugar Industry's earning potential.

2. Varieties with good earning potential should be cultivated at the maximum allowed capacity.

Table 1: Earnings from BJ7015 as a consistent and reliable variety over a productive commercial life spanning thirty years, Jamaica Sugarcane Industry

Years	Total earnings (million)	Years	Total earnings (million)
1986	$61	2001	$277
1987	$70	2002	$243
1988	$99	2003	$319
1989	$75	2004	$420
1990	$91	2005	$294
1991	$140	2006	$390
1992	$309	2007	$453
1993	$349	2008	$464
1994	$419	2009	$236
1995	$503	2010	$464
1996	$467	2011	$679
1997	$413	2012	$1,111
1998	$191	2013	$1,015
1999	$292	2014	$1,182
2000	$322	2015	$860
Grand Total			**$12,209**

Variety performance 2015

Table 2: Comparison of leading sugar cane varieties (as tonnes canes per hectare) under diverse cultivation practices and environments during Crop Year 2014/2015, Jamaica Sugarcane Industry

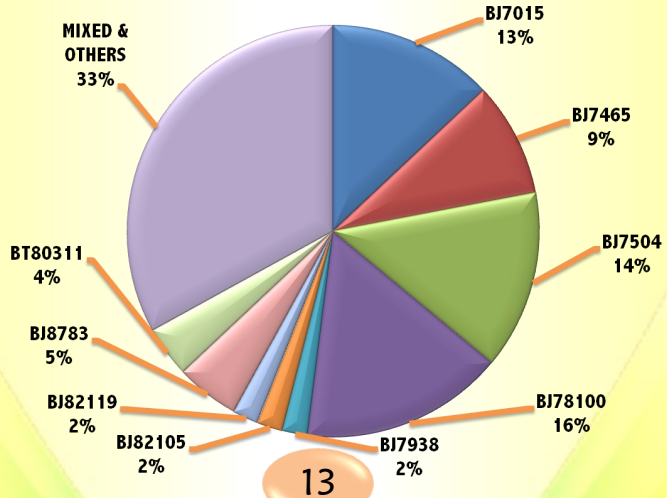
Estates/Farms	Top Varieties								
	BJ7015	BJ7465	BJ7504	BJ78100	BJ7938	BJ82105	BJ82119	BJ8783	BT80311
Appleton	66.37	65.43	65.87	56.91	66.17	64.48	50.55	+	60.58
Frome	72.55	70.63	77.93	56.36	67.89	79.37	87.74	79.54	+
Holland (Newton)	56.11	93.91	66.35	75.86	+	63.33	89.43	48.23	83.89
\Wet West*	**70.15**	**68.74**	**74.65**	**59.29**	**67.29**	**72.73**	**81.41**	**74.36**	**77.57**
Bernard Lodge	57.35	45.09	55.09	54.54	27.21	+	+	55.86	60.14
Monymusk	40.36	31.00	39.41	38.11	14.93	14.81	36.93	33.89	53.50
New Yarmouth	40.53	44.41	43.48	48.34	47.09	+	48.68	+	80.76
Irrigated*	**40.93**	**43.39**	**40.67**	**40.53**	**41.87**	**14.81**	**37.75**	**50.05**	**67.47**
Golden Grove	59.44	55.74	64.69	54.88	58.56	56.97	61.92	61.21	64.75
Wet East*	59.44	55.74	64.69	54.88	58.56	56.97	61.92	61.21	64.75
Cambria	+	62.41	57.90	58.35	56.95	+	60.39	64.28	69.87
Worthy Park	75.66	68.52	71.47	77.62	77.18	71.73	73.87	60.09	49.84
Central*	**75.66**	**63.63**	**70.93**	**73.68**	**72.11**	**71.73**	**72.89**	**60.89**	**68.78**
Island Average	**62.20**	**54.56**	**68.23**	**44.01**	**63.40**	**71.88**	**58.41**	**60.10**	**71.07**

+ No entry in this category

Source: Cane Yield Survey Report 2015, SIRI, Jamaica

* Regional Averages

Fig. 2: Percentage share of area reaped as occupied by the leading varieties cultivated in 2015, Jamaica Sugarcane Industry



Variety Performance 2015 cont.

Table 3: Comparison of leading sugar cane varieties (as tonnes sugar per hectare) under diverse cultivation practices and environments during Crop Year 2014/2015, Jamaica Sugarcane Industry

Estates/Farms	Top Varieties								
	BJ7015	BJ7465	BJ7504	BJ78100	BJ7938	BJ82105	BJ82119	BJ8783	BT80311
Appleton	6.42	6.38	6.77	6.16	7.36	6.44	5.09	+	7.56
Frome	7.39	7.28	7.66	5.95	6.95	8.61	7.89	8.74	+
Holland	5.13	8.78	5.92	6.71	+	6.37	7.18	4.40	9.52
Wet West*	**7.03**	**6.94**	**7.35**	**6.10**	**7.09**	**7.67**	**7.21**	**8.03**	**8.99**
Bernard Lodge	6.91	5.28	6.28	6.57	2.92	+	+	6.69	7.51
Monymusk	4.48	3.37	4.13	4.31	1.84	1.44	4.11	4.03	5.99
New Yarmouth	3.97	4.20	4.02	4.73	5.00	+	5.03	+	8.28
Irrigated*	**4.31**	**4.19**	**4.21**	**4.51**	**4.47**	**1.44**	**4.17**	**5.99**	**7.43**
Golden Grove	5.58	5.16	5.86	5.18	5.75	5.38	5.74	6.18	6.34
Wet East*	**5.58**	**5.16**	**5.86**	**5.18**	**5.75**	**5.38**	**5.74**	**6.18**	**6.34**
Cambria	+	6.89	6.40	6.44	6.44	+	7.33	7.42	8.33
Worthy Park	10.52	9.01	8.38	9.88	9.91	8.91	9.65	8.35	6.20
Central*	**10.52**	**7.31**	**8.30**	**9.17**	**9.04**	**8.91**	**9.48**	**8.17**	**8.22**
Island Average	**6.25**	**5.42**	**7.01**	**4.86**	**7.39**	**7.67**	**6.82**	**6.79**	**8.03**

+ No entry in this category

* Regional Averages

Source: Cane Yield Survey Report 2015, SIRI, Jamaica

Fig. 3: Percentage share of plant cane area reaped as occupied by the leading varieties cultivated in 2015, Jamaica Sugarcane Industry

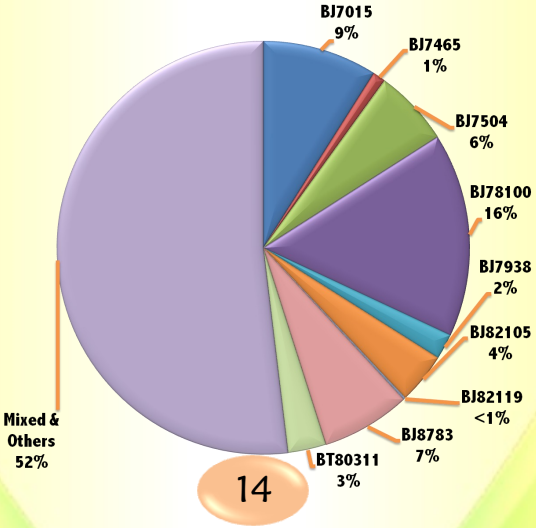


Table 4: Area reaped as a percentage of area in cane, by Factory Areas 2014-2016, Jamaica Sugarcane Industry

2014

Factory Areas	Area in cane (ha)	Area reaped	% Area reaped
Appleton	5924	5,268	89
Everglades	3068	2,367	77
Frome	11156	8,008	72
Golden Grove	3739	3,261	87
Monymusk	8368	7,298	87
Worthy Park	3679	3,503	95
Grand Total/Average	**35934**	**29,705**	**83**

2015

Factory Areas	Area in cane (ha)	Area reaped (ha)	% Area reaped
Appleton	5629	5,208	93
Everglades	3251	2,853	88
Frome	11156	6,846	61
Golden Grove	3739	3,030	81
Monymusk	8463	6,871	81
Worthy Park	4057	3,952	97
Grand Total/Average	**36295**	**28,760**	**79**

2016

Factory Areas	Area in cane	Ha reaped (ha)	% Area reaped
Appleton	5803	921	16
Everglades	2750	2,312	84
Frome	11156	6,460	58
Golden Grove	3739	2,330	62
Monymusk	7478	4,726	63
Worthy Park	3179	2,971	93
Grand Total/Average	**34105**	**19,720**	**58**

Table 5: Summary of cane and sugar production for Crop Years 2014-16, Jamaica Sugarcane Industry

Year	Area reaped (ha)	Cane reaped (tonnes)
2014	29,705	1,804,521
2015	28,760	1,539,992
2016	19,720	1,104,862

Year	Tonnes 96° Sugar	tc/ha	ts/ha
2014	154,361	60.75	5.20
2015	134,223	56.02	4.67
2016	82,856	56.00	4.00

Table 6: Combined field productivity of cane and sugar yields by Factory Areas 2014, Jamaica Sugarcane Industry

Factory Areas	Area reaped	Cane reaped (tonnes)
Appleton	5,268	370,674
Everglades	2,367	144,753
Frome	8,008	505,969
Golden Grove	3,261	255,024
Monymusk	7,298	300,775
Worthy Park	3,503	227,326
Grand Total/Average	**29,705**	**1,804,521**

Factory Areas	Tonnes 96° Sugar	tc/ha	ts/ha
Appleton	33,890	70.36	6.43
Everglades	11,724	61.15	4.95
Frome	38,603	63.18	4.82
Golden Grove	19,403	78.20	5.95
Monymusk	23,091	41.21	3.16
Worthy Park	27,650	64.89	7.89
Grand Total/Average	**154,361**	**60.75**	**5.20**

Table 7: Combined field productivity for cane and sugar yields by Factory Areas in 2015, Jamaica Sugarcane Industry

Factory Areas	Area reaped (ha)	Cane reaped (tonnes)
Appleton	5,208	304,577
Everglades	2,853	137,888
Frome	6,846	438,836
Golden Grove	3,030	196,750
Monymusk	6,871	285,899
Worthy Park	3,952	247,045
Grand Total	**28,760**	**1,610,995**

Factory Areas	Tonnes 96° Sugar	tc/ha	ts/ha
Appleton	26,914	58.48	5.17
Everglades	11,103	48.33	3.89
Frome	32,785	64.10	4.79
Golden Grove	16,018	64.93	5.29
Monymusk	19,775	41.61	2.88
Worthy Park	27,628	62.51	6.99
Grand Total/Average	**134,223**	**56.02**	**4.67**

Table 8: Mean annual rainfall (mm) that contributed to sugar cane growing in the Ecological Zones, Crop Year 2014-2016, Jamaica Sugarcane Industry

	Year		
Ecological Zones	**2014**	**2015**	**Jan - Aug 2016**
Central Uplands	1090	860	830
Dry North Coast	834	639	687
Irrigated Southern Plains	460	240	605
Wet East	1014	453	1193
Wet West	2063	1465	1130
Total	**5461**	**3657**	**4421**

Table 9: Combined field productivity for cane and sugar yields by Factory Areas in 2016, Jamaica Sugarcane Industry

Factory Areas	Area reaped	Canes reaped (tonnes)
Appleton	921	71,255
Everglades	2,312	100,459
Frome	6,460	390,662
Golden Grove	2,330	167,123
Monymusk	4,726	202,871
Worthy Park	2,518	119,980
Grand Total/Average	**19,267**	**1,052,350**

Factory Areas	Tonnes 96° Sugar	tc/ha	ts/ha
Appleton	-	77.37	-
Everglades	3,119	43.45	1.35
Frome	27,507	60.47	4.26
Golden Grove	11,282	71.73	4.84
Monymusk	16,985	42.93	3.59
Worthy Park	24,054	47.65	9.55
Grand Total/Average	**82,947**	**54.62**	**4.31**

Table 10: Summary of canes milled and sugar recovered, at six operating factories in 2014 & 2015, and by five operating in 2016, Jamaica Sugarcane Industry

Crop Year	Cane ground for sugar (t)	96º sugar made (t)	tc/ts
2014	1,788,162.51	154,361.00	11.73
2015	1,564,216.91	134,223.00	11.89
2016	1,114,136.00	82,843.00	13.45
Average	1,488,838.47	123,809.00	12.03
Target	**3,000,000.00**	**300,000.00**	**10.00**

Table 11: Summary of canes milled and sugar recovered, at each factory during crop years 2014-2016, Jamaica Sugarcane Industry

Factory	2015/2016		2014/15		2013/14	
	Cane ground for sugar (t)	96º Sugar made (t)	Cane ground for sugar (t)	96º Sugar made (t)	Cane ground for sugar (t)	96º Sugar made (t)
Appleton	-	-	314,752	26,914	369,802	33,890
Everglades	55,924.00	3,016.00	132,981	11,103	131,111	11,724
Frome	396,077.00	27,506.00	426,981	32,785	505,951	38,603
G/Grove	167,122.00	11,282.00	196,631	16,018	252,659	19,403
M/musk	242,164.00	16,985.00	253,415	19,775	270,177	23,091
W/Park	252,849.00	24,054.00	247,606	27,628	247,019	27,650
Total/Avg	**1,114,136**	**82,843**	**1,572,367**	**134,223**	**1,776,718**	**154,361**

Table 12: Comparison of efficiency of factory operations as measured by Factory Recovery Index (FRI) at each location during Crop Years 2014-2016, Jamaica Sugarcane Industry

Factory	2015/2016	2014/2015	2013/2014
	FRI		
Appleton	-	88.82	92.22
Everglades	63.66	87.62	87.23
Frome	77.92	79.52	80.6
G/Grove	79.02	89.04	87.36
M/musk	77.69	70.18	79.35
W/Park	96.04	98.38	98.34
Averages	**82.67**	**85.59**	**86.85**
Standard FRI	91.00	91.00	91.00

Table 13: Comparison of sugar recovery as measured by Jamaica Recoverable Cane Sugar (JRCS), an index to indicate factory efficiency according to quality of canes received for milling at each factory, during Crop Years 2014 -2016, Jamaica Sugarcane Industry

Factory	2015/2016	2014/2015	2013/2014
	JRCS		
Appleton	-	9.56	9.96
Everglades	8.99	9.36	10.15
Frome	8.98	9.54	8.91
G/Grove	8.62	9.16	8.79
M/musk	9.03	11.12	10.99
W/Park	9.99	11.34	11.41
Averages	**9.18**	**10.01**	**9.88**
Standard JRCS	10.27	10.12	10.54

Table 14: Comparison of the amount of canes from which each tonne of sugar is recovered at each factory, during Crop Years 2014-2016, Jamaica Sugarcane Industry

Factory	2015/2016	2014/2015	2013/2014
	tc/ts		
Appleton	-	11.70	10.91
Everglades	17.42	11.98	11.29
Frome	14.40	13.02	13.11
G/Grove	14.73	12.28	13.14
M/musk	14.26	12.81	11.7
W/Park	10.42	8.96	8.93
Averages	**13.45**	**11.71**	**11.51**

Table 15: Comparison of time use efficiency of factories as measured by installed grinding rates (as tonnes cane per hour) during crop years 2014-2016, Jamaica Sugarcane Industry

Factory	Rated capacity (tc/hr)	Grinding rate (tc/hr)		
		2015/2016	2014/15	2013/14
Appleton	**150**	-	132.04	137.29
Everglades *	**75**	56.68	69.58	74.23
Frome	**200**	179.49	187.52	189.37
G/Grove	**75**	79.00	85.39	85.15
M/musk	**200**	133.12	131.85	162.61
W/Park	**70**	71.06	68.2	69.18
Averages	**128**	**103.87**	**125.73**	**134.15**

* To date 13/08/2016

Table 16: Comparison of price paid by each factory to growers for each tonne of cane purchased and the amount of sugar recovered from it during Crop Years 2014 -2016, Jamaica Sugarcane Industry

Factory	Price/tonne cane ($)		
	2015/2016*	2014/2015	2013/2014
Appleton	-	$3,651.49	$4,446.54
Everglades**	1675.81	$3,534.86	$4,599.76
Frome	2371.86	$3,651.48	$3,688.24
G/Grove	2389.61	$3,389.71	$3,596.62
M/musk	2390.82	$4,664.03	$5,202.86
W/Park	2733.93	$4,822.08	$5,518.44
Averages	**2325.29**	**$3,953.91**	**$4,392.03**

** Up to Second Payment 2016*

*** Everglades Price/tonne is at first payment*

Table 17: Comparison of earnings by each factory for the quality of sugar recovered from canes milled during crop years 2014-2016, Jamaica Sugarcane Industry

Factory	Price/tonne sugar ($)		
	2015/2016	2014/2015	2013/2014
Appleton	-	70,203.68	79,906.90
Everglades	36,000.00	70,640.80	80,169.35
Frome	46,000.00	70,419.00	80,020.00
G/Grove	50,400.68	70,148.49	79,925.73
M/musk	46,000.00	70,419.00	80,020.00
W/Park	46,000.00	70,695.67	80,161.48
Base Price/Tonne	**46000.00**	**$ 68,565.00**	**$ 78,003.27**

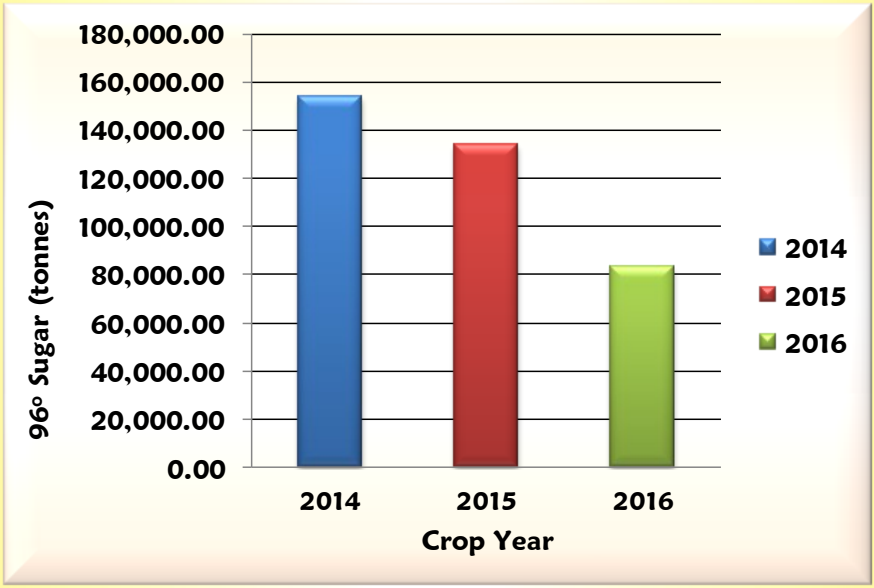
N.B

1. Appleton Sugar Factory did not operate for the 2015/2016 crop
2. Figures for 2015/2016 crop are to date 13/08/2016

Table 18: Comparative share of field earnings between estate farms and independent suppliers of cane during Crop Years 2014-2016, Jamaica Sugarcane Industry

	Farmers / Estates	2016*	2015	2014
Appleton	Estate		3,863.79	4,748.41
	Farmers		3,611.49	4,657.66
	Average		**3,687.16**	**4,676.14**
Everglades	Estate		3,610.02	4,893.81
	Farmers		3,484.53	4,800.19
	Average		**3,544.17**	**4,843.76**
Frome	Estate	2,267.39	3,722.85	4,141.28
	Farmers	2,341.19	3,726.95	3,805.42
	Average	**2,299.56**	**3,725.06**	**3,982.25**
Golden Grove	Estate	2,265.82	3,454.35	3,822.35
	Farmers	2,273.37	3,437.94	3,950.02
	Average	**2,270.41**	**3,447.87**	**3,878.93**
Monymusk	Estate	2,058.70	4,987.58	5,631.45
	Farmers	2,131.58	4,623.28	5,448.10
	Average	**2,101.15**	**4,773.65**	**5,521.15**
Worthy Park	Estate	2,559.93	4,666.36	5,565.13
	Farmers	2,668.72	4,904.94	5,912.22
	Average	**2,635.57**	**4,785.86**	**5,736.83**
Industry	Estate	2,287.96	4,038.46	4,643.87
	Farmers	1,830.37	3,970.97	4,623.88
	Average	**1,861.34**	**4,001.08**	**4,633.91**
First Payment		36,000.00	42,000.00	42,000.00
Second Payment*		46,000.00	17,470.00	28,000.00
Third Payment			8,695.00	10,020.00
Fourth Payment				
Molasses $/tonne		8,000.00	8,000.00	8,000.00

Fig.4: A comparison of sugar production as recovered by all six operating factories in 2014 and 2015 and by five operating in 2016, Jamaica Sugarcane Industry



Sugar production in 2016 is about 53.7% of production in 2014 and 61.8% of production in 2015.

Cane Production 2016: Titbits

Field harvesting of sugarcane, the raw material to feed the mills, had many challenges and a few incentives during Crop Year 2015/2016.

Challenges

- Harvesting began January 6, 2016, about 30 days later than usual, and ended on September 2, 2016, a run of 240 crop days
- Only four of the six factories were receiving canes; one joined later in the season, and operated for 103 days
- Over 304,000 tonnes of mature canes, *table xx*, remained when the reaping season ended on September 2, 2016. Included in the figure is 87% of canes originally destined for Appleton factory, which did not operate this season
- Some 6,329 tonnes of cane that were chemically ripened at Appleton & Subsidiaries were accepted and processed by Pan Caribbean Sugar Co, Frome
- Approximately 192,580 tonnes of mature canes were burnt without orders: 144,390 tonnes on estate farms, and 48,190 tonnes on farms operated by independent suppliers
- Approximately 25,400 tonnes of cane which were on estimate for milling were abandoned for varying reasons
- Some 14,700 tonnes of canes reaped were not destined for grinding, but for use in seeding new fields: 11,300 on estate farms, and 3,400 on farms operated by independent suppliers
- Positive outcomes from chemical ripening technology were not achieved due to some 575 ha (~86%) of treated canes not reaped
- Some 20% of mature canes for milling has not reached the mills when grinding ceased on September 2

Table 19: Comparison of unreaped mature cane as a percentage of cane estimates for each Factory Area during Crop Year 2016, Jamaica Sugarcane Industry

Factory Area	Cane unreaped (tonnes)	Cane estimates (tonnes)	% of estimates unreaped
Appleton	213,872	245,000	87.29
Everglades	459	118,000	0.39
Frome	23,064	480,000	4.81
Golden Grove	23,714	156,800	15.12
Monymusk	31,290	350,000	8.94
Worthy Park	11,674	202,000	5.78
Totals/ave	**304,073**	**1,551,800**	**19.59**

Incentives

- There were gains on the cane estimate at Frome, 4%; and New Yarmouth, 10.3%
- A project promoting green cane harvesting technology (GCH), involving two harvesting contractors and nine participating growers, was in operation in parts of Clarendon and St Catherine where some 300 ha were targeted

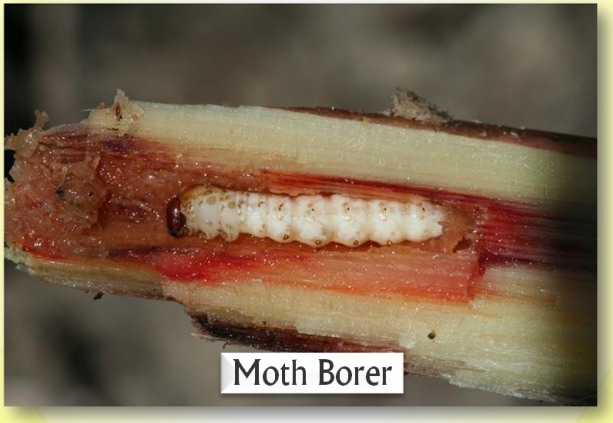
Chemical Ripening

- Chemical ripening to boost cane quality leading up to harvest was done via aerial spraying in two Ecological Zones:
- Wet West: Appleton Estates & Subsidiaries, 294 ha: 158 ha treated with Fusilade at 0.6-0.8 L/ha; 126 ha with Codan at 0.5 L/ha; 10 ha with Optimus at 0.5 L/ha
- Southern Irrigated Plains: New Yarmouth Estates, 377 ha treated with Codan at 0.5 L/ha

Bio-control of Sugarcane Moth Borer

Damage caused by larvae of the sugarcane moth borer, *Diatraea saccharalis*, the key insect pest of sugarcane in Jamaica, continues to be an important source of yield loss incurred by Jamaican sugarcane farmers. The larva of the sugarcane borer is the destructive stage of the moth. All varieties of sugarcane currently grown in Jamaica are susceptible, but sugarcane varieties respond differently to damage and yield losses.

Management of *Diatraea spp*. in many sugarcane regions has largely focused on biological control. In 1970, *Cotesia flavipes*, a wasp, was imported, reared and released. It was not until 1983 that establishment of this bio-control agent was achieved. *Cotesia* rapidly became the dominant parasitic species of the borer with 59% parasitism.


Moth Borer

Testing at SIRI's Central Laboratory

- **Sugar methods (ISO/IEC 17025:2005 accredited)**: polarisation, moisture, reducing sugars, sugar colour (affined and whole raw), dextran, ash, insoluble solids, grain size, and starch.
- **Wastewater methods (Ministry of Health approved)**: biological oxygen demand (BOD), chemical oxygen demand (COD), pH, total suspended solids (TSS), alkalinity, total dissolved solids (TDS), nitrates (NO_3), phosphates (PO_4), and total nitrogen.
- **Soil analysis:** pH, nitrogen (N), phosphorous (P), potassium (K), sodium (Na), calcium (Ca), magnesium (Mg), zinc (Zn), iron (Fe), copper (Cu), manganese (Mn), boron (B), organic matter, cation exchange capacity (CEC), texture, electrical conductivity (EC), and salinity.
- **Irrigation water:** pH, electrical conductivity (EC), total dissolved solids (TDS), alkalinity, nitrates (NO_3), phosphates (PO_3), sulphates (SO_4), sodium (Na), Potassium (K), Boron (B), Chloride (Cl), Carbonate (CO_3), Bicarbonate (HCO_3), Calcium (Ca), and Magnesium (Mg).
- **Molasses analysis:** polarisation (pol), brix, ash, total sugars
- **Leaf analysis:** nitrogen (N), phosphorous (P), potassium (K), calcium (Ca), magnesium (Mg), zinc (Zn), iron (Fe), copper (Cu), manganese (Mn), and boron (B).

Table 20: Comparison of number of tests conducted each year at the Sugar Industry Research Institute's Central Laboratory during Crop Year 2013/2015, Jamaica Sugarcane Industry

Year	Leaf	Soil	Water	Sugar	Molasses
2013	2852	7768	1965	3993	408
2014	667	2965	774	4516	844
2015	403	1994	1577	4196	842
Total	**3922**	**12727**	**4316**	**12705**	**2094**

Sugar Organisations in Jamaica

- **Sugar Industry Authority (SIA)** is a statutory body within the Ministry of Agriculture and Fisheries with powers to regulate and control the industry
- **Sugar Industry Research Institute (SIRI**) is a division of the SIA and its core business is research and development
- **All Island Jamaica Cane Farmers' Association (ALLCANE)**, is body corporated by the cane farmers to promote, foster and encourage the growing of canes
- **Cane Expansion Fund (CEF)** is the body charged with managing the revolving loan for cane planting and expansion
- **Everglades Farms Limited** are producers of sugar cane
- **Jamaica Cane Products Sales Ltd (JCPS)** is the oldest marketing company for sugar produced in Jamaica
- **Campari Group**. owner of Appleton sugar factory is a private large scale producer of cane and a manufacturer of sugar
- **PAN CARIBBEAN** is the operator of Frome and Monymusk Sugar factories and markets the sugar produced
- **Seprod Ltd** is a manufacturing conglomerate and the owner of Golden Grove sugar factory. Seprod will market the sugar produced by Golden Grove
- **Sugar Manufacturers Corporation of Jamaica (SMCJ)** is the umbrella organization of sugar factories
- **Sugar Producers' Federation (SPF)** deals with the industrial relations and staff welfare matters of the sugar manufacturers
- **Sugar Transformation Unit (STU)** oversees the implementation of The Jamaica Country Strategy for the Adaptation of the Sugar Industry: 2006 to 2015
- **Worthy Park** is a private medium scale producer of cane and a manufacturer of sugar

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