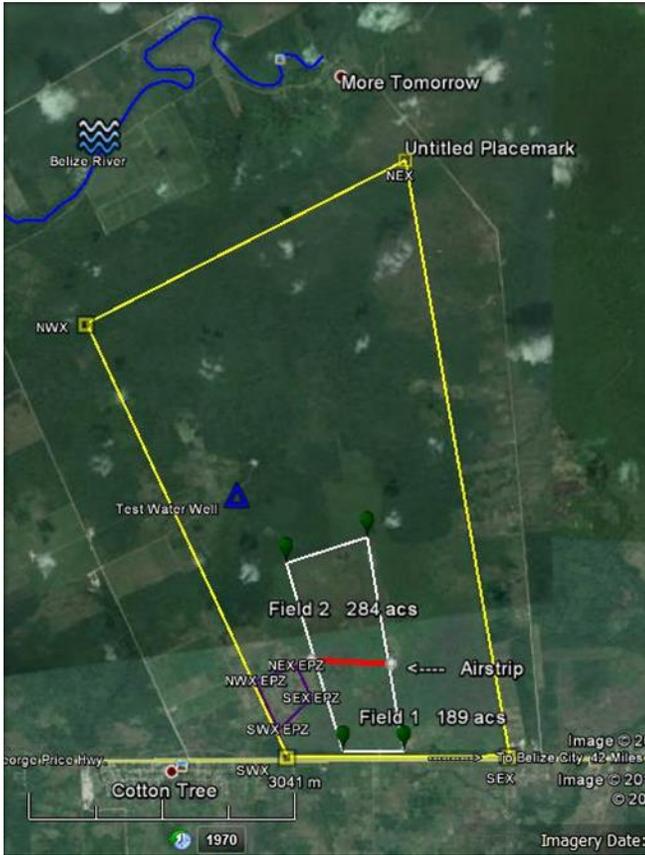


Belize Sustainable Agriculture, Ltd. Farming Report – May 31, 2016

General Comments & Weather



This is the third fortnightly Farming Report for BSA’s 2016 Summer (Wet) Season, whose main objectives are:

- Inform readers as to BSA’s farming activities by season, farm, and crop;
- Provide relevant data on climatic conditions and agricultural pests affecting BSA’s crops;
- Inform readers on domestic/regional market conditions for BSA’s crops.

BSA is only farming at the Cayo One Estate in the Summer 2016 season; it is situated approximately between miles 40 and 42 of the George Price Highway in Belize, near the village of Cotton Tree in Cayo District. Cayo One is some 41 miles west of Belize City, some 9 miles east of Belmopan and some 38 miles east of the Belize-Guatemala border at Melchor.

May 2016 saw a very dry month with only two days of showers at the beginning of the month, which has otherwise been sunny and hot (average day time temperatures of 95°F/35°C). This weather has finally allowed the ground at Cayo One to thoroughly dry out. Just in time for the expected return of seasonal rains! Once again we are hoping for more “normal” weather patterns this season, and activity in the tropical convergence zones seem to indicate that Belize’s 2016 summer wet season is about to arrive, with the first serious rain forecast for June 3rd or 4th.

Belmopan Precipitation Data (mm per month) - May Data through May 31st												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2016	105	282	30	66	71							
2000-2015	141	51	50	30	127	261	261	228	230	269	232	129

You can (normally) follow Belize’s weather on: <http://www.hydromet.gov.bz/250-km-radar-loop>

We continue to use the US NOAA Hurricane Center weather radar network which monitors the Caribbean basin, and would also suggest Weather Underground as an additional resource:

<http://www.nhc.noaa.gov/>

<http://www.wunderground.com/q/zmw:00000.2.WMGMM>

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Cayo One ~ 473 acres (100% non-irrigated)

Farm Operations

Land Preparations

Preparations for the 2016 farming season were completed on schedule on May 26th. Fields 1 (189 acres) and 2 (284 acres) having undergone the following (the fields are delineated in the map above):

1. Ploughing:
2. Disking:
3. Raking: using a harrow and a mechanical root rake
4. Planing/Levelling: using a locally manufactured apparatus
5. Disking (2):
6. Fertilizer Spreading:
7. Disking (3): Mid/Late May
8. Planing Levelling: Only on field 2
9. Harrowing:

The Raking requirement was due to heavy weed build-up during the Winter 2015/2016 as there was no crop planted during that season owing to extremely heavy rains in late 2015.

The extra (third) disking was due to the heavy rutting in parts of Field 1 as a result of the excessive rains in the last days of the 2015 Harvest.

The Land/Planing/Levelling work should begin to improve surface drainage at Cayo One, and additional work of this nature will be carried out prior to each crop over the next several years.

Work is almost complete on the first phase of the airstrip at Cayo One. This is planned on eventually being a 3,000 foot tarmacked strip (Runways 10/28), 40 feet wide, with an additional 40 feet safety zone on either side of the strip. For 2016 the dimensions will be limited to a 2,000 foot strip that is 20 feet wide and has an all-weather surface. The strip will only be usable this year for crop-dusting activities. However, this on farm crop-dusting strip should substantially pay for itself in 2016 through savings in ferrying crop dusters back and forth from the local airfield (compared with our 2015 costs).

Seed Selection & Planting

BSA has chosen to plant most of its acreage in one seed variety, with the balance allocated to two trials (the third trial previously chosen was abandoned as the local seed dealer could not ensure timely delivery).

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Planting began on Saturday May 28th and as of May 31st Field 2 (284 acres) is fully planted and Field 1 (189 acres) is 35% planted. All Planting should be completed within 24-48 hours, subject to weather and unforeseen mechanical issues

- **429 acres (Part of Field 1 and all of Field 2): DeKalb 7088 @ 27,000 seeds/acre**

This is an excellent wet season selection due to its closed ear and tendency to droop upon drying down.

Germination Test proved at 99% with excellent vigor

See the May 17th report for a detailed description.

- **22 acres (Part of Field 1): Dow 3383 @ 27,000 seeds/acre**

This is a crystalline variety that is both reasonably fungus resistant as well as drought tolerant. It has rather small kernels and is considered a closed variety meaning the husks onto cob will extend past the end of the cob and not allow entry of water. The cob will also droop as it begins its senescence.

Germination Test proved at 95% with very good vigor

See the May 17th report for a detailed description.

- **22 acres (Part of Field 1): American Seed & Genetics R9000 @ 27,000 seeds/acre**

This seed was developed in Chiapas, Mexico where it has done very well. This variety grows very tall, has a slender but strong stalk, and a large grain. Ideally this corn should be grown under irrigation as it is not very drought tolerant.

Germination Test proved at 96% with very good vigor

See the May 17th report for a detailed description.

We will be fertilizing the three trial plots in exactly the same fashion for trial control purposes.

In light of increased consumer interest in non-GMO foods, it is worth noting that all of our corn is non-transgenic, as will be all of our soybeans and edible beans. This may well provide future opportunities for making feeds for the animal, fish, and shrimp markets that can be sold at premium prices.

Fertilizer Program

We feel it is worth repeating BSA's fertilizer strategy for Cayo One, which is based on multiple goals:

1. Test the impact of higher fertilization rates on yields
2. Ensure that fertilization is at least 110% of theoretical "maintenance rates"
3. Test one plot for higher Nitrogen Applications
4. Initiate long term trial of organic worm based soil enrichment

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Target Yields and Fertilization Rates

BSA has set a business goal of a weighted average yield of 107 bushels/acre for its Summer 2016 corn crop, which is 6,000lbs./acre or 6.7 mt/Ha. This represents an increase of some 15% over the yields achieved on Field 3 in 2015.

However, CSA has planned to fertilize for a 150 bushel/acre yield (8,400lbs./acre or 9.4 mt/Ha), assuming a minimum fertilization rate of 110% of maintenance levels (the level at which the crop neither adds nor depletes to the soil's fertility). The table below provides an overview of the relevant data:

Fertilizer Application (lbs./acre)	N	P	K
Base	44	100	44
Liquid (fast uptake)	11	7	3
Urea	152	0	0
Foliar	0	0	0
Total	207	107	46
<i>150 Bushels/Acre Maintenance (lbs./acre):</i>	<i>188</i>	<i>66</i>	<i>42</i>
<i>Fertilizer Build / Draw (lbs./acre):</i>	19	41	4
<i>110% Fertilization requirement surplus:</i>	0	34	0

The high Phosphorous build is to adjust for a soil deficiency, which is not uncharacteristic of recently cleared land, identified in soil tests performed at Cayo One.

The fertilization program assumes the following applications:

- Base: 330lbs/acre (370Kg/Ha) of 13.3-30.3-13.2-1.8S+Micros to be applied in Mid-May (Now!) by ground
- Liquid: 2.0 litres/acre at planting by ground application
- Urea: 330 lbs./acre (370Kg/Ha) of 46% N divided into 3 aerial applications at days 20, 35, and 55 after planting
- Foliar: 1 litre/acre divided into 2 aerial applications at days 30 and 60 after planting
- Trial: Vermiplex Soil Enhancer on ~100 acres of DK-7088 on Field 1 @ 4L/acre

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Cayo One Northerly view day before planting - May 27, '16



Cayo One Easterly view with new airstrip – May 27, 2016



Base Fertilizer loading into spreader – May 20, 2016



Airstrip preparation – May 20, 2016



Field 2 Planting last few acres – May 31, 2016



DK 7088 Germination test at 64 hours: 99%! – May 27, '16

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Market Conditions and Conclusion

Grain prices remain unchanged in Belize since the May 17th report, notwithstanding the recent improvement in global prices. They have remained mostly stable over the five months since the end of the 2015 harvest, once again with the exception of weaker soybean prices.

Corn

Corn volumes in storage continue to be seen as adequate to meet needs until the summer 2016 corn crop is harvested. Belize's corn price of BZD 28.00-30.00/cwt (USD 310-330/mt) remains high compared to CBOT/World market prices, although once again it is important to remember that total demand at these price levels is limited. Regional prices (e.g. Guatemala, Salvador, etc.) for the forthcoming crop are settling in a Belize FOB equivalent of USD 260-280/mt. This is still a high price compared to the USD 165/mt level currently quoted by the USDA for corn FOB US Gulf Ports.

We continue to hear anecdotal reports that corn plantings in Belize will be lower this season as farmers are beginning to diverting acreage to sugar cane (Cayo District) and Soybeans (Orange Walk District). Local grain cooperatives continue to seek commitments and expect the summer 2016 corn crop to produce net prices to farmers in the USD 7.84-8.40/bushel (USD 310-330/mt) range.

Soybeans

Soybeans in Belize remain unchanged in price, with expectations continuing to be for increased plantings. Soybeans continue to sell in the range of BZD 45.00-50.00/cwt (USD 500-550/mt), compared with last fall's BZD 55.00-60.00/cwt (USD 605-655/mt). Recent increases in global soybean prices have led some Belize farmers to look for a local price increase, but given that current levels still represent a substantial premium to global markets we believe this is for the moment an unlikely outcome.

Rice

Rice continues to be a very good option for Belize farmers, but they must have fields that are properly designed and irrigated. The recent very dry weather in Orange Walk district (no rain for 8 weeks) will have meant that any non-irrigated rice crops will have been lost. Prices for rough/paddy rice remain stable at BZD 45.00/cwt (USD 495/mt), which continues to be a high premium relative to global market prices (USD 275/mt).

Edible Beans

Edible beans are experiencing an improvement in fundamentals, as sales of the 2016 crop have finally begun to pick up now that remaining 2014 and 2015 inventories are sold. Most bean varieties are still hovering around the USD 45.00 per cwt level FOB Belize, which is an improvement over 2015 but still materially lower than 2014 levels.

We continue to look forward to a successful Summer 2016 season, and we are on schedule with land preparations and planting. If weather conditions are more "normal" than in 2015 (we're not asking for good weather, just something better than terrible weather!), we believe that Cayo One will begin to demonstrate its considerable potential. Moreover, regional market conditions remain quite buoyant, especially when compared with the current low level of agricultural commodity prices on global markets. Once again, we retain all of our optimism for Belize's remarkable farming potential!

Thanks! - Abram Dyck, John Peters, and the Farming Report Editorial Team

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Grower	Location	Field #	Acres	Irr ?	Soil Type	Crop	Seed Variety (count/acre)	Plant Date	Stand Date	Fertilizer Program (For full details of applications, refer to Lot Records)	Comments
BSA	Cayo One	1a	129	N	Black	Corn (Yellow)	DeKalb 7088 27,000	June 1?	?	Base 13.3-30.3-13.2-1.8S 330lbs/acre Liquid Aporte-M 2L/Acre TRIAL Vermiplex 4L/Acre	Land Preparation underway May 1, 2016; continues May 17, 2016 under good conditions; finished May 23. Planting June 1?
BSA	Cayo One	1b	22	N	Black	Corn (Yellow)	Dow 3383 27,000	May 31	?	Base 13.3-30.3-13.2-1.8S 330lbs/acre Liquid Aporte-M 2L/Acre	Land Preparation underway May 1, 2016; continues May 17, 2016 under good conditions; finished May 23. Planted May 31
BSA	Cayo One	1c	22	N	Black	Corn (Yellow)	ASG R9000 27,000	May 31	?	Base 13.3-30.3-13.2-1.8S 330lbs/acre Liquid Aporte-M 2L/Acre	Land Preparation underway May 4, 2016; continues May 17, 2016 under good conditions; finished May 23. Planted May 31.
BSA	Cayo One	2	284	N	Black	Corn (Yellow)	Dekalb 7088 27,000	May 28-31	?	Base 13.3-30.3-13.2-1.8S 330lbs/acre Liquid Aporte-M 2L/Acre	Land Preparation underway May 4, 2016; continues May 17, 2016 under good conditions; finished May 27. Planted May 28-31

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Lot Records for Fields 1 & 2

GROWER: <u>BSA</u>						Date Planted: <u>5/31/2016 - 6/01/2016</u>	
FARM LOCATION: <u>Cayo One Estates I</u>						SECTION #: <u>1a, 1b, 1c</u>	
CROP: _____						BLOCK #: _____	
						SOIL TYPE: <u>Black Loam</u>	
						DK 7088;	
						VARIETY: <u>Dow 3383; ASG R9000</u>	
						# OF ACRES: <u>129+22+22</u>	

LAND PREPARATION					FERTILIZERS			PLANTING	
Discing	Harrowing	Leveling or Land Plane	Raking	Other	PREPLANT	AT PLANTING		Seed-Rate	Condition
5/1/2016					See Below		Aporte-M	27,000	Dry & Hot
5/16/2016	23-May-16	5/9/2016	4-May-16			See Below			
5/20/2016									

FERTILIZERS						Rain		PESTICIDES					
Date	Analysis	Rate/Ac	Ground	Air	#	Date	Quantity	Date	Description	Rate/Ac	Ground	Air	#
14-May-16	13.3-30.3-13.2-1.8S	330lb	X		1								
31-May-16	Aporte-M	2L	X		2								
31-May-16	Vermiplex	4L	X		2								

GROWER: <u>BSA</u>						Date Planted: <u>5/28-31/2016</u>	
FARM LOCATION: <u>Cayo One Estates I</u>						SECTION #: <u>2</u>	
CROP: <u>Corn</u>						BLOCK #: _____	
						SOIL TYPE: <u>Black Loam</u>	
						VARIETY: <u>DeKalb 7088</u>	
						# OF ACRES: <u>284</u>	

LAND PREPARATION					FERTILIZERS			PLANTING	
Discing	Harrowing	Leveling or Land Plane	Raking	Other	PREPLANT	AT PLANTING		Seed-Rate	Condition
5/5/2016					See Below		Aporte-M	27,000	Dry & Hot
5/10/2016	23-May-16	5/12/2016	6-May-16			See Below			
5/19/2016		5/21/2016							

FERTILIZERS						Rain		PESTICIDES					
Date	Analysis	Rate/Ac	Ground	Air	#	Date	Quantity	Date	Description	Rate/Ac	Ground	Air	#
20-May-16	13.3-30.3-13.2-1.8S	330lb	X		1								
28-May-16	Aporte-M	2L	X		2								