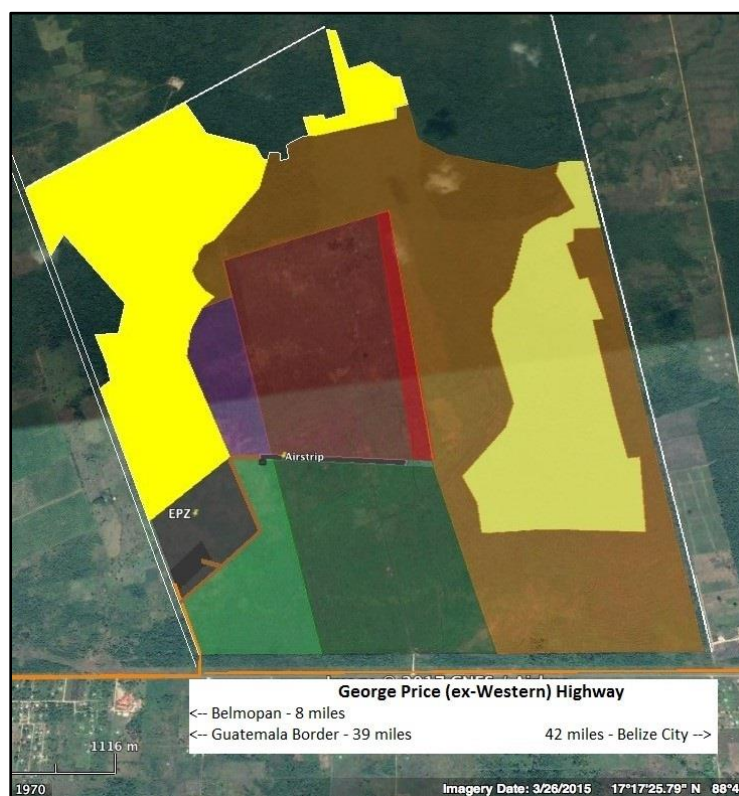
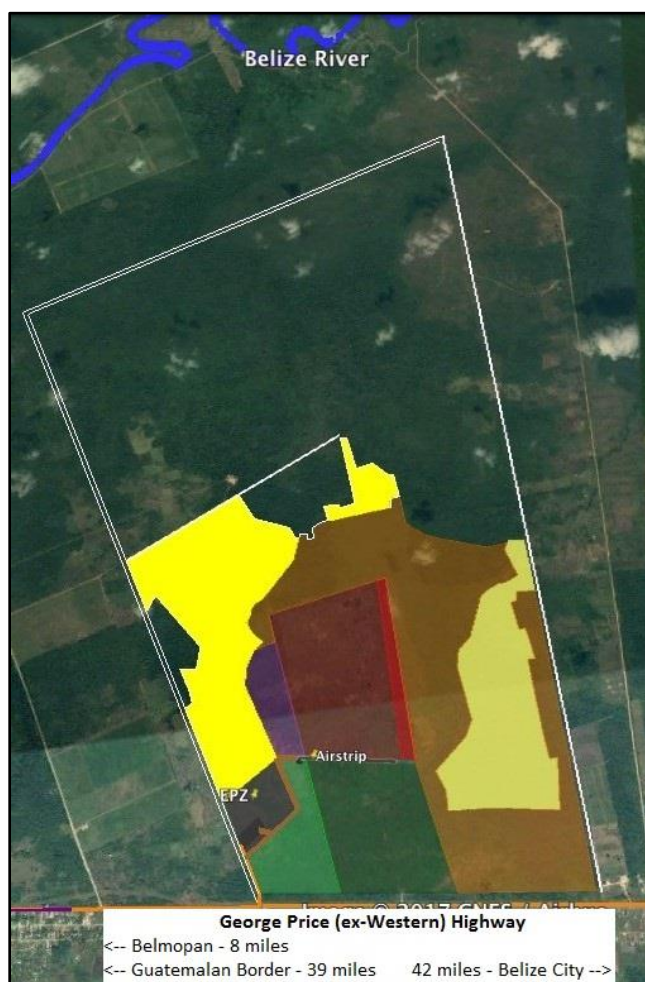


# Belize Sustainable Agriculture, Ltd. Farming Report – July 3, 2017

This is the **Second** Farming Report for BSA's 2017 Summer (Wet) season. Its main objectives are to inform readers about BSA's farming activities by season and crop; to provide data on climactic conditions, agricultural pests, and market conditions; as well as detailed data on BSA's farming methodologies.



Field 2: Subsoiled & Leveled	106 Ha	Mix Plow / Subsoil in progress	270 Ha
Field 2: Leveled / No Subsoil	13 Ha	Windrow / Work in Progress	173 Ha
Field 2N: Plowed / Some subsoil	23 Ha	Chained – No further work	109 Ha
Field 1: Leveled / No Subsoil	79 Ha	EPZ – Total Area	24 Ha
Field 1N: Plowed & Subsoiled	36 Ha	EPZ – Finished	2 Ha

*BSA is only farming at the Cayo One Estate in the Summer 2017 season; it is situated some 8 miles east of Belmopan near the village of Cotton Tree in the Cayo District, and is ~39 miles east of the Belize-Guatemala border at Melchor de Mencos.*

**Weather Summary:** The 2017 Summer season saw the arrival of heavy June rains after the 18<sup>th</sup> of the month, during which time over 200 mm of rain fell, in occasionally heavy downpours. A further 50mm of rain fell in the first two days of July. Notwithstanding these rains, the Inter Tropical Convergence Zone has still not formed its traditional pattern of continuous rainstorms in the 5° N - 10° N latitudes. So we expect the 2017 Summer season weather to continue to be erratic.

Cayo One - Belmopan Precipitation Data (mm per month) – 2017 Season YTD Data through July 3 <sup>rd</sup>													
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
2016/17	295	345	96	55	74	126	10	263	49				
2000-2016	232	129	139	65	49	32	124	271	256	236	230	260	2039

**You can follow Belize's weather on:** <http://www.hydromet.gov.bz/observations/radar/radar-images>

We also use the US NOAA Hurricane Center weather radar network which monitors the Caribbean basin, and recommend:  
<http://www.nhc.noaa.gov/> <http://www.wunderground.com/q/zmw:00000.2.WMGMM>

## **Belize Sustainable Agriculture, Ltd.**

### **Farming Report – July 3<sup>rd</sup>**

#### **Cayo One: ~ TBD Hectares (100% non-irrigated)**

The exact acreage to be planted during the Summer 2017 season has still not been determined; we have a small amount of work still to be completed on Field 1N, although we hope to have that ready for planting if weather permits. We have now definitively removed Field 2N from our potential planting area this year.

#### Weather Analysis

Seasonal rains began in the second half of June with substantial rainfall in the Cayo district, and throughout Belize. The heaviest rainfall occurred during the June 18<sup>th</sup> through 20<sup>th</sup> period, with between 125mm and 200mm falling across the country in a matter of a few days.

However, these seasonal rains appear to have arrived without any early indication from the Inter-Tropical Convergence Zone (“ITCZ”), which may indicate continued erratic weather throughout the season that does not follow historic patterns.

The dry spell from early May through mid-June had led to soil conditions which were not propitious to planting, as there was some limited surface moisture in soils, but going down 10-15cm most soils were quite dry.

The intensity of the June rains also made for difficult conditions for farmers who chose to plant early, as there were numerous reports of seedlings being “washed out” or young plants being drowned.

#### Land Preparation

There are two components to CSA’s Land Preparation activities in 2017: Land Development and Farmland Preparation.

##### *Land Development*

A detailed discussion of CSA’s Land Development activities is available in the June 19<sup>th</sup>, 2017 Farming Report, which is available upon request.

As of July 3<sup>rd</sup>, the status of BSA’s fields is:

Field 1 ( 79 Ha) is ready to plant, but will require extensive harrowing due to heavy rains  
Field 1 N ( 34 Ha) needs 10+ days of work, and will only be ready to plant if weather improves considerably  
Field 2 (119 Ha) is be ready to plant, but will require extensive harrowing due to heavy rains

Our target is to do everything possible to plant Field 1N as well as 1, 2, and, for a total of 232 Ha.

We will have an interesting ability to compare the impact of subsoiling, as a small section of Field 2 (13 Ha) was not subsoiled, and Field 1 will not be subsoiled whereas Field 1N has been subsoiled.

#### Seed Selection, Planting, and Crop Development

Acreages expected to be planted are:

- Syngenta Impacto – 228 Ha / 563 acres (Fields 1, 1N, 2) @ 68,000 seeds/Ha – 27,530 seeds/acre
- Pioneer 4226 – 4 Ha / 10 acres (Part of Field 2) @ 68,000 seeds/Ha – 27,530 seeds/acre

## Belize Sustainable Agriculture, Ltd. Farming Report – July 3<sup>rd</sup>

A detailed discussion of these two non-GMO hybrids is in the June 19<sup>th</sup>, 2017 Farming Report, which is available upon request.

Planting did not take place as originally hoped during the week of June 19<sup>th</sup>. Some 150mm of rain fell between the nights of June 18<sup>th</sup> and June 20<sup>th</sup> which made the ground totally unsuited for planting.

In the run-up to our original June 19<sup>th</sup> target planting date, while 24/6 work was being carried out to bring as much acreage as possible to the point where it was ready for planting, an overriding concern was the moisture level in our fields. While after a few showers in early June there was some moisture in the top few inches of the soil, digging further down revealed a much drier picture, with insufficient soil moisture to support healthy plant development. Hence the need for some rains before it would be safe to plant.

The weather conditions during the past three weeks have been very challenging for farmers in Belize. The heavy downpours have prevented good stands from emerging, and those farmers who have chosen to plant early will have suffered from this as seen in the pictures below.

Now that a substantial amount of rain will have penetrated deep into the Cayo One soil structure, our planting strategy is to wait for 10-15 days of relatively dry weather to allow the ground to dry out and be extensively harrowed, and then to plant. We are uncertain as to the timing of this window, which during the past several years has happened any time from mid-July to mid-August. Our team is on standby to plant as soon as conditions are reasonable, and we believe that we can plant our target fields in four to five days.

While this will move our crop cycle back, historical rain patterns in September and October should provide more than adequate moisture for a successful crop.

Our overriding goal is to demonstrate that commercially attractive corn yields can be achieved in Belize, even when faced with erratic weather patterns (but please, no hurricanes!)

### Fertilizer Program

**BSA has set a business goal of a weighted average yield of 7 mt/Ha (112 bushels/acre) for its Summer 2017 corn crop.**

However, CSA has planned to fertilize for a 9.4 mt/Ha (150 bushel/acre) yield, 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).

A detailed discussion of our fertilizer program is in the June 19<sup>th</sup>, 2017 Farming Report, which is available upon request. A summary table below provides an overview of this program.

<b>Fertilizer Application (lbs./acre)</b>	<b>N</b>	<b>P</b>	<b>K</b>
Base	44	110	78
Liquid (fast uptake)	11	7	3
Urea	152	0	0
Foliar	0	0	0
<b>Total</b>	<b>207</b>	<b>117</b>	<b>81</b>
<i>150 Bushels/Acre Maintenance (lbs./acre):</i>	<i>188</i>	<i>66</i>	<i>42</i>
<i>Fertilizer Build / Draw (lbs./acre):</i>	<i>19</i>	<i>51</i>	<i>39</i>
<i>110% Fertilization requirement surplus:</i>	<i>0</i>	<i>44</i>	<i>34</i>

## **Belize Sustainable Agriculture, Ltd.**

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#### Insects

We will again remain extremely vigilant for insect activity. We continue to receive reports from Belizean farmers who planted early that indicate strong worm activity this year, as well as resistance to the better-known insecticides. Historically, the three most widely used and successful pesticides for the successful management of various species of *Noctuidae* in Belize have been

- Lubacazuron (active ingredient: Chlorfurazon) was very effective 3-4 years ago and is proving to be very ineffective this year
- Curyom (active ingredients: Lufenuron and Profenfos), slight effect and very slow to take effect
- Certero, (active: Triflumuron) remains the most effective of the three but does not provide complete control and takes frequent (every 5-8 days) applications to be effective.

We are addressing worm risk through an enhanced seed treatment prior to planting and we are requesting a “special use” permit from Belize’s Pesticide Control Board for a DuPont insecticide (not currently approved in Belize) that has proved very effective in the region, notably in Mexico’s Yucatan peninsula. Belize’s PCB has so far proved to be unreceptive to our requests, but we are appealing to higher authorities and hope to have the issue resolved very shortly.

#### Funguses and Bacteria

As previously stated, our experience in 2016 and our commitment to our main customer’s high quality standards has caused us to schedule an initial fungicide application at day 60 and to budget for an additional application at day 90. While this represents a substantial expense, our crop’s ability to avoid the widespread aflatoxin prevalent in Belize’s 2016 corn crop reinforces our view of the importance of proactive disease management.

#### Weeds

We continue to proactively manage weeds at Cayo One, after our efforts during the winter 2016/17 period. The combination of our intensive fertilizer program and recent rains meant that aerial application of a herbicide would be required pending planting to control weeds, which took place on July 1<sup>st</sup>.

After last year’s disappointing results with the BASF Prowl product, we have selected Syngenta’s Calaris to be applied at the time we plant our 2017 summer corn crop.

#### Harvest

The delay in planting due to weather issues will delay harvest. Based on past experience, we expect the 2017 harvest to begin some 130-135 days after planting.



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Cayo One after initial rains – Jun 26, 2017  
*Too wet to plant but initial 150 mm of rain mostly absorbed*



Yalbac: new farmland 20 km N of Cayo One – Jun 21, 2017  
*Early plantings on poorly drained ground are very challenged*



Cayo One – Harrowing work – Jun 30, 2017  
*After a week of sun ground has dried but still too wet to harrow*



Penner Farm North of Cayo One – Jun 30, 2017  
*Air applications are better: see tractor ruts from spraying!*



Cayo One Fields 1N and 2N – Jun 30, 2017  
*Subsoiling allows water absorption; drainage pipes needed too!*



Cayo One North end of Field 2 – Jun 30, 2017  
*Grasses emerging - Newly cleared areas very wet*



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Cayo One Field 2 Grasses Emerging! – June 30, 2017  
*Lots of fertilizer/rain brings out grasses: time to spray!*



Cayo One Herbicide Spray – Jul 1, 2017  
*Quick, easy, and cost effective thanks to airstrip!*



Cayo One Very Wet after 200+mm of rain – Jul 3, 2017  
*Subsoil AND Drainage Pipes needed to absorb heavy rains!*



Banana Bank early plantings – Jun 30, 2017  
*Very wet and irregular stands*



North of Cayo One – Jun 30, 2017  
*Mostly unplanted – early attempts unsuccessful*



Yalbac – Jun 30, 2017  
*Early plantings on poorly drained ground have mostly failed*

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**Market Conditions and Conclusion**

Corn

Global prices have been steady to slightly firmer, with Gulf Ports prices averaging ~\$155-160/mt for US #2 Feed Grade corn. This equates to ~\$200/mt FOB Puerto Quetzal (Guatemala) and \$260/mt CIF Melchor (Belize-Guatemala border crossing). The breakeven duty paid CIF price delivered in Belize would be ~\$380/mt, or BZD 34.00/cwt

Domestic Belize prices have remained steady at recently lower levels, with prices trading in the \$265-\$285/mt range (BZD 24-26.00/cwt), with reported demand at the lower end of this range from Guatemalan buyers. Even Feed Grade Belizean corn appears to attract a quality premium from regional buyers!

The challenging start to the 2017 Summer Season will likely mean that Belize's domestic production will fall well short of its estimated 2013 peak of 65,000 mt, and will likely not even achieve the estimated 2015 production level of 50,000 mt (2016 production was heavily impacted by Hurricane Earl). No reliable estimates are currently available from Belize's Ministry of Agriculture regarding plantings, so we will continue to use ad-hoc aerial inspections to gauge the quantity and quality of Belize's corn plantings.

Edible Beans

Global prices for black beans have been steady to slightly firmer, with black beans trading at ~\$800/mt FOB US and Chinese dealers and Mexican CIF prices considerably higher at ~\$1,100/mt.

Belize's small 2016/17 black bean crop sold out quickly at historically attractive prices of \$1,000+/mt FOB. Belize still has a modest supply of light red kidney beans currently offered at ~\$1,050/mt FOB Belize.

Soybeans

Global prices have been firmer, with Gulf Ports prices averaging ~\$360/mt, which equates to ~\$400/mt FOB Puerto Quetzal and \$460/mt CIF Melchor border crossing. The breakeven duty paid CIF price (Belize delivery) would be ~\$660/mt, or BZD 60.00/cwt

Domestic Belize prices have remained steady for an extended period of time, with Grade #1 soy bean prices trading in the \$560-\$580/mt range (BZD 50-52.00/cwt). Belize imports some 15,000 mt of soymeal annually, and more soybeans would be grown and crushed domestically if there were a reliable market for soybean oil (either for human consumption or as bio-diesel).

*2017's weather continues to be challenging, however we remain excited by the prospects of planting high quality seed in our improved fields as soon as we have a 10-15 day relatively dry period. We will be reporting progress fortnightly and look forward to a successful 2017!*

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

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Grower	Location	Field #	Ha/ Acres	Irr ?	Soil Type	Crop	Seed Variety (count/Ha) (count/acre)	Plant Date	Stand Date	Fertilizer Program <i>(For full details of applications, refer to Lot Records)</i>	Comments
BSA	Cayo One	1	79/ 195	N	Black	Corn (Yellow)	Syngenta Impacto 68,000 27,530	TBD	TBD	Base 12-24-12 <u>330lbs/acre</u> 0-46-0 <u>85lbs/acre</u> 0-0-60 <u>68lbs/acre</u>	
BSA	Cayo One	1N	34/ 83	N	Black	Corn (Yellow)	Syngenta Impacto 68,000 27,530	TBD	TBD	Base 11.1-28.6-20.2 <u>385lbs/acre</u>	
BSA	Cayo One	2	115/ 289	N	Black	Corn (Yellow)	Syngenta Impacto 68,000 27,530	TBD	TBD	Base 11.1-28.6-20.2 <u>385lbs/acre</u>	
BSA	Cayo One	2a	4/ 10	N	Black	Corn (Yellow)	Pioneer 4226 68,000 27,530ASG R9000 27,656	TBD	TBD	Base 11.1-28.6-20.2 <u>385lbs/acre</u>	



## **Belize Sustainable Agriculture, Ltd. Farming Report – Jul 3, 2017**

[Lot Records for Fields 1 and 2 \(Zoom in to see details\)](#)

A new Lot Record is in development and will be provided in following reports