Belize Sustainable Agriculture, Ltd.
Joint Venture Farming Report – June 30, 2014

General Overview

Weather conditions have been generally favorable for this reporting period, albeit we now need rain. Most days have been dry with some wind and very bright sunshine. There were a few overcast days with promises of sunshine but none materialized. In general, the corn would very much like some rain, especially the earlier planted fields. However, for the forthcoming rice harvest the weather has been ideal. This weather has allowed farm activities to go on almost around the clock and considerable progress has been made during this time. Notably, much of the land in the Hillbank area being rented by BSA has been fallow for some years and therefore needs more tillage than land which is cropped twice annually; the recent dry weather has allowed much of this work to take place. Daytime highs have been in the high 20ºC with cool nights. As a reminder, for those so inclined, you can follow Belize's weather on:

http://www.hydromet.gov.bz/250-km-radar-loop

Thiessen Family Farms – 512 acres (283 Irrigated / 229 Dry – 100% Corn)

The corn fields at the Thiessen Family Farms are looking very good. In general we are very pleased with the germination of all varieties planted, and germination rates have typically been in the low to upper 90% range; this is far above historic norms in Belize and notably among the Indian Creek community; rigorous pre-planting germination tests did help weed out some substandard supplies (for more specific germination results see the table at the end of this report). As mentioned earlier, land preparation was not as good as we would have liked but it does not appear that germination was as negatively affected as first thought. However, there are things we have identified that we believe would improve the stand significantly if smoother planting conditions existed and would cause significantly less skips and less doubles to be planted. Simply put: in the seeding unit there's a device that singulates the seed for proper plant spacing. This seed then travels down a long (16") tube. If this tube bounces or gets jarred due to rough ground conditions, the seed will not be evenly spaced. This is critical because two seeds planted too close together will both not produce a good plant therefore not a good size ear. This is why proper ground preparation is so important and why the land plane was so eagerly anticipated. There is newer and better technology available for these ground conditions but they are well out of reach of the average Belize farmer due to their cost.

There has been considerable pressure on the Thiessen corn fields from pests, especially the army worm. While the Thiessens have been doing regular scouting and monitoring, it seems the insects always seem to know when there is a holiday; so the Thiessens have had to do multiple insecticide applications. As of June 29th the insects seem to be under control, and while there is some visible leaf damage, the crop should not be unduly affected. We had hoped to have a new pesticide, as yet unregistered for import into Belize, with which American and Mexican farmers have reportedly had considerable success, but Belize agricultural bureaucracy has not kept pace. This pesticide has long residual action and appears to be extremely effective. We will endeavor to keep pressure on our suppliers and the government bureaucracy to ensure that it soon becomes registered and available for use in Belize.

An important "First" for corn farming in Belize is that we submitted Tissue Samples to a recently opened lab for analysis. The results are currently being interpreted and we will focus on ensuring that this information is put to good use. Our goal will be to supply the crop with ample available nutrients to ensure plants can produce as expected. Going forward, all nutrients, with the exception of nitrogen, will now need to be applied foliarly and the necessary equipment for this purpose is ready.

The Thiessen's corn has not received sufficient rainfall in the past two weeks to adequately supply the plant with sufficient water, and the irrigation pivots have been running day and night. The Thiessens experienced a few minor glitches in getting their irrigation system up and running but these were quickly remedied; here again we were able to demonstrate our value added to the Thiessens by assisting with both the analysis of the problems and their resolution. Unfortunately, these pivots only cover 55% of the cropped area and the remainder is suffering. The outlook is for scattered showers and intermittent thunderstorms but so far there has been very little rain over the whole northern part of Belize for approximately three weeks. So much for the early start of the rainy season! (NB: as of the date this report was edited and circulated, a major downpour across the country appeared to alleviate the lack of water.)

All programmed applications of herbicide have taken place and there has been enough moisture in the soil to activate the herbicides. Grass and weed control appear good with a few escapes of Johnson grass (a perennial pain to control.) Several different varieties of herbicides are being used and tank mixed for easier application. One new herbicide combination (Convey & Dash) is being used as a trial. Indications are that it will give us good control of Morning Glory, which is undoubtedly the most difficult weed to control due to its late emergence in any crop.

Interestingly, the corn varieties we are growing are beginning to show their drought tolerance. It was expected from supplier literature that the Syngenta Impacto variety would be the most drought tolerant, which is not being borne out in our fields and is a disappointment. So far in all other aspects Impacto has been the variety that has shown the most promise and is a most welcome addition to our seed line up. Recent weather conditions also confirm the correctness of our "farm 100% irrigated ground" philosophy.

We are only in a position to make a few meaningful observations differentiating Marlon's trial plot from the main Thiessen fields. One logical difference is that Marlon's fields are not suffering as much due to being planted later. More importantly, something that is obvious is that Marlon's plant spacing is better than the Thiessen's, which is due to newer planting technology. Nonetheless, it is also clear in Marlon's trial plot suffered from inadequate land preparation and this quality of land preparation will not be repeated for another crop cycle.

The same observations apply with the worm casting trial. Not initially reported was that this seed was treated with a worm casting by-product, and saw very quick emergence. The seed was essentially pre-germinated in a mixture and planted. We were excited to see this rapid response in germination but have otherwise not seen anything noteworthy. Granted, it is really too early since the majority of the plant's growth till now has relied little on soil nutrients. We are keen to see this trial's results do as it could have major implications on how future crops will be grown, as worm castings are notably more "organic" in nature and inherently more sustainable. This too is being watched carefully by the neighboring farmers and is being subjected to a fair bit of scrutiny and perhaps even ridicule. They are "Doubting Thomases" who will only believe when they have seen. Of course the joke may be on us if the trial proves inconclusive!

The earliest planted corn fields, (TB1, TB2, T2: May 28 & 29) have received their first application of urea (46-0-0) at a rate of 50lbs/acre. This is a little less than ideal but with the dry conditions it is prudent due to its relative volatility. As soon as more moisture is available more applications will be made.

All in all, the corn crop is getting underway quite well, with excellent germination and vigorous early growth. While we wouldn't yet win any competitions in Ames County Iowa, the multi-year march towards 200 bushel corn is well underway. If we can deliver 30,000 ears of corn per acre, with a 600 kernel ear comprised of healthy kernels, these numbers would equate to yields in excess of 200/bushels per acre. While we don't expect to be there this year, this is our goal!

Thiessen Field TB-1 planted May 28, 2014 (June 30, 2014)

Neufeld Family Farms – 336 acres total (100 acres black eyed beans - 0 % Irrigated / 236 acres Rice – 100 % irrigated)

Rice

Jacob began his rice harvest as scheduled on June 23rd; he had his equipment ready and moved to his fields in plenty of time. The first few days were a little slow due to small amounts of precipitation numerous times during the day (unfortunately none of this rain fell in the San Carlos area!) This rain pattern makes harvesting very challenging so the initial field to be harvested was slow. The delay was amplified by the fact that a fair bit of the rice had lodged and was almost impossible to pick up with the type of header Jacob uses. In the end Marlon came in with his John Deere Rice Combine and harvested the portion of crop that was down.

Jacob's experience has been primarily with upland (rain fed) rice. Rice grown in this fashion will usually not yield more than 2500 lbs/acre, so Jacob's combine works adequately under these conditions. It was interesting to watch him drive into his irrigated fields and have his machine (Case IH model 1460) almost choke on the sheer volume of rice. Admittedly, his machine is really too small for the acreage and volume of rice he has to harvest, which means that he needs to travel slowly to avoid "plugging" up the combine and/or sending grain over the separation chamber of the combine. For all his inexperience (and under Marlon's watchful eye) Jacob has shown much restraint in harvesting and has progressed well. Nonetheless, Marlon has helped combine some of his rice to ensure the ripe grain came in prior to any adverse weather events, as well as needing to combine the areas of lodged rice.

Jacob's yields are coming in slightly below what we were targeting, but they are still quite good. Some fields have yielded the expected 7000lbs/acre and some less; to date Jacob's average is about 6,400/lbs per acre. Although this is less than our goals, Jacob's best looking fields are still awaiting harvest, so he may come close to our 7,000 lb/goal. And even

if they remain at current levels, Jacob's rice crop will provide a very satisfactory ROI, rather better than most other Blue Creek rice farmers (except Marlon!)

The remainder of Jacob's rice (field 221) is in the beginning stages of senescence. These are the 27 acres that were seeded with seed lacking vigor and subsequently reseeded after a burn down was applied. This field is maturing as expected and should be ready for harvest along with Marlon's later rice in another three weeks.

Jacob Neufeld field 114 awaiting harvest (June 30, 2014)

Marlon Dyck – 420 acres (Rice 100 % irrigated)

Marlon's earliest planted rice (March 12-14) in fields 211-213 is now in late stages of grain fill and his harvest should begin on July 7th. The amount of lodging is much higher than the preferred 10%, and in fact it is likely around the 50% level. The good news is that this is due to very heavy rice yields; the bad news is that this increases our exposure to rain and ducks. The rain is beyond our control; the ducks seem to be a bigger problem than usual. This is partly due to the relatively low rice acreage being grown in the area and other farmers resorting to more aggressive tactics. Ducks can do considerable damage by trampling large patches and laying their eggs. If left unattended, they can destroy large acreages so we are employing people to drive around and make noise, and have just agreed to provide local boys with shotgun shells to hunt at sunrise and sunset. These approaches appear to be successful, although in the long term these are not viable solutions and other deterrents will be necessary. Once again, we believe that the amount of grain on these plants is what is causing the plants to lodge so it is a source of some comfort…

Fields 221-226 have headed as expected, just later in their cycle. The fields are being rogued of wild or red rice and are looking very nice. Plant density is very high and panicle size indicates a significantly above average yield. We are mindful of the season and are prepared to harvest as quickly as possible to avoid rain damage. These fields are in late stages of kernel development and should be ready to harvest in the July 14-21 window.

The portion of one field (221) with the worm castings trial visually appears no different than the remainder of this field. We have clearly demarcated this area and look forward with considerable interest to what the trial's yield differences will be, and what, if any, economic advantage there might be in this farming approach. These fields received no insecticide or fungicides during their growth with no visible adverse effect. While this seems rather unbelievable, it has been our experience so far.

Fields 231-237 were planted two days later (March 31, 2014) and their maturity has surpassed the earlier planted 220 series. These fields are in late dough stage and are starting to dry down very evenly. Harvesting these fields will be a real treat if they continue to stand as well as they are now. Field 237 has begun to lodge a modestly. Otherwise these fields are mostly clean with the odd escape of weeds and a smattering of wild rice. This latter pest will be rogued from the field before harvest and hopefully will be unable to shed any seed for later germination.

Among Marlon's many duties has been ensuring his equipment would be ready to assist Jacob with his harvest. Marlon managed to get into the fields only a day later than Jacob, which allowed him to harvest Jacob's worst lodged rice. Marlon's John Deere stripper type header does a much superior job to Jacob's platform type header, and is further evidence of the potential to increase agricultural yields in Belize through improved equipment and technique. Marlon only has some 400 acres of rice to harvest on his fields, and so is confident that his equipment will perform well.

Marlon Dyck field 231 showing heavy lodging (June 30, 2014)

Other JV Farming Prospects

As mentioned in the last two JV Reports, we are excited about some other good pieces of land becoming available for BSA to rent. These will not be farmed on a JV program but rather will be managed by BSA personnel. Negotiations with HAC are complete however we are still waiting final confirmation from their lien holder prior to proceeding (finally received on July 3rd). We have used the recent fair weather to carry out some land preparation on these fields, although no major expenditures were scheduled prior to receiving the lien holder's consent.

Summary and Conclusion

Recent JV reports (and likely the next two reports) are somewhat unusual in that they straddle both the Winter 2013/14 and Summer 2014 planting seasons; the vagaries of the 2013 autumn/winter's weather are responsible, but we should soon be able to focus solely on the Summer 2014 season. Nonetheless, after a very satisfactory winter LRK crop, and a small didactic effort in Black Eyed Beans, we are looking forward to completing a very satisfactory rice crop. And this is not only from the farming viewpoint, where we look forward to superior yields and quality, but also to having established a first in Belize by pre-selling most of a large crop at a predetermined (and very attractive) price.

One important lesson we have drawn from the Summer 2013 Corn crop and the Winter 2013/14 bean crops is the importance of securing distribution channels. Historically, Belize has relied on a combination of domestic demand and small scale exports to absorb its crops. With the prospect of BSA farming much larger acreages now a distinct, albeit not immediate, reality, we felt the time had come to begin a program of reaching out to export markets and establishing relationships among end user buyers. There has always been an element of "horse/cart" in such an effort, because most export buyers aren't interested in the offtake from a few hundred acres of farmland, and wouldn't take us seriously until we could point to prospective meaningful supply. Our increased JV farming acreages, plus the very real progress being made on clearing the Cayo One property, now give us a firmer position with which to approach prospective export buyers. Plus the difficulties in disposing of the Summer 2013 corn crop have reinforced the urgency of securing distribution channels for the Summer 2014 corn crop. Hence we undertook our first major marketing/business development trip last week to Guatemala. The main goal was to make direct contact with prospective corn buyers and brokers/agents, and we met a number of interesting parties.

The first contact we met was essentially a local trader; he simply agrees to purchase corn from a supplier for a determined price, sells it to an end user for a higher price, and pays the seller once he has been paid. While this contact has a long history of buying corn from Belize and appears to have a strong network of prospective buyers in Guatemala, he is not our first choice as a partner. There is limited visibility in the spread he earns, we have no understanding of the credit risk he assumes on our behalf, and we were not left feeling entirely comfortable with his persona. Moreover, we felt he was looking to "low-ball" us with an opening offer to pay USD 5.60/bushel FOB Blue Creek. We will continue to work on developing this relationship, but it won't be one of our high priorities.

The next prospective buyer we met was Paulino DeLaCruz from Frito-Lay, a Pepsico owned company. Paulino has a vast amount of experience buying corn and various other inputs for their operation in the capital city of Guatemala. Frito-Lay are very specific about their needs and are willing to pay well if those needs are met. As an example, they are currently offering $330/mt CIF their plant for corn, which is the equivalent of $8.40/bushel (although significant shipping costs would need to be accounted for). For processing purposes Frito-Lay needs a grain supply of very consistent quality, which includes consistency of germination potential and stress crack free grain that has been dried slowly after harvest-

ing. We are confident that we can grow and dry the corn they need for this purpose, and a relationship with them would be very appealing to us on many fronts:

- We have long believed that slow dried corn should trade at a premium
- It has been well established through research that slow dried corn maintains higher nutrient value
- It has also been well established through research that slow dried corn maintains more weight and therefore more feed value
- The cost of drying slowly is lower on a per pound basis than heating to very high temps and cooling quickly
- We are currently fortunate to be able to rent equipment that has this slow drying capability,, and we would be one of the only growers in Belize with immediate access to such equipment.
- Our development plan for our grain processing and storage facilities include using these types of dryers.
- Frito-Lay is interested in long term regular delivery contracts, which could easily rise to 1-2,000 mt (40k-80k bushels) per month or more.

We are currently trying to source some corn in Belize that will meet these requirements (we think there may be some that was dried at HAC last year) so that we can establish trucking and border protocols. We have established good rapport with Belize's local plant health authority (BAHA) and the Customs Department and believe that we can in due course establish a fairly seamless export channel through the border at Melchor de Mencos, Guatemala.

The third Guatemala contact was quite disappointing; this was the lead we received from Beltraide, the government entity responsible for promoting both Foreign Direct Investment and for assisting Belizean industry with exports. We had made arrangements to see Oscar Hernandez, representing a local Guatemalan feed mill on June 27th, and after being effectively stood up, we had time to travel around a little and see some other feed mills. We were not disappointed: we learned that the feed mill Oscar represents was in fact one of the very small feed mills in the area. There are many more mills considerably bigger than his and we will work at establishing contacts among them. Guatemala has been a huge importer of Grade 2 corn from the USA for many years but there is lots of evidence that they are not happy with this arrangement. So our optimism remains high that a legal route can be established and that we can market our corn into Guatemala; such is the size of the country's structural corn deficit (~1,000,000 mt/year) that just meeting 10% of Guatemala's (rising!) needs would absorb the production of 20,000 BSA acres once they reach optimum production.

The final Guatemala contact was Julio Ruiz. Julio's primary experience has been in soybean breeding and variety selection for southern Mexico and Guatemala region. This has been freelance work for him and he has made his money with establishing varieties and selling seeds. He has agreed to help source seed for the next crop. It was Julio that was responsible for bringing the Round-Up Ready trait soybean (e.g. GMO) to southern Mexico which made its way to Belize and created the kerfuffle between the government and certain northern farmers who had been growing these beans for a number of years unbeknownst to BAHA (the Belize plant health authority). Julio struck us as being both very knowledgeable about agronomic farming and possessing a strong local network. We are considering asking him to work with us on a trial basis, acting as an agent (on a fully disclosed commission basis) to help us develop sales to larger mills in Guatemala. Also, on our "To-Do" list is finding mills in Guatemala's Peten region (immediately west of Belize) closer to Belize; working with these mills could reduce our freight costs significantly.

We are also considering a visit to El Salvador and to Jamaica. The former may take a while to organize, while the latter could happen sooner. The Indian Creek community still has about 20 container loads of LRKs to sell, which could provide a useful test bed for establishing a relationship with major Jamaican end buyers. We are also gearing up our relationships with the US Embassy and UK High Commission in Belize, so that they reach out to their regional colleagues, introducing us to them and requesting that they act as "door-openers" in Guatemala, Salvador, and Honduras.

Another noteworthy development is the way local Orange Walk grain co-ops have begun to ask us to assist them in finding markets for their crops. There appears to be a growing recognition of not only our professional approach to farming, but also our vision in terms of establishing businesslike relationships with major regional grain consumers. While this phenomenon is in its early stages, it may be a harbinger of future opportunities for us to help local farmers be more productive and profitable.

It has been another very busy fortnight, but that seems to be the "New Normal". The scope and tempo of our activities continues to expand, and the resources made available to us in the past two months have made an enormous difference.

Thanks!

John Peters

Grower	Location	Field #	Acres	Irr?	Soil Type	Crop	Seed Variety (count/acre)	Plant Date	Stand Date	Fertilizer Program	Comments
BSA / Marlon & Team	Hillbank	TBA	120	N	Red	Corn	Syngenta Impacto			TBA	Waiting finalization of HAC agreement
BSA / Marlon & Team	Hillbank	TBA	530	N	Red	Soy Beans	Huasteca 400 430 acres 3296 100 acres			TBA	Waiting finalization of HAC agreement
Thiessen Brothers	SC	T1	131	80 Y 51 N	Black-red loam	Corn	Dekalb 7088 131 acres (30,000)	June 6-7	June 9-10	14-36-12 150lb 18-46-0 50lb	Reviewing germination 91% germ
Thiessen Brothers	SC	T2	139	80 Y 59 N	Black-red loam	Corn	Pioneer 4226 139 acres (30,000)	May 29	June 1	14-36-12 150lb 18-46-0 50lb	Reviewing Germination results Germination good Vigor good 93% germ
Thiessen Brothers	SC	Trial TB-1	51	36 Y 15 N	Red	Corn	Syngenta Impacto 26 acres (30,000) 25 acres (35,000)	May 28	May 31	14-36-12 150lb 18-46-0 50lb	Reviewing Germination results Germination good Vigor good 93% germ
Thiessen Brothers	SC	Trial TB-2	52	36 Y 16 N	Red	Corn	Dekalb 7088 26 acres (30,000) 26 acres (35,000)	May 28	May 31	14-36-12 150lb 18-46-0 50lb	Reviewing Germination results Germination good Vigor good 94% germ
Thiessen Brothers / Marlon Dyck Trial	SC	Trial MD-1	131	71 Y 60 N	Red	Corn	Syngenta Impacto 30.5 acres (30,000) 30.5 acres (35,000) Dekalb 7088 35 acres (30,000) 35 acres (35,000)	June 7-8	June 10-11	14-36-12 150lb + liquid AlgaEnzims 1L/ac AlZinc .5L/ac Complex NPK 10L/ac Complex NS+P 10L/ac SinerFos 6L/ac SinerPotasio 8L/ac SinerPlus 1L/ac	Trial Plot managed by Marlon Dyck Reviewing Germination results and comparing to Thiessens: Impacto 99% germ !! Dekalb 99% germ !! Impacto 93% Dekalb 94%

Thiessen Brothers	SC	Trial Castings	8	N	Red	Corn	Syngenta Impacto (35,000)	June 6	June 8	14-36-12 150lb + liquid AlgaEnzims 1L/ac AlZinc .5L/ac Complex NPK 10L/ac Complex NS+P 10L/ac SinerFos 6L/ac SinerPotasio 8L/ac SinerPlus 1L/ac	Black Casting Trial Plot managed by Marlon Dyck Reviewing Germination Germination Good Vigor Good 99% germination
BSA / Marlon & Team	Blue Creek	TBA	80	N	Sandy loam	Corn?	(seeds/acre)			TBA	Waiting finalization of HAC agreement
TBA	Blue Creek	TBA	200	N	Sandy Loam	Soybeans Milo?	(seeds/acre)			TBA	Waiting finalization of HAC agreement
Marlon Dyck	Rio Bravo	210-212 220-226 231-237	420	Y	Heavy Black	Rice	Cheniere (local supplied)	March 12-13	Vigor issues	Base liquid fertilizers 40-0-0-6s 81lb 10-36-10-6.8s-9zn 68lb 40-0-0-6s 75lb 10-36-10-6.8s-9zn 75lb 40-0-0-6s 100lb 10-40-5-7s-7zn 30lb	210-220-230 planted Significant Issues due to bad seed 210 Series now much improved 220-230 Very Promising
Jacob S Neufeld	Rio Bravo	110-114 121-123	230	Y	Heavy Black	Rice	Cheniere	March 5-7		15-15-15 65lb 12-24-12 65lb 40-0-0-6s 50lb 13-11-21-2s 30lb 40-0-0-6s 50lb 46-0-0 50lb 19-4-19+mg	236 acres planted Some algae in 110s, one field, 122, suffered from poor seed, replanted. 121-122 now looking very good Yield potential very good

										30lb 40-0-0-6s 50lb 46-0-0 50lb 13-11-2 30lb 40-0-0-6s 75lb	