

The Belize Ag Report

Belize's most complete independent agricultural publication

Sept-Oct
2010



Harvesting Ag News
From All of Belize

BELIZE IMPLEMENTS POULTRY PLAN EQUIVALENT TO USA

Esperanza, Cayo District, 4th August 2010



BAHA and the Belize Poultry Association (BPA) have implemented the Belize Poultry Improvement Plan

(BPIP) which is equivalent to the USA National Poultry Improvement Plan (NPIP). Following attendance at the 2008 NPIP Conference in the USA, BAHA and BPA considered it worthwhile to implement a similar plan in Belize. Thus, the NPIP provisions were adapted to Belize by BAHA and BPA officers then discussed with the hatcheries and broiler breeders. Once consensus was obtained from all stakeholders, initial Plan activities began in September last year.

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New: online BEL-CAR tab with photos Page
at: www.BelizeAgReport.com

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Taiwan Technical Mission
Papaya Project pg. 12

TOLEDO CACAO GROWERS ASSOCIATION A THRIVING INDUSTRY IN THE SOUTH

by Armando Choco
TCGA General Manager



Toledo Cacao Growers Association is a not-for-profit organization created in 1984 whose aim is to "Improve the socio-economic standard of living of its members through competitive and diversified system of production that incorporates sound ecological practices". Today more than 1100 subsistence farmers (primarily in Toledo and South Stann Creek Districts) are engaged in cacao production. Its members are divided into 52 communities in the Toledo, Stann Creek and Cayo Districts who produce 47 tons of cacao beans annually.

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New Book Describes Mennonites in Belize Reviewed by Dennis Feucht

One of the ironies of life is that people who want to live quiet lives, separated from much of what goes on in the world, would attract so much attention. In the USA, the state of Pennsylvania built a freeway addition for easier access by tourists to the Amish in Lancaster county – a county which a decade ago would have been ranked tenth among the nations of the world in agricultural output had it been categorized as such. And now, the Mennonites of Belize are of interest to Dutch sociologists who have spent time in Blue Creek, Spanish Lookout, and other colonies, to observe and analyze their ways. These are academic researchers whose new book, *Between Horse & Buggy and Four-Wheel Drive: Change and Diversity among Mennonite Settlements in Belize, Central America*, edited by Carel Roessingh and Tanja Plasil (VU University Press, Amsterdam, Netherlands, 2009; www.vuuitgeverij.nl) is an organized collection of reports from the research project of VU University Amsterdam. It is written by scholars and their students, “all non-Mennonite, unbiased ‘outsiders looking in’”.

To give the larger view of Mennonite colonies in Belize, the book begins with a brief history of their founding, often referring to scholarly studies made of Anabaptists in other parts of the Americas. This history nicely complements that in Gerhard S. Koop’s self-published book, *Pioneer Years in Belize*, published in 1991. It also contains a collection of chapters in which some early Spanish Lookout Mennonites recount their experiences from the late 1950s, when there was a lot of mud to be slogged through in Spanish Lookout. The more recent book, *Spanish Lookout Since 1958: Progress in Action*, was published by the settlement on the occasion of

their 50th-year anniversary. It provides yet more of the story not found in either Koop’s book or the Dutch study, and is available at Harry Letkeman’s Computer Ranch (823-0373) in Spanish Lookout. Also available there are the CD recordings of some of the 50th-year celebratory events and history as told by the Mennonites themselves. Koop’s book, when in print, is available at Peter Reimer’s book store in Spanish Lookout along with the Dutch book under review.

The book concentrates on four Mennonite settlements: Blue Creek, Spanish Lookout, Shipyard, and Springfield. This choice of colonies offers a diverse look, with the first two having assimilated much of the generally available technology while the last two retain pre-20th-century technology. The writers appear to have a substantial understanding of Mennonite subculture including the Anabaptist Christian outlook. They handle the worldview of Mennonites respectfully and avoid opining about the relative merits of Mennonite beliefs and practices. Indeed, they seem to be hopeful that Mennonite culture will succeed, and analyze opportunities that Mennonites in Belize have for growing their already successful business efforts. Along with this, the sociologists also recognize that Mennonites are not Mennonites for business reasons and they spend substantial pages discussing the impact that entanglement with social institutions outside of their own groups have on their spiritual and social outlook and practices.

Separate chapters are devoted to the four designated settlements. While the research is on social aspects, the social life in the settlements is affected by geography, climate, colony layout, and other incidentals that set the stage for the social events under study.

Continued on page 10



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Citrus Nurseries

**Notice to Citrus Nursery Owners,
Potential Nursery Owners and
Citrus Growers**



All nursery owners and growers are notified of the following:

1) Currently, there are no certified citrus nurseries in Belize. It is against the laws of Belize to produce citrus trees in a nursery that is not certified. Nursery owners are reminded that since the discovery of Huanglongbing (HLB), a very serious bacterial disease of citrus, all citrus plants must now be produced under psyllid-proof screen (the psyllid is the insect that spreads the HLB disease) in accordance with S.I. 122 of 2009 - laws of Belize.

2) Before establishing a citrus nursery owners must complete an application for submission to the Citrus Research and Education Institute (CREI). This will register the nursery under the Belize Citrus Certification Programme (BCCP) as mandated under Chapter 211 of the Laws of Belize. Application forms are available at the Citrus Research and Education Institute (CREI). Upon receipt of the completed application form and the non-refundable fee of BZ\$100.00, an inspection of the proposed site will be conducted to determine whether the site meets the requirements under the regulations for nursery establishment.

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TO THE EDITOR

Dear Editor,

I am a resident of the US. I have traveled to Belize and enjoy the country a great deal. In fact I have enjoyed it so much that I am looking for opportunities in the country either to travel to on a more regular basis or move to.

I own a seed and farm equipment business in Oregon. I oversee some of my own seed production, distribute, wholesale, and retail every type of seed available to grow in my location. I also sell farm equipment. Tractors, implements, sprayers.

I found your Cane ethanol article particularly interesting, as it is something that I had thought about for Belize myself. I am not familiar with Petrojam, but will do some more investigation. It just seems to me to be a natural fit for the country of Belize to be more involved in this type of venture.

If you have the time would you mind giving me your opinion as to why cane ethanol is not being produced in Belize? Government interference, logistics?

By the way, I read your report every time a new one is put on line and enjoy it very much. I would much rather be reading it in the paper form under a thatch roof, but I will enjoy it as best I can in my office.

Regards,

Todd Greer
D & D Seeds and Farm Equipment Sales Inc.
www.danddseeds.com

Dear Beth:

So nice to get to talk with you the other day. As far as S.O.F.E. is concerned, I'll attach a brochure with this accompanying spot on our group and SAVAS School Project. *S.O.F.E. - Sharing Our Freedom & Energy is a not-for-profit 501 (c) 3* group from the U.S. working on the establishment of a Vocational/Agricultural School to be built in San Antonio, Cayo. As S.O.F.E. is an agriculturally-based group, we intend to provide the local youth, both boys and girls, between the ages of 14 and 21 with skills that will help them become part of community. That is, community within San Antonio, Cayo and greater BZ in general. Our Board Management Authority, comprised of 7 members, met recently in San Antonio to distribute applications for enrollment. We hope to have the school built by next year's end with classes starting around Feb., 2012. Any student wishing more information may contact Leonardo Tzib, Alex Balona or Geronimo Carillo, all residents of San Antonio. We are looking for Board representatives from Cristo Rey and Seven Mile also. Hector Silva, the Director of the CET School in San Ignacio has been most helpful in organizing this effort along with Rene Canto, Chairman of San Antonio.

Anyone wishing to acquire further information about SOFE or the VO-AG School can email me, Dave Snyder at: savas1421@yahoo.com

Hello,

I'm sure you don't remember me but I met ya'll last year at the Aguada. I have a question for ya. I look over your report every now and then but nothing is ever mentioned about cotton. Does no one plant it? Is there a gin in Belize or is that why no one plants it because their is not a gin. Thanks.

Kenneth Parrott

Georgia, U.S.A.

Note: In 2008 approx 200 acres of cotton, yielding 200,000 lbs were grown in Orange Walk and exported. 2009 figures indicate 100 acres and 100,000 lbs produced and exported. And, you are correct, there is no cotton gin here. In C. America: Mexico is #18; Nicaragua #58, Honduras #67; and Guatemala #70 in world production, 2009 ests.

Hi Beth,

Any update from the government on the cattle testing for cattle sales to Mexico? We are the 3rd largest ranch with cattle in Corozal and cannot get any accurate information.

I greatly appreciate any info.

Thanks from Corozal.

UPDATE TO THE RAIN CHART

We thank the family of Mr. David J. Thiessen

of Friesen Hatcheries, Spanish Lookout, for sharing these figures with us. They have kept rainfall records continuously for 41 years.

The figures shown are for rains in Spanish Lookout, Cayo District. For the chart showing May 1968 to April of this year, go to page 14 of issue # 7, June-July 2010. Available online.

	2010		
	May	June	July
Per Mo.	8.07"	9.37"	10.66"
New Avg.	3.65"	7.34"	8.85"
Amt. Over Avg.	4.42"	2.03"	1.81"



Mission Statement:

The Belize Ag Report is an independent bi-monthly agriculture newsletter. Our purpose is to collect, edit and disseminate information useful to the Belizean producer, large or small. We invite opinions on issues, which are not necessarily our own. Belize Ag neither solicits nor accepts political ads.

Organic Production A Tale of Three Sisters...

By Greg Clark

In the Native American nation of the Iroquois Indians, the three sisters lived. The three sisters were actually a reference to the method of planting for three of the primary staple vegetables for the nation. The three were planted together on a mound and assisted each other during their growth. Corn was placed at the center of the mound, and provided a trellis for her other sister, the Bean. Two weeks after the corn was planted, the other two sisters were introduced to the fold. Beans were planted at the base of the corn to be supported with the corn stalk, and to provide nitrogen to the other two sisters of the mound. The third sister was Squash and was planted into the mound at the outer edges. The squash provided shade to the mound, for moisture retention, and a living mulch to deter weeds. Because they were companion plants, they were labeled as sisters. Each plant provided a beneficial item to the adjacent plant.

Companion plants are very important in organic farming. Some are companions due to their ability to attract beneficial insects to the area, some provide nitrogen and nematode resistance to the soil.

As a child I remember my grandparents always planted green beans in with the sweet corn. I only knew at that time the corn was the support for the beans. I thought my grandfather just didn't want to build a support for the beans; little did I know that actually the beans were making the corn grow bigger due to the nitrogen that the beans were pumping directly into the ground at the roots of the corn.

I began researching other plant companions and their cohesive abilities. I discovered that cucumbers are helped by carrots, and peppers are assisted by tomatoes. **I have a complete list of the companion plants that can be downloaded. Check the BelizAgReport.com website for the link.**

Similar to companion planting, crop rotation and the order of rotation is very important. The nitrogen balance of a field can be maintained within a level that will reduce the addition of external nitrogen for the crops. In Belize, we are very fortunate that corn and beans are staple items of the population. This works well with the rotation requirements of a nitrogen balance. Beans add nitrogen to the soil and the following corn crop will require less nitrogen. Marigolds are great suppressors of nematodes, and can be used as a rotation crop. Marigold seeds are used in the poultry industry as a feedstock. A quick rotation with marigold will provide for less nematode pressure on the following crops.

Remember what I have stated in most of my articles: **feed the soil and the soil will feed you.**



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FROM THE MEXICAN SIDE
Restoring the ancient trade routes
by Henning Bartsch

For our article this issue, we'd like to summarize the effects of our product exploration and our work thus far.

1. It has become clear to us that: our company, Operadora las Tortugas, is interested in working with small producers instead of huge quantities of agricultural products. We encourage quality that favors higher prices. We feel this best suits the niche market and potential of Quintana Roo. An example is the chocolate produced in southern Belize: small operations, very high quality, thus easier to sell for desirable results with both buyer and producer.
2. We have noticed that as soon as there is a demand for a certain product, everybody begins growing or producing the same product and this ensures that the price goes down to the point of making it unprofitable to grow the crop. The development of stable niche markets on a long term vision is of importance for small growers and the encouragement to produce small, reliable, highest quality crops, foods, products, in other words, emphasizing quality over quantity, is essential to guarantee the best prices for all.
3. The organic peanuts of Sol Farms of Teakettle Village are now available at the first two stores in Quintana Roo, Maya Riviera, Mexico, and hopefully distribution will increase significantly after all export documentation has been completed. Thanks to Greg Clark and his efforts.
4. Pedro Escobedo of Playa del Carmen, Q. Roo, Mexico, has completed the information exchange with SAGARPA and will give a more detailed explanation on import documentation for Mexico in one of the next issues as well as a description of Quintana Roo's different custom status and the favorable implication this has for Belizean products. During the month of August he will meet with the representatives of the Mexican Embassy in Belmopan and the Chamber of Commerce of Belize and Beltraide to discuss further import/export procedures.
5. Our company is very interested in any seafoods, fine chocolate and chocolate products, organic black pepper, habanero or other chile sauces, special soaps and fine herbs. Any producers of these products please contact us through the Belize Ag Report. Thank You.
6. We appreciate that the Belize Ag Report has made this venture possible and we look forward to continued work with and through the Belize Ag Report in the future.



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BEYOND THE BACKYARD

SWAMP THING

By Jenny Wildman

I was given a couple of recommendations for trees to add to “the perfect garden” list: coco plum, moringa and neem. The first is great for shade but it’s fruit; a cross between a marshmallow and a cotton ball is definitely an acquired taste. The second is absolutely wonderful in scrambled eggs or an omelette besides all of its touted health benefits. Neem is an excellent inclusion as it keeps pests, such as aphids and mosquitos at bay and can be used for many medicinal purposes.

The next suggestion was “coconut boy”. What? Is this something like a garden gnome or a pink flamingo?.....true godwottery! After a brief description I ascertain that it is a local name for the pokenoboy. A few articles describe this as *Bactris Horrida*. Well it is surely horribly spiny just as every “horrida” plant or fish, lying in wait for unsuspecting targets but that looks more like wild cane as does *Bactris Minor*. Our swamp thing is, in fact, the palm *Bactris Major* or Kawmaka, Prickly Palm, Lata Palm, Cubaro of the **big** family *Arecaceae* (*Palmae*).

The name pokenoboy is a corruption of the words pork and dough as part of the palm trunk can be made into a most useful pair of tongs for turning tortillas, meat and hot coals. I have seen this tree on the banks of rivers whilst on the look out for monkeys and toucans. Its stalk is covered with black spiky thorns and its fruit hangs down like a bunch of grapes from a long stem. Once you break through the tough skin of the nut-like fruit, a burst of delicious sweet and sour liquid explodes into your mouth. In its green stage it is more bitter. The darker fruit has sweeter juice and at this point rather resembles black cherries.

Many people buy black cherry juice as it contains anthocyanins thought to reduce inflammation, levels of uric acid and relieve chronic pain of arthritis and gout. I have a relative who switched to this juice from expensive pills and has been most happy with the results. Foods similar in colour and taste usually have similar properties.

So, now armed with machete and protective clothing, we are heading to the impenetrable swamp forest in quest of the pokenoboy cure. I think this is a pick-your-own-from-the-forest type of fruit without any commercial interest. However the Amerindians apparently make an alcoholic drink from this and, as I suggest, it could have therapeutic benefits. It is found in markets in Panama, Costa Rica, Nicaragua and Honduras along with the peach palm *Bactris Gasipaes* (*Pejibaye*)- very popular and widely cultivated. I am sure that here we should be using more of these food sources some of which could be characterized as free foods until all forests become privately owned or forbidden territory. As an edible *Bactris Major* is abundant and does not require cooking; therefore it is high on the ultimate survival food list for the Amazon jungle. The tree could be good for sucking up marshy areas but, in general, it is considered a naughty nuisance and therefore I do not think I would want it in my home garden. It may appear to be a **major** pain, but, it is actually not difficult to gather once you know where to find it. If I get gout I may have to go looking for it further afield hoping that it is still abundant in its native habitat. This boy may even be crowned the new “Swamp King”. For now it is a tasty treat when I am lucky enough to cross its path.

Please share your comments, recipes and any ideas on this and other related topics.

Jenny Wildman spectarte@gmail.com



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Jatropha Diesel Processing Centre at Central Farm

By Clifford Martinez

A national two-year project entitled: "Jatropha Innovation Center for Community-Adopted Technologies and Development in Belize" was approved for funding by the OAS, with plans for execution by MAF. The Central Farm Research and Development Department, MAF, is responsible for the establishment of a *Jatropha curcas* Oil Extraction and Utilization Centre that will provide processing and also demonstrate use of jatropha oil as an energy option. Although the subject of renewable energy isn't new to Belize, bio-diesel and agro-fuel adaptability by small farmers is a fresh and growing concept. Central Farm's collaborative efforts are to identify factors and make recommendations for promotion of bio-fuel production for small scale farmers which will assist in the alleviation of rural poverty.

Jatropha (*Jatropha curcas* L.) (Euphorbiaceae) commonly known as physic nut is an oil plant that is found in sub-tropic and tropical regions of the world. According to Punia, (2007), it is known to have more than 200 common names and is found to grow wild or as a hedge specifically as live fencing by cattle farmers. Currently it is cultivated for its oil and production of bio-fuel for use in diesel engines. Jatropha is believed to have its origin in Central America. According to OFI-CATIE, (2005) its use also goes back to World War II, when the oil was utilized in motors by military teams.

Continued on page 23

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A section in chapter 3, on Blue Creek, is titled "Frictions in Blue Creek" and describes the causes and subsequent handling of differences of viewpoints among settlers. Old Colony Mennonites are against the use of pneumatic tires on farm equipment and prefer steel wheels. However, the Blue Creek soil and the needed clearing of the land made them impractical, and some families changed to the more effective rubber tires. This, along with the strain of homesteading, led to conflict uncharacteristic of Anabaptists in that the Belize police had to become involved to keep the peace. Many Old Colony families moved to Shipyard, and in the intervening years the Kleine Gemeinde ("Little Fellowship") from Spanish Lookout offered a helping hand to the remaining group (p. 81).

The chapter on Spanish Lookout focuses on "religious differentiation", and recounts briefly the history of the Kleine Gemeinde from Russian beginnings in the 1820s, to Canada, Mexico, and now Belize. "Their bean, dairy, and chicken companies are dominant businesses in the country. Their transport and distribution network is based on well-organized logistics, which reaches far beyond the borders of the settlement." (p. 100). The sociologists also noted the infrastructure differences (p. 100):

Continued to page 19

ASK RUBBER BOOTS

Dear Rubber Boots,

Do you know of any organic compound for killing cockroaches?

Signed,
Mrs. D.A.



Dear Mrs. D.A.,

Diatomaceous earth (DE), which is 84% silicon dioxide (silica), is a natural, organic insect killer. DE kills by physical action and not by chemical so there is no harm to pets or humans. The tiny hard and sharp diatoms scratch off the insect's waxy coating, causing it to dehydrate. Bugs can not become immune to its effects. Use DE for control of roaches, silverfish, ants, fire ants, bedbugs, lice, mites, spiders, flies, fleas, scorpions, crickets and many other insects. DE can be used in and around the home, yard, animal housing, etc. It will not harm earthworms or beneficial soils microorganisms, or livestock. Reimers' Health Food Store in Spanish Lookout sells DE. They also sell borax-based flour pellets that are very effective in killing cockroaches.

Dear Rubber Boots,
How can I keep the "drunken baymen" bees from eating the blossoms on my pomegranate tree?
From A. Schiemann

Please help Rubber Boots with the drunken baymen conundrum. Send suggestions to editor@belizeagreport.com

Thanks, and keep those letters coming. Send questions or suggestions. We apologize for Rubber Boot's email account giving problems... please send as above, attn: R.B. please!

Movie Questions Merits of GMO's A Review of the Movie, *The Future of Food* Shown at George Price Centre on 28 July 2010 Reviewed by Dottie Feucht

A movie about genetically engineered (GE) crops and a detailed explanation of genetically modified organisms (GMO) was shown at the George Price Center on 28 July 2010. GMO refers to a living organism whose genes have been altered by inserting gene(s) from viruses or unrelated species. Monsanto was cited in the film as the primary producer of GE seeds. Monsanto was granted patents for its seeds (It now holds 11,000 patents.) and prosecutes farmers whose crops are found to be harvested from GE seeds, even those farmers who did not plant GE seeds. Two major prosecutions of such farmers were followed in the film. It was disclosed in the trials that these farmers' crops were "polluted" by airborne cross-pollination. The judge ruled in favor of Monsanto. Monsanto claims ownership of crops in which it finds its patented seeds. One farmer had to destroy 1000 pounds of seeds that he thought were his own seeds saved from his harvest but which Monsanto claimed had some of their patented seeds.

The most popular herbicide-tolerant GMOs are Monsanto's Roundup Ready® crops, which are engineered to be resistant to the company's own broad-spectrum herbicide Roundup (Glyphosate). This enables growers to use large quantities of Roundup on their fields, and the herbicide will kill everything except the GM crop.

In spite of the arguments justifying the incorporation of GMOs into the food supply the film brought out that there is evidence that GE foods have an increased risk of causing allergic reactions, and uncontrollable cross-pollination depletes crop diversity which has resulted in resistant "super-weeds" and "super-pests." The statistics supporting lack of crop diversity included potatoes which went from 5,000 commercial varieties before the 20th century to 4 today. The filmmakers also felt strongly that the primary benefits of GM seeds are to the seed /pesticide companies, and not to consumers. Many risks are yet unknown.

While some groups advocate the complete prohibition of GMOs, others call for mandatory labeling of GE food or other products to provide for traceability and choice for those who are concerned about food safety. The film focused on efforts to introduce labeling of GE food for consumers that have repeatedly met resistance from lobbyists and politicians affiliated with companies like Monsanto.

The film also quoted researchers who have tried to do research on the effects of GE food on health but have been stopped in their research with threats of withholding funding to their research institutions. In the film it was stated that patents are based on products that substantially differ from any other product, but when defending GE food safety the producers claim that it is "substantially equivalent" and "generally regarded as safe". Consumers in the US want labeling so that those who are prone to allergies can avoid GE food.

NOTE: This movie was hosted by The Health Hut, in Belmopan at The George Price Centre for Peace and Development in Belize. Learn about GPC's many ongoing events from their website at www.gpcbelize.com or email <info@gpcbelize.com>

Do you have some knowledge or opinion that you would like to have printed in The Belize Ag Report? We welcome contributed articles, as well as letters to the editor and ideas for articles. Your contributions will improve the paper. Kindly send to <editor@belizeagreport.com> or call Beth at 663-6777. Thank you.

BEL-CAR Addresses Corn Glut with Value-Added Products

Always forward looking in agriculture, BEL-CAR has purchased from Zaccaria, S.A. Brazil, sophisticated machinery for corn grit and corn meal production. Well aware of the profit potentials for value-added processing, they received in March of this year the first and only EPZ (Export Processing Zone) status in Spanish Lookout. Now working out the kinks and making product samples, their goal is to utilize members' corn surpluses (est. at 20% of current production level) and increase the price paid to the members for their corn, over current local and export prices.


Projections are to ship to Jamaica in late August, 2 containers of cornmeal of 50,000 lbs each. Their short term goal is 5 containers weekly. As it requires roughly 70,000 lbs of corn to produce 50,000 lbs of corn meal, conceivably the corn thus processed and exported could exceed 18 M pounds annually! (70,000 x 5 x 52). Jamaica and Haiti both consume much of these corn products. BEL-CAR plans to export to other areas of the world eventually too, as they do with their beans.

The new equipment essentially performs 2 tasks: first it degerminates, removing the hull (86% fiber), the tip cap (similarly fibrous at 78%), and the nutrient-rich germ, (the 'living' part of the kernel, nearly 30% oil, and 18% protein); then a rolling mill reduces it to the desired particle size. The plant is capable of processing up to 5 metric tons of larger particle products per hour. Why is this nutrient-rich germ removed? Leaving the germ in, (as done in stone ground corn meal) decreases the shelf life of the corn meal or grits drastically. These products, both the hull byproduct, and the high protein corn germ, will be utilized locally. The fibrous hull mix will serve as a cattle feed, and the corn germ will be a prime ingredient in poultry feeds. Prices for these byproducts have not been established, and will reflect supply and demand. BEL-CAR anticipates that the corn germ meal will be sold at a premium price.

Not all corn varieties are suitable for these new products. Of the approximately 10 hybrid varieties favored in Spanish Lookout, only a few, such as Pioneer's 30F80, meet the criteria of having both hard kernels, and a bright orange color. Corn types with softer kernels and germ have more line loss. Another desirable trait is a smaller amount of germ and larger amount of the harder kernel (endosperm).

There is a wide range of particle sizes of the product known as grits. The grits of the Caribbean are much coarser than what the Southern U.S. market traditionally utilizes. However, there is a growing market for the large particle grits in places like Miami, indicating the increasing Caribbean influence on foods there. BEL-CAR has plans to make these new products available on the local market too.

By B. Roberson



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PAPAYA EXPORTATION, PILOT PROJECT FOR SMALL FARMERS

By The TAIWAN TECHNICAL MISSION IN BELIZE

In an effort to promote papaya production for export for small scale farmers in the Orange Walk District, ROC –Mission Taiwan, La Immaculada Credit Union Small Scale Enterprise in Agriculture and Tourism and the Ministry of Agriculture & Fisheries, are investing in the establishment of a five acre papaya demonstration pilot project. This initiative will provide the opportunity for other farmers throughout the district to actively participate in the training sessions and practical field demonstrations. The demonstration plot will serve as a pilot model for technology transfer (know –how) to the farming community in the district.

The objectives of the project are:

- To create an investment opportunity in papaya production for export among small farmers.
- To generate and adopt standard production procedures for further training of small farmers.
- To further develop the papaya industry in order to increase foreign exchange generation.

The expected outputs of the project are:

- One five acre plot complete with drip irrigation system.
- One seedling nursery (size 20 ft x 40ft).
- 500,000 lbs exportable Tainong papaya for the US market.
- 50 farmers highly trained in Tainong production.
- Fields days to demonstrate papaya production to rural farmers.
- The possibility of accessing further financing from ICDF-Taiwan and other funding agencies for the establishment of an additional 30 acres of papayas.

During the project implementation, the Agriculture Department- Orange Walk- will be supervising the project implementation in collaboration with Taiwan Mission and LICU/SSEDAT. Technical support will be carried out by the ROC Technical Mission & Orange Walk Agriculture Department.

The 5 acres of papaya demonstration orchards are expected to supply an average 280 cases per week (35 lbs / box) or more of the export papaya by the end of 2010 and by the end of 18 months, more than 20,000 boxes. At \$8 Bz/carton, the expected gross income is over \$160,000 Bz. With marketing costs expected to be about \$120,000 Bz, the annual benefit ratio can reach more than 33%.

Little Belize Fruit Packers have agreed to purchase all the papayas produced from the five acres. They are currently selling 71,280 lbs which is equivalent to two containers per week of exportable papayas to the US. This quantity of papayas is not enough to meet the current demand. Belizean papayas have become very popular in the US. The buyers have the willingness to expand production in order to meet the additional weekly demand of 350,000 lbs (10 -12 containers) of quality exportable Tainong papayas.

A field day was held in July for the purpose of introducing the pilot project to farmers from the surrounding areas as well as representatives of the GOB and supporting agencies. The attendees visited the demonstration plot

as well as the seedling nursery and packaging facility. It was emphasized in the presentations that there is a huge market for quality papaya and farmers need to be trained in growing quality papaya. Export papaya orchard cultivation and management techniques include:

1. appropriate choice of operation (soil quality, water, drainage, species selection, cropping avoidance, etc.),
2. sowing and seedling nursery operation (indoor net house),
3. soil preparation, use of organic fertilizer, line spacing,
4. transplanting, seedling management operations,
5. extra fertilizing, weeding, irrigation, pest control operations,
6. sexes strain selection, replanting operations,
7. removal of extra seedlings, deformed flowers, old leaves, vegetal operations,
8. harvesting, post-harvest and transport operations, and
9. natural disaster damage handling.

The field day activities also included a display of papaya-processed products developed as part of the food-processing program by TTM and MAF. The products provided at the demonstration site were:

1. Barley Green Papaya Chicken, called Green Phoenix,
2. Papaya Yokan,
3. Papaya bread,
4. Honey papaya cake and
5. Papaya dehydrated fruit.



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Consider Alternative Animal Feed Sources

By Peter Margesson

Often conventional animal feed ingredients are also consumed by humans or used for other purposes. In times of supply shortages these feed stuffs become expensive and often times uneconomical to use. It is becoming increasingly important to try to find alternative feeds for animal utilization.

Recently it was advertised that Dehydrated Citrus Pulp (DCP) was now available from the citrus processing factory in Stann Creek. In the past two or three years I had been using, in limited quantities, wet orange peels from a local juice squeezer as a maintenance ration for my ewes. Feeding the halved squeezed oranges was not entirely satisfactory. The sheep struggled to chew the halved orange and there were palatability problems.

When the new DCP product was announced, I called the factory for more information. They had little to offer to help the prospective end user. All they could tell me was that it had a protein content of about 6% and basically read data off the label which had been prepared by BAHA. They suggested it had the same nutrient value as corn, but would cost 14 cents a pound picked up in Stann Creek. I decided to investigate more thoroughly the use of this product as it would produce a substantial savings over the use of traditional energy sources such as corn and milo. There is a wealth of information available on the internet.

DCP has in fact been in use throughout the world where citrus is processed and is recognized as an important energy source for ruminant animals. However there are limitations in its use. DCP should not replace more than 50% of traditional energy sources in a ration as it will have a negative effect on performance. It seems that DCP has limited usefulness in chicken or pig nutrition.

I have been using a ration containing citrus pulp for fattening my lambs on pastures for about 3 months. My ration has about 16% protein and 87% TDN*. The cost is 22 cents per pound. I am extremely happy with the results so far. The sheep consume 2 to 3 pounds a day and weight gain is a little less than half a pound per day. No problems have been observed with palatability or adverse reactions.

I do not use DCP as a dry season supplement for my ewes. The cost is too high. Instead I continue to use the wet pulp from my local supplier. We put the pulp through a hammer mill and mix it with molasses, urea and minerals. Palatability and feed acceptance is now excellent. This provides important nutrients missing from dry season forage. As soon as the pastures start greening up we discontinue feeding ewes and only provide salt and minerals.

I feel there are several alternative feeds available in Belize, that are currently going to waste, which we could be utilizing through our animals. Unfortunately there are many factors which come into play that determine the feasibility of using these products. Transportation costs are a major liability.

Work done in Cuba on alternative feed sources is readily available. Perhaps our Ministry of Agriculture could take a leaf out of their book and start doing some useful research.

*TDN: Total Dietary Nutrients

Belize Corn Market How GMO May Affect It

A Compilation from Interviews

Recent efforts to export corn to Guatemala are changing the local corn market. For Belize to become a net exporting country on the world market, Belize must reduce its corn pricing by 30% (remember this number). Currently Belize purchase price for corn is \$0.18 bz/lb to the feed mill. At this price, Belizean farmers are barely making any profit to grow the corn. Last year, the purchase price of the corn was \$0.24 bz/lb. Why has the purchase price of corn decreased? An increase in land cleared and put into production, increased storage silos (just added in Spanish Lookout), and a decrease in meat consumption in the country due to economic climate are some of the issues that directly impact the profitability of a farmer in growing corn.

The basic factor is supply vs. demand. The economic growth rate of Belize is not increasing at the same rate of increase as corn production. The rate of corn consumption is a derivative of the economic growth of Belize, thus the reflection in the pricing of corn. One method of increasing the price is through increasing the demand. The current effort to develop the export market to Guatemala supports the demand side of the equation, and is a positive step. Last year the corn farmers were able to make approximately \$400 bz/ac and this year it appears that the farmers will make approximately \$225 bz/ac due to the increase in supply.

The true answer for maintaining a stable pricing for corn is balancing supply vs. demand, and the first step is recording data for corn in Belize. The three main factors that need to be tracked are consumption, storage quantity and planted acres. This data is important for forecasting the future pricing of corn at harvest time for the farmers.

Since Belize corn production can feasibly out-produce consumption by 200%, the balance has to be exported to maintain the corn growing industry at its current rate. This brings up another question, what does it require for Belize to be competitive as a corn exporting country?*

Continued to page 17

**see page 11, BEL-CAR article for more on corn exports*



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Agriculture Prices at a Glance- \$\$\$\$

A-B denotes the difference between 1st preference & second preference and sometimes between wholesale & retail and bulk or small amounts . Trend (H) means Higher over last 30 to 60 day (L) Lower (S) Steady
all Belize dollars - usually price per lb

Belize Cattle		T	A	B	Grains, Beans & Rice		T	A	B
Young str. & bulls- 750- 1100 lbs		S	.95 -1.00	.93 - .95	Belize yellow corn	S	.18 - .19	.17 - .18	
Cows & Heifers for Butcher		S	.60 - .75	(old).50 - .60	White Corn	S-L	.20 - .21	.19 - .20	
Heifers for breeding 650-900 lbs		S	1.00 - 1.15	.90 - 1.00	Corn/ Local retail (Low volume)	S	.27 - .30	.24 - .27	
Young grass cattle- 350- 650 lbs		S	.85 - .95	.75 - .85	U.S corn price @ 3.75 U.S a bushel	S	.14 - .16	.13 - .14	
U.S price -corn fed- 1000- 1200 lbs		S	180 - 185	175 - 180	Guatemala corn price/Peten	S-H	.26 - .28	.24 - .26	
U.S price - feeders 600- 800 lbs		L	2.00 - 2.10	1.90 - 2.00	Belize Milo	S-H	.16 - .17	.15 - .16	
U.S price- calves 450- 600 lbs		S	2.05 - 2.15	1.95 - 2.05	R-K's, little reds & blacks (beans)	S	.90 -1.05	.80 - .90	
U.S price- aged butcher cows		S	.80 - .90	.70 - .80	Black eyed peas	S	1.00 - 1.25	.75 - Spa Lt	
Belize Hogs					Paddy rice/ from combine	S	.29 - .32	.27 - .29	
Weiner pigs- 30 -50 lbs- by the head		S	\$85.00 - \$95.00		Milled retail rice per pound	S	whosal 103-108	Ret 115-125	
Butcher pigs 125 - 200 lbs		S	1.70 - 1.75	1.65 - 1.70	Citrus				
Belize Sheep					Oranges per 90 lb box-lb.solid basis	S	\$9.50 Est. 2010 price		
Butcher lambs		S	2.50 - 2.75	2.25 - 2.50	Grapefruit- per 90 lb box	S	\$4.50 Est. 2010 price		
Mature ewes		S	1.70 - 1.75	1.60 - 1.70	Sugar				
Belize Chickens					Cane per ton- est. 2010 price	S	\$50 - \$65 per ton		
Broilers- live per lb		L	1.05- 1.10	1.00- 1.05	White Sugar- 112 lbs- controlled	S	\$44.42 per bag		
Old hens		S	.73- .76	.70- .73	Brown Sugar- 112 lbs- controlled	S	\$38.31 per bag		
Belize Milk					Bananas				
Pd to farmer per lb		S	.45 contract	no demand	Export @ 40 lb box	S	June- Aug .price- 12 - 13		
Special Farm Item					Local Wholesale #2 quality- 40 lb	S	\$ 7.00- \$10.00		
Shrimp Retail- Farm Raised		S	6.50 - 8.50	5.50 - 6.50	Retail #2 @ 8 per sale	S	\$1.00 - \$1.50		
Pitaya 12-16 oz		S	1.75 - 2.00 each		Fruits & Vegetables				
Eggs-case of 30 dozen		L-S	65 wholesale	70 retail	Tomatoes, Cabbages, Cucumbers	S	.50 - 1.25, wh	1.25 - 2.00, rt	

***These prices are best estimates only from our best sources and simply provide a range to assist buyers and sellers in negotiations. ***

Dear Ag Readers: We've had a lot of rain. Grass for livestock is great and corn may be a record - some fields suffered from water. World climate change is with us- fire & drought in Russia- major floods in Tennessee and other places. Markets are very static. Retail meat sales slow -probably because of recession. It's a time in all of our lives to be tough- Put our trust in God and fight the giants- All the best, John Carr

Light Rein

By Marjie Olson

BACKING: UNDER THE SADDLE (continued from #7)

So now we go for it under saddle. If your horse did well with halter and you are fairly coordinated, you can do this technique with reins and a lead, so you are asking him in the manner he is already familiar with and adding the rein and seat pressure or forget the halter and lead and start over with the hopes the word or the click will help. A click of the tongue to my horses means 'move'; they figure out which direction from other body cues I give, but they know it is to move and that prepares the brain to think and be ready for the next cue.

When you gather up your reins to make contact with his bit be sure your hands are the width of his bit minimum, so you will need to be slightly lower than his withers. You will need to really shorten your rein as you will need to bring your elbows back. **YOUR EYES ARE TO BE LOOKING STRAIGHT OUT OVER HIS EARS!** Not at his ears or at your hands, only up and to the distance; this keeps your body position upright.

Now take a breath lifting yourself from your center, (belly button area) -your upper body goes up, your lower body goes long- lightly exhale and rock your pelvis from your center into the saddle and add a light grip with your legs, again a cue that says *move*. Pull back your hands as lightly as you can to start and add pressure as needed to get the desired backward steps. Here I do not release with a pause in my hands, only in my legs; I click and gently squeeze in the same rhythm I did on the ground, 1-2, like a clock ticking. I release after 2 steps or when I am out of breath; then I gather myself and ask again, in the same manner. Be sure to give a big praise when steps are taken and then ask again, hopefully getting three steps or more.

If Trigger is very reluctant or confused, put a ground person in front of you and even add a halter and lead if you want, but have them do the poke in chest with their thumb or handle of a whip or help with lead till he understands your rein and body cue.

As you become consistent, so will Trigger, and the cue should become nothing more than a rock back of the pelvis with a click, or a slight rein connection in the backward motion along with the pelvis and click.

Be firm and consistent, but if it is getting out of hand with a lot of resistance, then it may be a physical issue. Look at that possibility before pushing too hard.

Thanks for reading and "enjoy the ride".

Marjorie Olson, Light Rein Farm, 5 mile Mtn. Pine Ridge Rd, Cayo Dist. Belize

All comments are the opinion of Marjie Olson and are in no manner expected to be the only way to train a horse but have proven to work for her.

Curb Diabetes with Local Produce

By Maruja Vargas

Did you know that these indigenous plants, pitaya (pitahaya) and chaya (chayamansa), have antidiabetic properties? Claims abound that the eating of a small piece of dried pitaya after the meal will lower the blood sugar. The National Institute of Nutrition in Mexico City states that chaya will combat arthritis and diabetes.

Here is another bit of interesting information. Diabetes is also rampant among several of the native American populations in the southwest of the US (over 80% of the population was diagnosed with Type II diabetes). After years of study and millions of dollars in grants, researchers in the US determined that the reason for this upsurge is the genetic makeup of the population, which cannot assimilate the 'American diet'. The issue is completely related to the fact that these indigenous have left their traditional diets for the 'American' diet. The incidence of disease has now been reversed.

Could this 25-year research hold some answers for Belizeans?

The two foods above, pitaya and chaya, are native to this area, and have been part of the indigenous diet for centuries. While we have an abundance of these plants available to us, few people know what pitaya is and even less know chaya.

A nutritional analysis shows that *chaya* has 8 times the calcium, 4 times the protein and Vitamin A, 3 times the Vitamin C and twice the iron compared to spinach. And the iron is assimilable unlike much of the iron in spinach (oxalic acid prevents the assimilation). The leaves are pretty bland, so you can add them to soups, casseroles, spaghetti sauces, salsas and salads without affecting the taste. Chaya is easy to grow, by placing a cutting in the ground.

Pitaya is grown locally in abundance and is available in the markets from May through December. This is the web location on pitaya in the diabetic diet.

http://diabeticlifediet.com/my_diabetic_diet_foods/dragon_fruit_pitaya_fruit/dragon_fruit_health_benefit/dragon_fruit_diabetes_diet.html

For further discussion, email Maruja Vargas at

amar.international.maruja@gmail.com

ENDURANCE HORSE RACING BACK IN BELIZE!



B.E.A. and Light Rein Farm will be hosting

a **TRIPLE CROWN of Endurance Races.**



November 27th will be 15 miler, January will be a 20 miler and February 12th will be the 25 miler. Races will be over a cross country course at the Belize Equestrian Academy in Cayo on the Western Highway and each event will have its own placings with a **CHAMPION being crowned from the combined three races!**

Other fun and exciting events to be planned for the day, so mark your calendars now!

Marjie Olson 663-4609, shotzy08@live.com or Tre Roberson 667-5684. More information to come!

Belize Corn Market, *continued from page 13*

The Belize corn is at \$0.09US/lb. The world pricing for corn, at this writing, is at \$0.064US/lb. Belize is 30% above the world export pricing. Remember the 30% in the opening paragraph? The data presented by the USDA and the US Embassy for GMO, stated that the average yield increase per acre is 30% through using GMO corn. The cost input for growing GMO corn is decreased with the reduction requirement of insecticide sprays and the fuel/labor to apply the sprays. The pertinent question that can be answered only by a corn farmer is the cost savings of not having to conduct the sprays. The other pertinent question that can be answered only by the seed supplier is the price difference between GMO seeds and standard seeds that are currently used. With all of this information, the final pricing for the production of corn can be calculated on a per pound basis. This price must meet, or be less than, the world market price for corn per pound. The item that will have to be adjusted is the profit for the farmer to meet the world market pricing. The farmer "taking the hit" will be a hard "pill" to swallow under his current declining profits, but for the long term survival, it will be necessary.

Other facts that prevent Belize from meeting the world market pricing are: (1) Subsidies - Corn grown in the US is grown with \$1.80US/gallon diesel fuel; Belize grows corn at \$4.00US/gallon. (2) Insurance: - Crop insurance is available in the US for impending weather conditions that occur; Belize has no crop insurance plans. (3) Tax breaks - Purchase of farming equipment in the US is amortized on taxes for a reduction in cost over years; Belize provides no tax breaks for farmers. (4) Ethanol market - The US has provided a secondary market for the corn produced in the US through ethanol grants and incentives, which absorbs excess production for balancing the pricing. Belize has no such program.

Possible Options:

- One option would be that Belize takes a stand and develops a world marketing campaign to promote their corn as GMO- free. There are many countries that refuse GMO products; these would be Belize's targeted markets. With the appropriate marketing, there could be commitments for Belize corn at the pricing structure that Belize **needs** to yield for its current corn production methods. For this option, Belize would stay on track with their current law of no GMO's. This would have to be a joint effort with the Ministry of Foreign Trade, Beltraide, Ministry of Ag, etc.

OR:

- Belize brings in GMO corn and matches the current world pricing of corn from that point forward and increases exports. If the extra production is only added to the internal market of Belize, the market could be crushed due to a 30% increase in production and no increase in demand.
- Belize looks to value-added for corn, by creating export markets for corn-consuming mammals like chicken, pork, cattle, etc. Increasing the demand for export on the meat products will directly affect the corn supply and pricing in the country.
- The government gives an incentive worth 30% to the pricing of corn. If the government would look at this, it would actually be paid through exports of corn and the GDP of Belize.

- Belize farmers look at alternative crops to grow in lieu of growing all corn in a saturated market. Other items of suggestion would require investments by the government or outside groups to develop an industry. One suggestion is sugar cane (which would positively affect that suffering industry also), sorghum and corn for ethanol use in the country; ethanol in Belize has a value of \$4.50 US per gallon and the world market price for ethanol is approximately \$1.65 US per gallon. To make this solution viable the General Assembly would have to commit to mandate a 10% **Belize-produced** ethanol addition to current gasoline. No vehicle or infrastructures would be required to implement this requirement, and the money would stay in Belize versus sent out to pay for gasoline.

Land utilization in Belize for farming is probably at 20%. This shows the amazing potential farming future for Belize. The current and impending consumption of China is now directly affecting the world supply of corn, which will translate into corn pricing increases world-wide. This will affect the exportability of Belizean corn in the near future. But, we should decide now which options to pursue and do so.

TO OUR READERS: Do you have some knowledge or opinion that you would like to have printed in The Belize Ag Report? We welcome contributed articles, as well as letters to the editor and ideas for articles. Your suggestions and articles will improve the paper. Kindly send to <editor@belizeagreport.com> or call Beth at 663-6777.

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POULTRY, *continued from page 1*

The Poultry Improvement Plan is managed by government and industry to certify poultry farms and hatcheries as free from certain poultry diseases thus providing health quality assurance for hatching eggs and day-old poultry.

The USDA facilitated attendance at the 2008 Conference and Dr. Bruzual's visit. Both the NPIP and BPIP target three poultry diseases - salmonella, mycoplasma and avian influenza- classifying farmers as clean or monitor. Farms need to comply with the Salmonella Clean Plan provisions to participate in the Plan and can subsequently incorporate other disease classification programmes. Unlike the NPIP, the Belize Plan is for chickens only whereas the US Plan includes chickens, turkeys, waterfowls, ratites, etc. Disease classifications require routine sampling and laboratory testing of participating flocks and quality control. Compliance with Plan provisions allows the poultry producer to use the Plan emblems denoting disease status classification.

Dr. Jose Bruzual, Veterinary coordinator of the NPIP in the USA, provided valuable technical assistance to BAHA and BPA during his visit to Belize 25-31 July 2010 where he reviewed our Plan provisions and sampling and testing procedures and results. He congratulated Belize on taking this bold initiative and on being "doers" and not just "hearers" of successful ventures in other countries.

Future prospects for the Belize Poultry Improvement Plan include certification, movement control and making the Plan a legal document. As a legal document, the Plan would be for optional membership but once a person agrees to be a Plan participant then he/she would be legally bound to fully comply with the Plan provisions.

**Belize Poultry Association:
Poultry Production School**

The Belize Poultry Association held a Broiler Production School for its membership on July 29 and 30, 2010. The first seminar was held in Orange Walk Town at the Belize Social Security conference room for the producers of Blue Creek, Shipyard and Little Belize. The seminar was held in Spanish Lookout at "Life Springs Ministry." A total of 88 producers participated in the seminars.

The seminars were geared toward broiler management and included the management of birds from 0-2 weeks and 2 weeks to slaughter. In addition, particular topics in basics of poultry feed, advances in poultry nutrition and vaccination considerations for broilers were also presented. A presentation was also made on broiler breeder management entitled "Fertility Problems In Meat Type Breeders."

The lecturers at the seminars were Dr. Jose Juan Bruzual of USDA who works for the US National Poultry Improvement Plan, Dr. Arnoldo Ruiz representing Hubbard Company, Ing. Angel Salazar representing AVIAGEN, Mr. Jan Wijma representing LNB International of the Netherlands, Dr. George Weseloski a consultant with Syfrett Feeds of Florida, USA and Dr. Victor Gongora of the BPA. Lecturers at the seminar also

spent a few days doing farm visits at the feed mills, broiler and breeder farms and at the hatcheries. These visits served to identify areas where improvements in biosecurity and general management are needed to increase productivity, on-farm food safety and profitability.



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CITRUS NOTICE, *Continued from page 4*

3) Nursery owners wishing to establish their own budwood source trees are also required to submit a completed application form registering budwood multiplication blocks under the Belize Citrus Certification Programme (BCCP) in accordance with the Regulations. Application forms are available at the Citrus Research and Education Institute (CREI).

4) All local seed source trees to be used for citrus nursery production must also be registered under the Belize Citrus Certification Programme (BCCP). Application forms can be acquired from the Citrus Research and Education Institute (CREI).

5) Growers wishing to purchase citrus plants should ensure that the plants originate from a certified nursery. This will

ensure that the plants they are buying are of the highest possible quality available in Belize, are produced using high quality seeds and budwood and have minimum risk of being infected with diseases such as tristeza virus, exocotis, psorosis, cachexia or HLB. Young trees infected with HLB are likely to die within 6 months or two years after planting.

Do not plant diseases: use healthy plants in your grove!

For further information about the Belize Citrus Certification Programme, screen-house structures for small and large-scale nurseries and to find out how CREI staff can help you establish a nursery that will produce high quality plants, kindly contact us at 522-3535.





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Mennonite Book Review, continued from page 10

When driving into the colony one enters a different world from the rest of Belize. Visitors who come to Spanish Lookout frequently note similarities between this settlement and the agricultural areas of the Mid-West of the United States.

Many of the businesses along Center Road are named. "Because of their strong entrepreneurial position, the Mennonites are commonly regarded as the economic motor of Belize" (p. 101). How success in business and the adaptation of technology has affected colony life is explored at some length. For instance, in older times women would be needed to work with their husbands on farm chores. Mechanization relocated women to the home and kitchen, and with home and kitchen technology, they now have so much free time that Mennonite women are working jobs in businesses, thereby impacting traditional Mennonite culture. "From Mennonites to Mechanites" (p. 108) the book notes, is "a phrase which is frequently used among Belizeans". Electricity came to Spanish Lookout in the 1980s and running water in the '90s. "An important consequence of this policy [of adopting new technology] is that the settlement has become more prosperous over the years." This has also led to an improvement in the logistics of farming. As one young farmer explained, "Not long ago, the feed mill in Spanish Lookout started delivering the food with bulk trucks to the silo of the farmer. This use of individual food silos has changed the way the farmers work." Friesen Hatcheries and Quality Poultry Products, a chicken processing business, coordinate in delivery of chicks to growers, while the chicken plant collects the broilers six weeks later and distributes frozen chicken all over the country. Similarly, milk collection for Western Dairies is effected by one dairy farmer who has a milk tank truck and collects milk from 20 Mennonite dairy



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farms and from non-Mennonite farmers at a collection point in Santa Elena.

all over the country. Similarly, milk collection for Western Dairies is effected by one dairy farmer who has a milk tank truck and collects milk from 20 Mennonite dairy farms and from non-Mennonite farmers at a collection point in Santa Elena.

As agriculturally-related activity progresses, the scope of involvement expands. "Western Dairies expects to achieve the hazard Analysis Critical Point (HACCP) standard in the near future, a standard used for dairy products all over the world. Obtaining this standard will improve the sales. BAHA is also involved in achieving this standard." (p. 111) Mennonites have a cohesive transnational identity "and much of the new machinery and techniques are imported from, and distributed through transnational entrepreneurial connections, in which other Mennonite institutions often play a role." Thus Spanish Lookout is "part of a broader community that interacts on a transnational level and is based on shared religious principles and extended family ties. When it comes to business, differences within the Mennonite religious context do not appear to play a significant role." (p. 114)

The chapters on the Shipyard and Springfield colonies emphasize the religious and social aspects of these colonies more than the agri-business aspects simply because, for varied reasons, the commercial intensity of these settlements is less than that of Blue Creek and Spanish Lookout. The Beachy Amish and Homestead Acres in Esperanza appear in chapter 7. Considerable detail about Beachy Amish life is presented.

The book has a concluding chapter and extensive bibliography, as would be expected from academic researchers. Anyone who wants to understand in any detail a major factor in Belize agri-business will benefit from this book.

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CACAO, *continued from page 1*

Having become a fully functional cooperative in 1984, farmers continued to farm and supply the local market (Hershey) until the late 80's when they experienced a declining price and market collapse, forcing them to abandon their farms. After a period of relative inactivity, TCGA signed its first big contract with Whole Earth Food Ltd (now Green & Black's) in 1993 and exported its first cacao beans to the United Kingdom immediately thereafter. During this time, TCGA obtained its "organic" certification by Soil Association and "Fairtrade" by FLO making the TCGA a pioneer in the Fairtrade business in Central America. TCGA later renewed its contract to a 5 year rolling contract making the sole contract to benefit the farmer to date.

Maya Gold

From 1994 – 2001 TCGA exported approximately 20 tons of cacao beans annually, cultivated by 200 farmers. Since then productivity has been increasing as a result of additional input on labor and time from farmers. However, this trend was short lived as a result of a devastating hurricane, Iris, which rumbled well-established cacao orchards with blooming pods and permanent timber trees for shade. Even for well-established farms rehabilitation was difficult because of little or no resources. TCGA was assisted by Fairtrade and Green & Black's to rehabilitate at least 50% of its members' farms, while leaving harsh hit farms to be rehabilitated over time. In spite of quick rehabilitation, production turned very low. TCGA continued the struggle to encourage farm

rehabilitation with provisions of chainsaws, and other pruning equipment; however very few farmers took advantage of the resources.

Even with very discouraging scenarios at hand, some cacao farmers were eager to take advantage of an existing market. Green & Black's noted this great interest, simultaneously recognizing the potential to produce quality cacao beans (from well flavored Trinitario beans) for the Maya Gold Bar; so that by 2003 it started working on a new project to assist TCGA farmers. This recognition of interest and quality product instigated a new project, "The Maya Gold Project" whose aim was to create a sustainable TCGA by increasing its members and acreage thereby increasing its production. The Project financed by Green & Black's, DFID (Department for International Development) and HIVOS (Dutch support organization), commenced in September 2003 and by 2006 TCGA increased its members by 700 from 231 to 973 and its acreage from 400 to 3000 acres. The Maya Gold Project was designed for the farmers' benefit by establishing large nurseries, transporting of seedlings, conducting a campaign to educate the farmers on the benefits of establishing cacao farms, developing TCGA management capability and directors and providing technical training and extension services to the farmers. During the 3 year period, disillusioned farmers rehabilitated their farms, which boosted TCGA's production to around 30 tons annually, with the second best record of 42 tons in 2006.

Continued to page 22

Farmer Looks Longingly at GMO GMO “Get Moving On” ‘Genetically Modified Organism’

The scientists have identified the system of gene modification within a cell. The inputs into that cell from other plant life result in the better use of herbicides, and pesticides. This process also provides a non-chemical resistance to worms and other pests. There is continuous research that indicates that in the future there will be less loss from drought and a continuous uptake of nitrogen rather than application surges. Through the use of Round-Up Ready® corn seed it is cheaper and more efficient for weed control.

Corn growers in other countries see an almost total absence of corn borers, corn root worm and corn ear worms. When you have a corn ear worm, it lets rain in and rot may destroy up to 1/3 of the ear. When the combine harvester comes through it cannot separate the damaged kernels from the good kernels. The result is damage contamination throughout and results in unsanitary- livestock/chicken feed – to corn tortillas- to corn oil- to corn flakes.

GMO corn growers from the eyes of most non-GMO supporters think that GMO is evil and probably dangerous to the future of corn and consumers. In the 14 yrs. of GMO use in almost 30 other countries, in my view, there is no evidence of that being true. I would plant GMO corn in Belize if it were legal, because my GMO travels and investigations indicate a 30% plus increase in yields, with less chemicals and a higher quality end product. The corn seed will be more expensive and I don't intend on spending my money like a fool. In other words at the end of the crop sale, I may have more net money if I have a GMO option.

I and several other Belizeans went to Honduras (Pan-American Ag. College - Zamareno) where we saw first hand in side-by-side

comparative tests, the distinctive overall advantage of GMO versus non-GMO. We listened to Dr. Wayne Parrott from the University of Georgia- Athens, Georgia – possibly one of the most renowned GMO crop scientists in the world. He puts his name and reputation on the line in support of GMO. His almost life time study basically says- higher yields, a more sanitary product with less chemicals. Some opponents of GMO are worried about cross contamination toward old type single cross varieties and their eventual annihilation. Dr. Parrott replies that “if there is value to the old line and contamination should accidentally occur, you could take that corn to the laboratory and remove the GMO invader and line up with what you began with.”

In our never ending quest to solve world food and health problems there is nearly always a negative opinion somewhere.

Maybe the discovery and use of vaccines for polio, small pox, and diphtheria were a mistake. Maybe we should have never discovered antibiotics and let things just happen. Maybe GMO should never have been approved by some 30 countries including Brazil, Argentina, United States, Canada and Cuba. There is a proposal in the European Union that may allow each country to decide their future rather than one EU policy. I hope that the bio-sanitation and safety committee in Belize will be open minded on this issue so I can buy GMO corn seed and be financially competitive on the foreign market. I would prefer to grow all my crops organically; however at this point it is impossible on a larger scale farming venture in Belize. I have to be competitive or I will become like a dinosaur – extinct.

By John Carr

Do you have some knowledge or opinion that you would like to have printed in The Belize Ag Report? We welcome contributed articles, as well as letters to the editor and ideas for articles. Your contributions will improve the paper. Kindly send to <editor@belizeagreport.com> or call Beth at 663-6777. Thank you.

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CACAO, continued from page 20

TCGA and its services

Despite a very successful Maya Gold Project, the only measuring indicator, increase in production, can only be realized in the 5th year of tree life. Therefore TCGA continued monitoring and minimized its expansion on a decreasing basis for the next 4 years. In 2010 TCGA's membership stands at approximately 1,100 farmers producing 47 (record) tons annually. TCGA farmers cultivate local hybrid "Trinitario" which is a cross of "Forastero" the rustic variety and "Criollo" the most aromatic of the existing varieties of cacao. Farmers cultivate on average 2 acres with planting space of 12' x 12' intercropped with timber and leguminous trees at maturity and plantains and other staples during growth stage.

With a fully functional extension department, TCGA provides organic inspections, technical training (cacao production - from seed sowing to post harvest methodologies), quality control, pruning services, organic and agriculture education, farm consultations, and other extension support services for existing and new farmers. TCGA ensures that farmers have the adequate skills to cultivate, ferment and dry cacao beans as demanded by the market. TCGA has undertaken several infrastructure projects over the last 5 years to build satellite buying centers (Maya Mopan, San Antonio Village) and drying facilities in San Jose in order to provide quality beans to its customers.

Market and Price

While TCGA records its ultimate successes in becoming a sustainable organization in Southern Belize, external attributions are perhaps the fundamental factors in its success. These are

the maintenance of a guaranteed market and certification for organic and Fairtrade standards, a foundation set in 1994. The revolution of moderate expectations presented itself after 2007 and by virtue four (4) local chocolate processors (Kakaw, Goss, Cotton Tree and Cirila's Chocolate) are now added to TCGA's buyer list.

Today 90% of TCGA's production is exported and 10% is for local processors. In accordance with its business plan, the percentage will be reconsidered as the current trend for local processing increases. The result of reducing export in favor of the local market is that TCGA production is 90% short of Green & Black's demand for the more than 450 tons of organic cacao annually, a significant gap and incentive for TCGA to increase production and enjoy a thriving market.

Although production is a drop in the bucket in comparison to other Latin American production, TCGA's cacao fetches a relatively high price compared to farmers in other continents of the world (producing 70% of world production). Belize cacao farmers earn Bze \$2.30 per lb of cacao beans (fermented and dried) in addition to .14 cents for their Fairtrade Premium Fund and .18 cents for their organic certification as mandated by Fairtrade. The price is higher than the FT minimum guarantee of Bze \$1.76 but lower than the current world market price of 2.90 (NYSE). TCGA's price however is complimented by a new bargaining deal TCGA entered into with Green & Black's in 2007 to benefit from the International Cocoa Organization's (ICCO) daily price adjustment.

Continued on page 23



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CACAO, continued from page 22

Cacao prices have increased by 60% over the last 7 years (from 1.40 – 2.30 per lb). The 2.30 has been maintained for over 3 years leading to 2010 and will probably remain without further increase for the next year considering the erratic fluctuations of world market price triggered by African producers over the last 6 months.

Projects

In addition to executing projects harmonizing with developing skills of farmers and the industry, funded by organizations such as the UNDP, CARD Project, Help For Progress, HIVOS, Irish Aid, ACICAFOC and DFID, over the past 10 years, TCGA is currently executing the Central American Cacao Project funded by the Norwegian Government through CATIE (Tropical Agricultural Research and Higher Education Center). The project is aimed at providing capacity building sessions to farmers through the farmer field school method, education and research, cooperation amongst cacao producer organizations and stakeholders in the region, and improving productivity and quality of cacao in Central America.

As a growing industry, TCGA's aim is to become a self-sustaining organization that provides relevant services for its members in other areas of agriculture production. Follow the Ag Report in other issue for more information on Cacao Production in Belize.

By Armando Choco, General Manger
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BOOM TIMES FOR COCONUT WATER

Worldwide roughly 54 million tons of coconuts are harvested annually; Belize's production is approx. 850,000 nuts/yr. Price to growers has been at an all time high of \$.385/nut, delivered to the factory, for a few years and has growers smiling. It seems that the supply of coconuts in Belize cannot keep up with the local demand; so coconut water is being imported. Most of the imports come from the Caribbean although the products originate in Thailand and Singapore. Price for local c.w., 16 oz. is \$2.00 and the imported cans, 17.5 oz. are \$2.75/\$3.50Bz.



Why have worldwide sales of coconut water risen from \$4M USD in 2007 to over \$20M USD in 2009? Recent studies show that populations which have had and retained a traditional coconut heavy diet have remarkably good health, especially compared to their compatriots who have switched to a western diet. Marketing in the western world has centered on coconut water as a 'natural sports drink'. Coconut water is rich in electrolytes, anti-oxidants, vitamins and minerals, and all 'in a natural form'. The giant U.S. soft drink manufacturers now market versions of coconut water and cannot keep up with demand, just as we in Belize cannot.

With the incredible surge in popularity of coconut water, should we be looking at planting more coconuts in Belize? Although salt tolerant and best suited to sandy soil, coconuts can also do well on inland soil. Maypans can take 5 yrs. to bear, and the dwarf types usually bear earlier, or about 2 to 3 yrs. after planting. Both produce amply for 40+ yrs. at 110-120 nuts/year. Green or immature coconuts are harvested at 5-6 mos. for coconut water.

B. Roberson

JATROPHA, continued from page 9

Several development organizations, such as the World Bank, OAS and some NGO's are developing similar projects based on the cultivation of the physic nut and uses of its fuel by small farmers in zones with unfavorable agro-ecological conditions. The economy of Belize has traditionally depended on agriculture, (bananas, sugar and citrus) which accounted for 12.7% of GDP and close to half of exports in 2005. While significant progress has been achieved, the alleviation of poverty continues to be a major challenge for Belize. Poverty levels based on the 2002 Living Standard Measurement Survey were unchanged at 33.5 percent compared to the 1996 survey. As mentioned by Raswant (2008), many poor farmers can benefit from the production of bio-fuel, especially on lands not suitable for food production.

The general purpose of this project is to establish a **Jatropha Innovation Centre** to utilize *Jatropha curcas* and its oil for community development. This will generate income, rehabilitate degraded land and reduce green house emissions. Furthermore, the Centre plans to produce information and educational material on the management of commercial jatropha production.

The implementation of the program has three pillars: institutional, regulatory, and agricultural skills and pivots around the transfer of knowledge from the Centre and its regional/local partners to Belizeans. Activities will include provision of hands-on workshops in grove cultivation, processing of diesel and using it in small machinery.

Targeted concerns to be explored in the project include but are not limited to the following :

- Identifying characteristics such as adaptability, pests & disease tolerance, homogeneous flowering and high oil production, which is necessary before establishment of groves and creation of a cost effective processing unit
- Addressing farmers' concerns that labor costs for manual harvesting may challenge profitability
- Watching the prices for fossil fuel, as a decrease in the future could affect farmers with large scale investments
- Increasing local awareness in the benefits of renewable energy to develop a local market
- Identifying the customization requirements for Belize: International advances in jatropha diesel have allowed for more efficient and mobile equipment to be available; however these advances are customized for conditions in various domestic and regional markets.

Previously, a lack of availability of seed, technical assistance and information about management and use of *Jatropha curcas* hindered its adoption by small farmers. A promotional video and brochures were recently produced and distributed to the six agricultural district offices. The Jatropha Innovation Centre will additionally function for the production, storage and processing of jatropha oil.

A five-acre jatropha grove is being established at Central Farm and will serve as a training and data collection facility for interested farmers, researchers and scientists. Certain zones have had high production performances while other regions of the world including Belize have seen much variation in production.

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Central Farm R&D Station, MAF, Cayo, Belize
Email: rdcfarm@yahoo.com (501) 804-2129 or 804-3774

Spanish Lookout's PALM HILL DAIRY

SUCCESS FOR NEW BUSINESS

Only beginning in December 2009 with 5,000 pounds of milk, from just 2 local farms, in July 2010 Palm Hill Dairy greatly expanded to processing over 100,000 pounds of milk, from 36 Spanish Lookout farms and group shipments representing over 100 farmers in Shipyard. Today, about 60% of the milk originates from Spanish Lookout, and the remaining 40%, is from Shipyard. The Shipyard dairy farmers combine their milk to send 2 truckloads of milk, 4,800 lbs. per load, weekly. Prices to the producer vary between 32 to 40 cents/lb., depending on local stock levels and quantity that each producer is selling.

To speak in terms more of us understand, 100,000 lbs. of milk, at 8.6 lbs./gal. = approx 11,627 gals., which, if all made into cheese, would net about 11,000 lbs. of cheese. (One gallon of milk yields about 1 lb. of cheese.) 90% of Palm Hill's milk currently is being made into cheeses. Their most popular cheese is the 'stretch mozzarella' type. Palm Hill's vision is to process about 60% of their milk into cheese, and use the balance for bottled milk and ice cream. They already have the capacity for bottling regular and flavored milk.

HACCP certification, for which they have already applied and are awaiting final inspection, will open doors for exports too.

B. Roberson

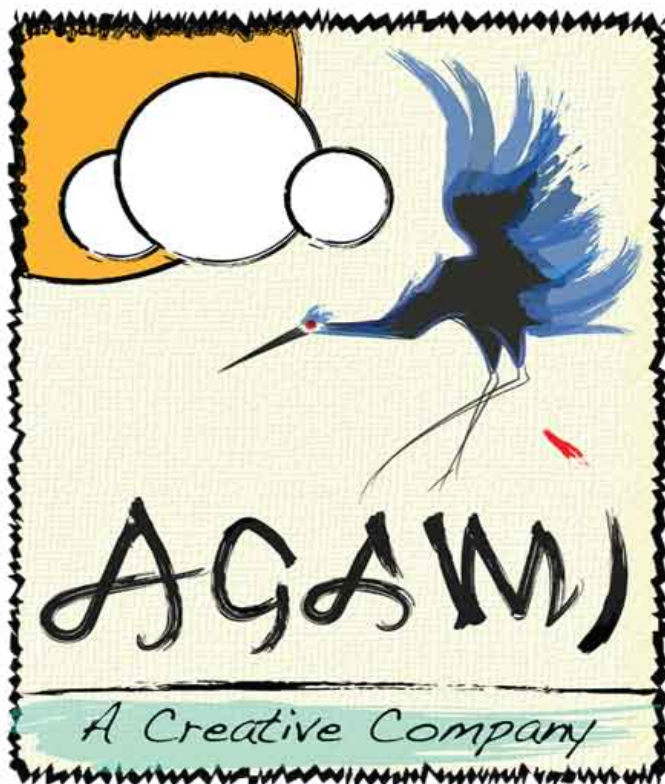


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Belize Ag Report's AG NEWS BRIEFS



In July, SIB (Statistical Institute of Belize) announced **growth of 3.2% in agriculture**, attributed to citrus and banana increases. **Sugar cane decreased by 12.6%, and fisheries dropped by 25%**, to 2008 levels. production of most fisheries products remained equal or increased. Decline was due to depression in prices in the Mexican and US markets.

Banana Bank reports to BAR that their 3 acre trial of sunflowers was successful, and oil was extruded at Reimer's Feed Mill in Spanish Lookout. The cake (up to 41% protein remains after oil removal) is suitable for livestock feed. A native of Central America, sunflowers are known for their fatty acid composition. Some 'high oleic' types contain a higher level of the healthy monounsaturated fats than olive oil. Sunbutter is a relatively new product made from sunflower.

Cohune Oil—A processing plant was inaugurated in Flowers Bank, Belize District in May of this year, supported by AED, in turn supported by a BRDP grant to UNDP and MAF. The cohune nut's kernel yields up to 70% oil, but the kernel is only 10% of the nut. Cohune oil is very similar to coconut oil; markets for both are expanding.

U.S. National Corn Yield Contest, 2009: Winner harvested a staggering 19,376 lbs. /acre (346 bushels). Compare that to 2009 U.S. national average of 9,234 lbs. (164.9 bushels). Belize's avg. yield for this crop is estimated at 5,500 lbs./acre.

Belize/Guatemala Trading -There has been some movement under the Partial Scope Agreement. It seems that the Belize side has it together; after phyto- sanitary is issued by BAH, then a broker fills in the export permit and finally the Rules of Origin are issued by Customs; then the Belize side is done. Next one hires a Guatemala Broker who issues an import permit. The Guatemala buyer needs an import number and then the E.V.A Tax is settled and things move on. It is recommended that if you are interested in exporting, you needs to talk to brokers on both sides who will facilitate the process. Just under .5M lbs. of corn have been exported to Guatemala this year under this agreement.

Guatemala's Ministry of Agriculture has budget slashed, similar to Belize's: With 23% of GDP from agriculture, Guatemala lowered its allocation to agriculture to \$47M USD (1.4%), down from 2005's \$95M USD (4.6%).

COCONUTS: Central Farm's best-selling fruit tree is the coconut. Harvesting monthly, they maintain a stock of approx. 10,000 to 15,000 seedlings on hand at all times. Annual sales are approx. 60,000 plants. Most of these are the hybrid Maypan or the Malayan Dwarf. The Maypans, useful for both coconut water or coconut oil production, are resistant to the Lethal Yellowing Disease (LYD). Malayan Dwarfs are only 75% tolerant to YLD. However, the dwarfs bear faster and are often used for commercial coconut water plantations.

CUBA reports a 7.5% fall in agricultural production for the first half of this yr. compared to 2009. Farming: 9.7% decline; Livestock: 4.8% decline. The only increase was in bananas which showed a 48% increase. Sugar is reported separately, and the gov't. has not released those numbers, only saying 'the harvest is the poorest since 1905.' Pres. R. Castro on Aug. 1 stated that that this drop results from 'errors in leadership... and also the effects of the drought'. Cuba spends \$1.5B USD annually on food imports.

Mexican Cattle Export -The main cattle sweep committee tells us that maps and procedures are mostly in place. There is apparently a budget of some \$1.25M USD (money being requested from the European Union) needed to complete the brucellosis, and tuberculosis testing. This also includes an animal identification record; each cattle farm needs to be registered too. BLPA is waiting and it seems that progress is being made but things move very slowly. We are hearing about lower cattle prices throughout Belize, especially in the North. The economic slow-down is lowering the consumption of beef and the only export is being done is by cattle traders.

As much of the world faces either drought or monsoon conditions, Belize anticipates bumper corn crop. Russia closed its doors for all grain exports at least until end of 2010: world's 3rd largest wheat exporter will harvest 30% less than last year. Ample U.S. harvests should cover world grain shortages caused by Russia's crisis.

August 2010: **Judge rules that more GMO sugarbeets cannot be planted until the USDA reviews effects the GMO crops could have on other food;** such a study could take several years. About half of the USA's sugar is from sugarbeets. Over a million acres are planted annually. Speculation is that there will be drastic shortage of conventional sugarbeet seed, as only 5% of entire crop the last 2 yrs has been from conventional seed.

Local and Regional Fuel Prices



	Belmopan, Belize	Quintana Roo, Mexico	Peten, Guatemala
REGULAR	↑ \$9.50 Bz/Gal	↑ 8.13 pesos/Lt \$4.90 Bz/Gal	↓ Q 30.00 /Gal \$8.22 Bz/Gal
PREMIUM	↑ \$9.85 Bz/Gal	↑ 9.55 pesos/Lt \$5.75 Bz/Gal	↓ Q 30.50/Gal \$8.36 Bz/Gal
DIESEL	↑ \$8.60 Bz/Gal	↑ 8.53 pesos/Lt \$5.14 Bz/Gal	↓ Q 25.00/Gal \$6.85 Bz/Gal



Belize Electricity Rates RESIDENTIAL

Belize*	Quintana Roo, Mexico	Peten, Guatemala**
0- 50 Kwh: \$0.35/Kwh 51-200 Kwh: \$0.44/Kwh Above 200 Kwh: \$0.47/Kwh	Any Amount: \$1.3877/Kwh	Any Amount: \$.05356/Kwh
All in Belize Dollars		
* Belize Residential: Plus \$5.50 monthly service charge and plus 12 1/2% GST applied to entire bill if over \$200.00		
** Guatemala rates adjusted every 90 days		

Classifieds

Classified prices:

2-3 lines= \$24; 4-5 lines=\$32; 6-7 lines=\$40

PIGS and CATTLE FOR SALE:

Ironwood Cattle Co. Ltd., Corozal. Contact Bill at 660-4014

BULLS FOR SALE: Ready to work Nelore Bulls in Cayo. Former champions. Proven sires. Priced to move 664-7272

QUARTER x THOROUGHbred STALLION FOR SALE: 5 yrs old, grandson of the well known running mare, Popcorn, who is by Soldier John \$5,500. Call Cedar Bluff Ranch at 664-7272

FOR SALE: New Holland Baler, Ford Sickle Mower, 5 wheel rake. All in working condition \$8,200. call 600-2853 or email: amar.international.maruja@gmail.com

BIO-DEGRADABLE PLANTING BAGS: Eco friendly propagation method, saves \$\$\$\$ in nursery, planting, time & labor. Pre-filled sterile peat bags with pH loaded. All tree, plant and vegetable types available. Mile 63, Western Highway (Airstrip) 501-621-3432 www.b-oilbelize.com

FOR SALE: Ferry/Barge, 12' x 30' with ramp. Originally set up to be free wheeling. No motors included. Hull excellent condition. US\$27,000 Call 600-2853.

FOR SALE: AZOMITE®, a mined natural mineral product that is an excellent anti-caking agent and a unique re-mineralizer for soils, now available in Belize! For more information or to order call Calvin Reimer 670-3172 or visit www.azomite.com

FOR SALE: MORINGA PLANTS:

\$10 per plant. Belize-Michigan Partners (Dr. Chris Bennett) tel 223-0404 or bennett@btl.net

FOR SALE: 2005 Harley Davidson 1340cc, 662-2563

WANTED: Grape Vines

Would love to grow.
Please call Jenny 533-8019

CANOE WANTED: lifejackets & paddles(2 ea)
email: k.ray@mac.com

WANTED TO BUY: Used Skiff 12' to 18'. Condition is not important, will be commensurate with price. Call Maruja 600-2853.

90 Ac Great Bottomland for LEASE: Banana Bank area, North side on Bze River. Former Caricom Farm land. 662-5263, 664-7272, <holdfastbelize@gmail.com>

2+ac, 3+ac Hilltop Lots near Mile 57 W. Hwy, established estate area, water/elec, incredible views, call Beth at 663-6777 or email holdfastbelize@gmail.com

450ACRES, RIVERFRONT BANANABANK AREA, BELMOPAN 2500 USD/Ac. Priced for investment or development. Call 663-6777 / 664-7272 Or email holdfastbelize@gmail.com

PROPERTY FOR SALE: Barton Creek, 74 ac on creek, approx 700 ft creek frontage. \$249k usd, or 380 ac, includes above with creek for \$510k usd. Private farm or resort potential. Holdfast Ltd 663-6777 / 662-5263 <holdfastbelize@gmail.com>

PROPERTY: Horticulturalists dream-home on 1 acre, feels like more, in Belmopan City limits, west side of Hummingbird Hwy. Extensive landscaping, fruit trees, orchids, etc. Asking 295k usd. 664-7272, 662-5263 <holdfastbelize@gmail.com>



PROPERTY: RENTAL, rural luxury, Cristo Rey Rd, 15 minutes from San Ignacio, 1 bdrm, 2 full baths, deck, barbq, great views, maid/yard service/security on working farm. \$750 usd/mo. Call Sandra or Beth 664-7272 or 663-6777

BEACH LOT, SAN PEDRO, Punta Azul Area. 50'x50', in L Benson subdivision, on the blue Caribbean Sea. Bze tel 501-663-6777 or <roberson.elizabeth@gmail.com>

86 Acs, 4,000' Riverfront, Young Gal area, Teakettle, Cayo District. Rolling hills, mostly cleared, big trees. 30 min. drive from capital city, Belmopan. Reduced to sell. Call 663-6777 or 664-7272, holdfastbelize@gmail.com

BELIZE BIRD RESCUE is dedicated to the care, rescue and rehabilitation of all bird species in Belize, especially parrots. 822-1145/ 610-0400/ 602-4291 info@belizebirdrescue.com www.belizebirdrescue.com

STAINED GLASS WINDOWS - Custom design, any size, all imported materials. For churches, hotels, businesses or private residence. Email: leisa@bananabank.com for more info.

SUNDAY FUN:

Great Market on the first Sunday of each month at Spectarte, Maya Beach, Placencia. something old, something new, buyers and sellers very welcome 533-8019

"Nothing can stop the man with a the right attitude from achieving his goal; Nothing on earth can help the man with the wrong mental attitude."

T. Jefferson

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