

# The Belize Ag Report

Apr-May  
2010

Belize's most complete independent agricultural publication



Issue 6

Apr-May

2010

Harvesting the Ag News  
from All of Belize

## Belize Ripe for a Farmers Credit Union?

By Marcelino Avila, PhD  
Project Director BRDP

I was asked: "What do you think of a Farmers Credit Union?" Well, after some thought, I think this is a timely question because:

- 1) There are an estimated 10,000 small and medium size farmers who do not have the land titles or other commercial assets to qualify for a bank loan; perhaps a small minority of these belong to any credit union.
- 2) Most commercial banks and even DFC in Belize are reluctant to lend directly to the small farmers as they are too far away from their target group (minimum loans of \$10,000) and they represent a high risk factor. Banks also do not have the appropriate know-how to deal with these clients. In addition, they estimate that the poor cannot fulfill the bank's requirements to access credit such as collateral, managing capacity, repayment rates & schedules...

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Find Belize Fisheries "Catch of the Quarter" Newsletter on: [BelizeAgReport.com](http://BelizeAgReport.com)



Air Potato  
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## CANE ETHANOL FOR BELIZE ?

by Beth Roberson

Many of us remember Petrojam's brief venture in the energy business in Northern Belize in the late 90's. Are conditions favorable now for us to reconsider the potential of biofuel from sugarcane? It's a natural tendency to study the actions of those who are our major trading partners – for us, North America. However, in the instance of biofuels, tropical Belize should be looking south, to tropical Brazil for vision more applicable to us. (The U.S. leads the world in bio-ethanol production, using corn. Brazil is second, using sugarcane.) The U.S., due to its prevailing temperate climate and its strong corn lobby have failed to give cane ethanol the attention it deserves. At long last though, cane ethanol facilities are operating or under construction in Louisiana, Florida, Hawaii, Texas and California. *Continue on page 20*



WELCOME FISHERIES

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**Liquid Fertilizers  
By David Thiessen**

David and John Thiessen are the owners of **Thiessen Liquid Fertilizer** handling the Agro-Culture Liquid Fertilizers products thru their facility located in Spanish Lookout. They started in the fertilizer business in 2005 where their first year sales were \$250,000 BZ and in the years since they have had very good growth averaging 40+% growth each year. David and John work with growers who use the Agro-Culture Liquid Fertilizers product on their crops; one of the reasons for the success is that the products fit the growers' very diverse nutrient needs. The soils in Belize are very productive but can be very variable. With the Agro-Culture Liquid Fertilizer's product line Thiessens can custom tailor a nutrient blend for each individual grower and his crop's and soil's specific nutrient needs. At the heart of the Agro Culture Liquid Fertilizer line of products is higher quality fertilizer manufacturing that allows the nutrients to better be absorbed into the grower's crops giving higher usability thus giving better crop feeding and better results with higher yields.

At Thiessen Liquid Fertilizer they import the fertilizer in large bulk tanks, so they have the fertilizer on hand to meet their customer needs. One of the benefits of liquid fertilizer is the ease of handling, and the ease of how the grower can apply his specific liquid blend to his crop. Nutrient solutions can be planter applied, foliar fed, applied through the irrigation, or banded over the row. With so many options Thiessens' customers find it is easy to feed their crops the nutrients needed. And with a large amount of storage in different locations and delivery equipment Thiessens are able to supply their customers the products they need throughout the country of Belize on a timely basis. Some of the growers are starting to have storage tanks of their own so they have a supply of what's needed for their farm at all times.

Agro-Culture Liquid has a strong foundation in research in the U.S. with over 20 years of commercial and independent research on over 50 different crops. In Belize the Thiessens have done several years of trials taking the knowledge gleaned from findings in the U.S. and then taking the unique climate Belize has and developing use rates that have shown their customers good returns on the dollars invested. Agro-Culture Liquid is one of the most researched fertilizers on the market today; so growers know when they invest in their high quality, high usability nutrient solutions they will get the results needed in today's ag economy.

John and David work with most of the crops grown in Belize. Their business is divided up 12% banana, 5% papaya, 23% rice, 18% beans, 27% corn, 6% citrus, and sorghum,



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vegetable crops, potatoes, and sugarcane making up the other 9% So you can see they have the experience to work with the crops that growers in Belize have. Their customers who use the Agro-Culture Liquid products report things like better uniformity, more kernels per ear, better fruit quality, more tonnage, higher test weights, and higher yields.

Thiessen Fertilizer's bottom line is to prosper the farmer, and they look forward to visit with you about the Agro-Culture Liquid Fertilizer products that they offer in Belize.

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## FROM THE EDITOR

### HATS OFF TO PROMOTERS OF THE SPANISH LOOKOUT EXPO

Estimates of between 12,000 to 16,000 people made the effort to visit the First Annual Spanish Lookout Commercial/Industrial Expo, held as a one day event on February 27<sup>th</sup>, at Countryside Park, Spanish Lookout, Cayo District. Close to 100 businesses, most but not all Mennonite owned, set up booths and exhibits to showcase their wares and services.

The Belize Ag Report salutes the main sponsors of that show: Farmers Trading Center, Universal Hardware, Western Dairies, Quality Poultry, Westrac and Belize Tire Depot. We understand that the turn out was so successful, that organizers are considering making this a two-day event next year, and may include more agriculture – crops, horticulture and even livestock. Well done, and all will look forward to next February's Second Annual Expo. Where would Belizean agriculture be if the Mennonites had not chosen to migrate here in 1958? Their 'competition with cooperation' business philosophy distinguishes them from mainstream Belize. Well done Spanish Lookout; The Belize Ag Report is ready to reserve our booth for next year.

We have realized our first year in print, with issue #6. Enormous thanks to all our advertisers and all the writers who continue to raise the profile of the newsletter. We are now being read from Malaysia to Mexico (and receiving feedback) from many of our online as well as printed copy\* readers. Over 8,000 unique readers visit our website every month. What more can we say than an old fashioned, THANK YOU! And, we look forward to your continued support – you are all vital to our continued growth and success. We look forward to hearing from more readers. Please tell us what you would like to read; suggested topics or contributed articles are always most welcome.

*\*Note: the main distribution channels for the printed editions are via our advertisers. Quarter page clients receive 25 printed copies, half page-50, etc. Additional copies are delivered to ag NGO's, embassies, and agribusinesses. Ministry of Agriculture receives over 100 for its country-wide offices, Foreign Affairs floats a few around the globe on their travels, and over 150 copies are distributed in Southern Mexico, by gracious assistance of the Mexican Embassy in Belize. The Belize Ag Report appreciates all these efforts by advertisers and friends of Belizean agriculture.*

#### 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.*

## TO THE EDITOR

Dear Editor,

In the past people from Belize had asked me for information on my program on micro-budding.

I gave an invited talk at the 64th Annual Meeting of the Sub-tropical Plant Science Meeting, Weslaco, TX, January 25, 2009. My topic was "Learning to Live with HLB." It was a situation analysis and options available to the citrus industry for HLB management. I would like to share it with you. It is 14 minutes, flash video you can watch or download from

<http://www.screencast.com/t/ZTdIzjQ3>

Link to the video is also posted at the Florida Citrus Mutual website

[http://www.flcitrusmutual.com/greening-info/greening\\_news.aspx](http://www.flcitrusmutual.com/greening-info/greening_news.aspx)

Please feel free to share it with people you think may like to watch it.

Sincerely,  
Mani Skaria, PhD  
Professor & Plant Pathologist  
Texas A&M University-Kingsville Citrus Center  
Weslaco, TX 78596  
E-mail: [MSkaria@ag.tamu.edu](mailto:MSkaria@ag.tamu.edu)

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Belize Ag Report, P.O. Box 150, San Ignacio, Cayo, Belize, Central America

Phone: 663-6777 & 664-7272

Editor: Beth Roberson  
Assistant Editor: John Carr  
Special editor: Dottie Feucht  
Technical Manager: Jane Beard

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## TO THE EDITOR

Dear Editor,

Recently some copies of the Belize Ag Report magazine were distributed in Playa Del Carmen. I was quite impressed to see how Belizean agriculture has evolved in the last couple of years and the variety of Belizean products that are available. I became interested after reading about agreements between Belize and Mexico of opening the market for live cattle. I hope this is the beginning of an increased agricultural trade between Belize and the Mexican state of Quintana Roo. The most attractive parts of this agreement are: short distance, reduced transport cost and the increasing quality and competitiveness of Belizean agricultural products. It seems that at this time the conditions could be in place to actually make it possible for Belize to export and for Mexican businesses to import produce and agricultural products. However, some of the legal requirements and fine tuning between Governments and the private sectors are essential for this to happen. We need the cooperation of both governments to succeed. This may require the forming of a commission between Belize and the State of Quintana Roo to review the current situation, with the intent of helping customs and sanitation (animal health) protocols to become more fluid. Price information plus product availability and supply capacity are necessary. The Belize Ag Report can play a part in this process, acting as a shopping catalogue and information exchange for Mexican buyers and Belizean producers. We would respectfully like to request from the Editor, a small amount of magazines for distribution among the business community on a regular basis.

Already by showing the magazine to some of my clients I have received questions on fiscal implications and custom tariffs on specific agricultural imports from Belize. I have begun the process of looking into those details of importing and exporting; so questions on the Mexican side can be answered, and hopefully this exchange between Belize and Quintana Roo can be facilitated. Reading the magazine has made me aware of the extensive possibilities that exist on this level between our two countries and I would like to thank the editors for their efforts in creating this magazine.

Sincerely Yours,

L.C. Pedro Escobedo Vázquez

Playa del Carmen, Quintana Roo, Mexico

Hi Beth,

Your Belize Ag Report reached as far as Malaysia! I was surprised and delighted to receive an email from Les Thorogood, who is the CEO of Complete Commerce Sdn. Bhd. in Kuala Lumpur, Malaysia. He had read my article on pitayas in the Belize Ag Report [issue 4] and had several questions about pitaya production in Belize and other Central American countries. He is helping Malaysian farmers become more productive through effective farm management practices on the 950 hectares of "dragon fruit" in the country. He sent articles dealing with pests and stem rot, including current research by Dr. Alberto Valencia Botin, at Guadalajara University in Mexico. Because of the Ag Report,

pitaya growers in Belize have access to valuable expertise from international sources.

Best Regards, Richard Rasp  
Belize Pitaya Growers Asse.

Dear Editor,

The write-up on "bissey nuts" aroused my curiosity, since I had never heard of them before. One day while browsing through an encyclopedia (an old-fashioned, but relaxing pastime), I found it! World Book Encyclopedia under Kola Nut: "They are also called cola, guru, and bissey nuts by the people of Africa, who chew them. The nuts contain twice as much caffeine as coffee beans do." Wow! That explains its powerful effect. Just thought I'd pass that on for other "health nuts" out there.

About the same time, I happened to read some pretty convincing information on caffeine research. I'd be glad to pass that on to anyone who contacts me.

Thanks for BELIZE AG REPORT. Keep up the good work!

Lyn Routhe [toshawb@excite.com](mailto:toshawb@excite.com)

### Colloidal Silver

Lyn also dropped by our office to loan us her book about *colloidal silver* - as follow up on question in issue #4 regarding 'natural methods of raising livestock' posed by a reader. The Routhes use *colloidal silver* for parasite control with their horses. The book is interesting from both historical and scientific perspectives. Putting a silver dollar in the milk pitcher in pre-refrigerator times, and putting drops of silver solution in newborn's eyes to prevent infection remind us of times when silver's reputation as a germicidal agent was common knowledge. NASA chose a silver water system for the space shuttle, and many international airlines use silver water filters for passenger drinking water. Studies from sources such as UCLA claim colloidal silver kills over 650 types of germs- bacteria, viruses and parasites in minutes by attacking a vital enzyme, while remaining harmless to the host person or animal. Natural health proponents claim that the pharmaceutical industries downplay *colloidal silver* medical potential because it is un-patentable. Also in 1938 when the antibiotic industry was nascent, *colloidal silver* was very costly to produce. We include in the ONLINE ANNEX an article from SILVER, THE FORGOTTEN ANTIBIOTIC, by K. Adachi. Note: *colloidal silver* (CS) is NOT to be confused with *colloidal silver proteins* (CSP), which can result in Argyria. CSP products are silver compounds produced by the pharmaceutical industry.

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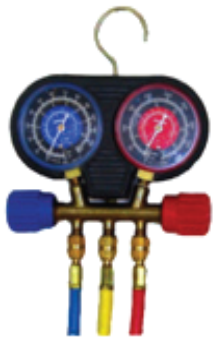
By Greg Clark

### The After-Life of a Chicken...

Poultry in Belize is more of an integral part of the agricultural systems than most realize. The chickens consume the corn grown in Belize, thus reducing the levels of corn in the silos of the feed mills. The chickens are also the most consumed meat-based protein in the country. This "consume and be consumed" process has developed into a steady agricultural loop that maintains a balance of one of the biggest agricultural revenue streams in Belize. The chicken actually can do more for Belize than most realize. In the organic world of limited sources of nitrogen, the chicken can play a key role. The chicken manure, after a composting process, can supply adequate supplies of nitrogen for the soils. The manure is being utilized for this process, mostly on grazing fields to increase the growth rate of forage.

A secondary source of nitrogen, which is being overlooked in Belize, is the utilization of the feathers. The feathers contain protein that will release nitrogen when tilled into soils. This form of nitrogen release is deemed a slow release fertilizer. Over a year period, the nitrogen will steadily be released for utilization by the crop. Standard nitrogen fertilizers will give an instant burst of nitrogen release into the soils, and typically after a 3 month period, are depleted. Currently, the feathers from the processing of poultry are treated as a nuisance, and are burnt to remove the accumulation. Farmers all over Belize have to pay premium prices for nitrogen fertilizers, or choose to waive the cost of the nitrogen at the cost of yield decreases. One of the best utilizations of the feathers would be in the nitrogen intensive crop, sugar cane. Cane quality is very dependant on the input of nitrogen. Looking at the availability of the feathers, increasing the quality of the cane could occur at a reasonable cost, and would relieve the nuisance of the poultry processors. If you would like to see the results of the feathers, stop by anytime to see the results of our sunflower crops.

In closing, I would like to state that this is only one of the efficiency gains that are available in Belize; there are many, many more. For Belize to remain agriculturally viable, we all must be looking at the value streams of any resources.



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**RURAL ROOTS**  
**Organic Certification**  
by Matthew James

With due deference to Wm. Shakespeare this simple question lies at the heart of the development of organic agriculture in Belize; “whether ’tis nobler” to use increasingly expensive chemical inputs or to revert back to using simple soil management and biological control techniques. The latter determine Belize’s ability to compete in the increasing organic market region wide. The Caribbean production of certified organic produce represents 28% of the total certified farms worldwide with 16% of regional land dedicated to organic production (IICA 2008-Mr. Pedro Cussianovich).

A visit to Dangriga’s market this weekend illustrated the confusion or knowledge deficit, common to the introduction of organics in Belize. Crops grown using other than certified organic seed on uncertified as organic soil without chemical inputs ARE NOT organic. One vendor was selling “organic” squash and vegetables which, to the writers certain knowledge, were not grown using organic certified seed on soil not certified for organic production and as such would not meet any recognized organic standard anywhere.

Crops grown using organic seed, during the three year qualifying period for organic certification without chemical inputs does qualify as organically grown using organic methods but are still not organic. This may appear to be simple ‘sour grapes’ to readers until one accepts that trying to ‘pass off’ such produce as organic could easily result in the rejection of Belize as a reliable certified supplier of organic produce before the farmers have a chance to compete for the estimated \$US 38.6 Billion dollar world market, a market growing at 15% per annum (IICA-2008).

In May last year Canada and the U.S. ratified organic standards allowing increased trade between each other and further trade within the European Union. The only logical way forward is to adopt existing standards as used in the U.S., Canada & European Union. This would ensure Belizean farmers and growers meet international requirements. Trying to reinvent the wheel by creating separate Belizean standards would cost Belize dearly as whatever standards Belize introduces itself must meet these international standards or be worthless; therefore the adoption of either U.S., Canadian or European Union standards is quicker, easier and just plain common sense.

A company specializing in organic certification will be in Belize early this year; certification by this group will enable certified farms to plant crops knowing they have a market for the produce. Farms ‘in transition’ can market produce as organically grown during the three year qualification cycle. Organic production is not easy; it requires diligence and effort; however the effort is rewarded with better prices, better market opportunities and a healthier nutritious lifestyle for both Belize and its potential customers. Organic methods allow small and medium farmers the chance to compete with larger growers who can afford costly chemical inputs. Every single developing country began their growth by focusing on small/medium farmers.....so must Belize.

Interested farmers should contact [gscstanncreek@gmail.com](mailto:gscstanncreek@gmail.com) for further information.

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## The Importance of Insect Pollination to Crops

by Dottie Feucht

The importance of insect pollination, primarily bees, to improving the quality and production of cultivated crops is not new information. B.N. Gates in 1917 warned the grower that, "he may fertilize, and cultivate the soil, prune, thin and spray the trees; in a word, he may do all of those things which modern practice advocates, yet without his pollinating agents, chief among which are the honey bees, to transfer the pollen from the stamens to the pistil of the blooms, his crop may fail."

In 1967 J.H. Girardeau and D.B. Leuck produced a significant 6 to 11 percent more peanuts grown in open field than from plots caged to exclude bees. The vicinity of a forest with native pollinators near agricultural crops, such as pitayas or coffee, can improve their yield by about 20%.

S. E. McGregor, retired apiculturist from the Agricultural Research Service in Tucson, Arizona, says that worldwide there are more than 3,000 plant species that have been used as food, but only 300 are now widely grown, and only 12 furnish nearly 90 percent of the world's food.

Wind-pollinated or self-pollinated crops are primarily barley, corn, oats, rice, rye, sorghums and wheat, grass hay crops, sugar beets, sugar cane, potatoes, sweet potatoes, cassavas or manioc. Crops that may receive some benefit from insect pollination but are largely self-pollinating are beans, peas, soybeans, and coconuts. However, *most fruits, vegetables, and nuts are dependent upon insect pollination.* In addition to bees, butterflies and moths, flies and beetles pollinate plants such as cucumbers, squash, melons, okra, cilantro (coriander) and peppers. Fruit and nut trees dependent upon insect pollination include sapodilla, mango, custard apple, star fruit, mamee, avocado, and cashew. The on-line version of the Belize Ag Report contains a table that lists the cultivated crop plants that are dependent upon or benefited by insect pollination.

N.P. Guidry, of the US Dept of Agriculture reported in 1964 that more than half of the world's diet of fats and oils comes from oilseeds including those found in Belize: coconuts, oil palm, peanuts, soybeans, and cohune nut. Many of these plants are dependent upon or benefited by insect pollination. When these sources and animal products are considered, it appears that perhaps one-third of our total diet is dependent, directly or indirectly, upon insect-pollinated plants.

In addition, the insect-pollinated legumes have the ability to collect nitrogen from the air, store it in the roots, and ultimately leave it to enrich the soil for other plants. Without this beneficial effect, soils not fertilized by processed minerals would soon be depleted and become economically unproductive.

There are ways a grower, with little or no intimate knowledge of the life and habits of pollinating insects, can measure the effectiveness of the pollination of his crop. For example, adequate pollination is indicated by two or more musk melons near the crown or base of the vine. In a watermelon field, adequate pollination is indicated by a high percentage of melons that are symmetrical, completely developed throughout, and of satisfactory weight.

There's no doubt about the importance of bees to agriculture. However, what may not be as well known is the danger of losing bees and pollinating insects because of weed sprays, a reduction in cultivated crops attractive to bees, destruction of nesting places during cultivation, new diseases and parasites of bees, clear-cut logging, decline of beekeeping, and removal of hedges and other habitat from farms.

The aesthetic value of pollination to ornamentals, wild flowers, and forest and range plants in terms of beauty of the landscape is recognized for specific plants but it cannot be measured. Nor can we measure the related ecological value in terms of seeds, fruits, and nuts produced, which are used as food for various forms of wildlife, but this value, too, is doubtless considerable.

*Note: You can access the table of cultivated crop plants benefited by insect pollination in our ONLINE ANNEX of issue 6 at [www.belizeagreport.com](http://www.belizeagreport.com)*

**Q: Where can you get your printed copy of The Belize Ag Report?**

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FROM THE MEXICAN SIDE  
RESTORING THE ANCIENT TRADE ROUTES

TEST RUN  
BY HENNING BARTSCH

Through a series of coincidences I was able to meet Beth Roberson, publisher of the Belize Ag Report and read several issues of the magazine. I shared them with other businessmen in Playa del Carmen and we were so impressed with the agricultural information in this magazine that we as a small group of Mexican businessmen have decided to start a testing program trying different Belizean products in various businesses in the Riviera Maya over the next couple of months. From the ads we already have an idea of what is available and have picked several products for testing.

The magazine for us is essential to facilitate communication between Belize producers and Mexican buyers. We hope to see more ads of what is available and that the Belize Ag Report continues to evolve helping us in this way.

In the first phase we will be testing Belizean products for the Riviera Maya market by acquiring samples from different producers as well as querying Mexican buyers what their interest is in terms of products. Several restaurants are requesting information on organic produce. We have inquiries from Mexican businesspeople if Belizean products can be specially packaged for their restaurant or hotel.

The section, Agricultural Prices at a Glance is exquisite information for us and allows us to analyze feasibility of importing. We are discussing with the editor to open a page where we can request products. Gourmet and organic of anything is of high interest.

In the second phase we will explore legal procedures and complications of importing/exporting. We will analyze and publish our findings and hopefully can work with both governments to alleviate any difficulties.

The third phase ideally will then be to start importing ag products into Mexico on a more regular basis. We would like to thank the editors for their publication and are looking forward to a continuing relationship.

*Mr. Henning Bartsch, a dual German/Mexican national resident in Mexico since 1969, (and in Quintana Roo since 1992) has his business headquarters in Akumal, Q.R. We welcome a regular column from Mr. Bartsch and his invited commentators, in **From the Mexican Side.***



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## BEYOND THE BACKYARD

### DIVINE INTERVENTION

#### The Air Potato

BY JENNY WILDMAN

I was shown a strange looking tuber by an avid gardener. The attractive vine with pretty patterned green leaves, climbed high on a tall old tree and displayed an abundant crop of fascinating brown nubby looking potatoes. He said his pigs happily fed on them and that they are easy to grow. "Well how about for people?" "Never tried one." Everyone likes to grow unusual exotic plants, especially edibles. So armed with a couple of samples I head home eager to try this intriguing vegetable. However I first decided to google air potato and see if it was truly edible. Imagine my surprise to find an onslaught of information. On the one hand the promoters selling the plants and then on the other the harsh warnings such as DO NOT PLANT or let anyone else plant air potatoes; they are aggressive, dangerous and could destroy the ecosystem.

Not being sure what variety of Dioscorea I had in my hand, alata the winged yam, or bulbiflora the air potato. I checked pictures and libraries to find out more. I am now sure this tuber from Toledo is a winged yam Dioscorea alata sub classification Enantiophyllum since the stems are square with winged corners and twine clockwise and the leaves are opposite each other. In contrast the air potato twines left counter clockwise and leaves are alternate. Both have heart shaped leaves and the alata here does not grow so high. The position of leaves could be important as the potentially poisonous ones have alternate leaves. The information at forestry shows that there is an amazing variety of these vines. So perhaps my potato is another variety. It did not much matter which one, as the advise on the internet is simply not to grow it; I decided to just follow the warnings.

But I am curious about these vines. The innocent looking vine of the air potato rapidly spouts new shoots and invades

the countryside. It spreads just like kudzu, another invasive species. Looking at pictures of how it engulfs whole buildings, it looks very dangerous. We also have such vines everywhere in Belize and have not heard anyone here raging. Some gardeners in hot dry climates reported not being able to grow these vines at all. Florida seems to be the most excited about the nuisance and they have a climate similar to here. They have put the air potato on the Noxious Weed List. Is this another controversial topic like global warming? I do not want to have a battle with my neighbours if the vine creeps over the fence and eats his hibiscus and I do not want to be a potato farmer. So I am thinking I will just avoid it. The only way I could see that it is worthwhile growing dioscorea is IF you intend to use it. Experiments have proved that kudzu and potato vines have an excellent potential as a source of fuel. The weed can grow a foot a day and every bit of it is useable. We have seen lands bared to make way for papayas or citrus only to be chopped down again to make way for a more lucrative crop. Wouldn't it be wonderful to put the so-called pests, air potato or kudzu, to good use.

We have a particularly annoying strangler vine around Belize that locals call God's Bush. I am always fascinated with names and how and why they came about. Now Dioscorea could be God's Dance. Divine and vine also from God. Jasmine, another attractive, yet invasive vine, is from the Persian name meaning God's gift-Divine order. Now if "all is for a purpose", are we not getting the message? Should we be using this gift? Initially the potato was considered potentially dangerous and nutritionally useless by most of the world. Yet it has had a long run as the *king of the crops*.

Now the US potato industry has serious competitors for land leasing to grow bio fuel. They are prepared to pay higher prices for land leases which means the price of potatoes and corn could rise dramatically. Growing potatoes in the air would seem to be a good option. Maybe the reason the edible variety has not caught on before is that they have not been offered for sale.

*Continue on page 11*



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Continued from page 10

## BEYOND THE BACKYARD

We get sold on ideas...white sugar better than brown, margarine better than butter, formula better than breast...only to later switch to the other side of the argument. I quizzed some villagers about all this. The reason that the imported type of potato is not so popular with them is that it is not indigenous and hard to grow in this climate. They tend to eat what they farm rather than purchase expensive imported items. The Maya favour rice, coco and yams and, yes, they do use the air potato. They plant it in April to May and it grows about 30 feet and they do not consider it invasive. I guess if you are using it rather than letting it spread its bulbis then it is quite controllable. It is particularly good in stew, soup, pigtail and boil up or just cooked plain. I could not find any local name here except air potato.

Now about the vegetable:

Time for the test run on this new-to-me "potato". I have had one sitting on the window sill for 2 months and it is still hard, not rotting. So it definitely keeps well and it grows here. I am hoping it is an culinary delight like the dasheen which has become a favourite in my household. I peel it and it feels sticky like coco. A potato feels wet by comparison. Firstly I cut a wedge off and put in a pot to boil and set timer for 15 minutes (but they become soft sooner). It tastes like a cross between a potato and a yam. The water turns orange but the potato looks pale like a potato. It tastes very good so I try it buttered and mashed, both good. Then I cut some more into strips like fries put them to dry and drop them into hot vegetable oil; they fry quickly- EXCELLENT, a good consistency, a slight bitter taste.

So I am glad I gave this vegetable a chance and will most certainly add it to my menu. I am also not so scared of growing it. I do think it is wise not to jump on band wagons you never know where they will take you. We should be careful what we introduce to the environment and research and question what we are told before we commit and find ourselves in irreversible situations.

Have fun growing and send any information you would like to share to Jenny Wildman at [spectarte@gmail.com](mailto:spectarte@gmail.com)

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## **NUTRITIOUS VEGETABLES FOR BELIZE**

by JOHN E. LINK

MSc. Agriculture, Plant Pathologist (Ret.)

From time to time we hear of Belizean children suffering from calcium deficiency and/or malnutrition. This should absolutely not be! Considering the wealth of nutritious vegetables that could and should be readily available all over the country, Belizeans should be able to stave off such nutrition problems. Perhaps the problem is due partly to lack of knowledge of the food value of these vegetables and of the proper ways of preparing and cooking them.

While most vegetables possess some nutritive value, there are some that are outstanding in terms of their high content of some of the minerals and vitamins that we require for good health. On the other hand, some of the vegetables we regard highly are relatively low in food value. The vegetables listed in this article have outstanding nutritive value and, the best part, they are some of the easiest and cheapest to grow. Some actually grow as weeds. Below are listed some of these vegetables in decreasing order of their food value.

- 1.) The Brassicas: called collard greens; kale; broccoli; cauliflower; turnip greens; mustard greens— these are some of the vegetables with the highest nutritive value.
- 2.) Calalu: amaranth; calaloo; pigweed – grows as a weed in some places, so seeds can be obtained free.
- 3.) Spinach: there are three kinds— regular spinach; Malabar spinach; and New Zealand spinach.
- 4.) Beet Greens: beet leaves; Swiss chard.
- 5.) Okra: – easy to grow; seeds readily available; the more you harvest the more it bears.
- 6.) Sweet potato (young shoots): although the roots are quite nutritious, the young shoots are also quite nutritious as a vegetable.

7.) Cassava: the young tender leaves are high in protein among other nutrients.

8.) Purslane: called pusley. The vegetable with the highest available iron, suitable for those with high iron requirements. This vegetable usually grows as a weed in some gardens. Propagate by cuttings and by seeds.

9.) Coco shoots: malanga; taro; dasheen – the young, unopened, leaves of these Aroids are very nutritious and are used in a dish called calaloo in the West Indies. Propagative material is readily available and they are easy to grow.

10.) Chaya: the leaves are nutritious, but possess little hairs that are irritant to skin and need to be parboiled first to get rid of hydrocyanic acid. (Caution: never eat this vegetable raw!)

11.) Nopal: tuna; scagineal; prickly pear – the fleshy “leaves” are nutritious and a favourite in Mexico. They grow wild.

12.) Cho-cho (chayote): very good in soups. “Seeds” are readily available at the markets.

13.) Cabbage: the coloured ones are more nutritious than the green ones.

14.) Lettuce: the leaf lettuces are more nutritious than the head lettuce.

Selecting from this group, the vegetables that should be most accessible to villagers, small farmers and gardeners are: calalu, coco shoots, purslane, cassava shoots, sweet potato shoots, chaya, okra, cho-cho and nopal. Apart from the lack of knowledge, acceptability of the foodstuff is sometimes a problem. The way a food is prepared and cooked may be an important factor in the acceptability of that food by the consumer. It is a strong recommendation to those agencies involved in educating consumers, that they teach them not only how to grow these vegetables, but also how to harvest, prepare and cook them. Next time, we will go into more details about these vegetables: their botanical names, their relative food values, etc.

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## The Wonders of a Goat

by Collette Gross-Vergriete

Some people will regard the goat as the worst animal to have around a homestead. The goat, constantly wandering around loves to eat on fresh buds and barks of freshly planted trees, leaving a trail of destruction. The foresters treat them, in most countries, as their number one enemy and resent them for their ability to eat just about everything. But in fact, these "vagabonds" are incredible "milking machine" working with a high source of energy.

From their milk we create good cheese; their meat creates savory meals; their hides and manure are also useful products with commercial value used in many parts of tropical countries. Manure has high content of nitrogen and phosphoric acid and urine is rich in nitrogen and potassium. The pastor or goat keeper is the key factor to the health and behavior of a goat. His responsibility lays with feeding, habitat, reproduction, hygiene and economy.

The more technical qualities of goat milk:

Goat milk is a valuable source of amino acids, rich in histidine aspartic and tyrosine and has a larger amount of non-protein nitrogen compared to cow's milk. Sodium, copper and iron contents of goat's milk are relatively high.

Like most things in life, these vitamins and minerals are good for your health when consumed in moderation.

There is limited processing of goat milk in the Tropics. Goats

are milked by hand usually by small farmers and the milk is used for domestic consumption or distributed for sale locally (such as Mexico and Venezuela). Cheese making is conducted on small scale too, a soft cheese being produced.



Here in the "bush" of Cayo District, we have been working for the past thirty years planting hardwood trees among other things. As trees grow tall, my children, born here, grow as well. The new generation comes up with new ideas: raise goats to keep the bush down on our plantation. Great idea! So we got goats, named them all and learned how to manage them. They love to roam under the shade of our big trees and we love the new life style they provide for us. We milk the mother goats so we drink the milk for our good health and strength of our bones. We make cheese to add flavor to our food and create gourmet meals. We slaughter our males and preserve the meat in bottles for wonderful dinners a la "Cordon Bleu". We use the hides at home and the leftover meat to feed our dogs.

We are what we eat! So we planted corn that we grow organically to feed our goats. This is especially beneficial during the dry season when the goats have less browse to choose from and can be supplemented with more corn. We also taste the various leaves of our fruit trees in the milk and the cheese has different flavors depending on what the goats eat.


The herd is growing and producing more milk that we can consume. A small "fromagerie" will be built on the plantation for the cheese to be processed and aged. Goat cheese will be available to consumers this fall in San Ignacio. It is time that we enjoy the wonderful quality of this cheese and restore the names of the "wonders of a goat".

For any suggestions or comments, please e-mail to: [labelizeana@hotmail.com](mailto:labelizeana@hotmail.com)

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

April 1st, 2010

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

<b>Belize Cattle</b>		T	A	B	<b>Grains, Beans &amp; Rice</b>		
Young str. & bulls- 750- 1100 lbs	L	.95 -1.00	.93 - .95	S	Belize yellow corn	.18 - .19	.17 - .18
Cows & Heifers for Butcher	L	.60 - .75	(old).50 - .60	S	White Corn	.21 - .22	.20 - .21
Heifers for breeding 650-900 lbs	L	1.00 - 1.15	.90 - 1.00	S	Corn/ Local retail (Low volume)	.27 - .30	.24 - .27
Young grass cattle- 350- 650 lbs	S	.85 - .95	.75 - .85	S	U.S corn price @ 3.75 U.S a bushel	.13 - .15	.12 - .13
U.S price -corn fed- 1000- 1200 lbs	H	185 - 190	175 - 185	L	Guatemala corn price/Peten	.23 - .26	.21 - .23
U.S price - feeders 600- 800 lbs	L	2.10 - 2.20	2.00 - 2.10	S	Belize Milo	.16 - .17	.15 - .16
U.S price- calves 450- 600 lbs	S	2.10 - 2.20	2.00 - 2.10	L	R-K's, little reds & blacks (beans)	.88 -1.00	.80 - .88
U.S price- aged butcher cows	L	.80 - .90	.70 - .80	S	Black eyed peas	1.00 - 1.25	.75 - Spa Lt
<b>Belize Hogs</b>				S	Paddy rice/ from combine	.30 - .33	.28 - .30
Weiner pigs- 30 -50 lbs- by the head	S	\$85.00 - \$95.00		S	Milled retail rice per pound	whosal 105-110	Ret 120-130
Butcher pigs 125 - 200 lbs	S	1.75 - 1.80	1.70 - 1.75	<b>Citrus</b>			
<b>Belize Sheep</b>				H	Oranges per 90 lb box-lb.solid basis	\$9.50 Est. 2010 price	
Butcher lambs	S	2.50 - 2.75	2.25 - 2.50	H	Grapefruit- per 90 lb box	\$5.00 Est. 2010 price	
Mature ewes	S	1.70 - 1.75	1.60 - 1.70	<b>Sugar</b>			
<b>Belize Chickens</b>				S	Cane per ton- est. 2010 price	\$50 - \$65 per ton	
Broilers- live per lb	L	1.10- 1.15	1.05- 1.10	S	White Sugar- 112 lbs- controlled	\$44.42 per bag	
Old hens	L	.73- .76	.70- .73	S	Brown Sugar- 112 lbs- controlled	\$38.31 per bag	
<b>Belize Milk</b>				<b>Bananas</b>			
Pd to farmer per lb	S	45 contract	no demand	L	Export @ 40 lb box	Jan-Mar.price- 12 - 13	
<b>Special farm items</b>				S	Local Wholesale #2 quality- 40 lb	\$ 7.00- \$10.00	
Shrimp Retail- Farm Raised	L	6.50 - 8.50	5.50 - 6.50	S	Retail #2 @ 8 per sale	\$ 1.00 - \$1.50	
Honey- per litre	S	Whosale 9-11	Retail 12-14	<b>Fruits &amp; Vegetables</b>			
Eggs-case of 30 dozen	L	59- wholesale	68 retail	S	Tomatoes, Cabbages, cucumbers	.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. \*\*\*

**Notes** - Cattle prices are soft and older cows & light cattle are in surplus because the dry season is upon us and grass will be scarce. Mexico Exports have more potential than Guatemala. On April 4, 2010, The Partial Scope Trade Agreement will kick in and should make trade with Guatemala more feasible. Our grain prices are steady, but lower than this time last year, so chicken prices are falling. Cheese is being imported from subsidized producers in Europe and the U.S. Kraft is on the shelf at 200 a lb cheaper than our cheddar. We have a tremendous surplus of milk and cheese. If we sell at a loss, we will stop producing, Not Good- We need to consider protection, thru tariffs and quotas just like other countries do to us- Note the difference in U.S. cattle prices and ours. Our Ag production is increasing and we need to export. Thanks for the Partial Scope Agreement. It really gives us hope. I would like to send a thanks to Jaime Alpuche COM at the Citrus factory- my first tour there and I felt so proud of my Belizean brothers and sisters who show their desire and ability in managing and running this very sophisticated operation- I di big up all a yu.

**Light Rein  
BACKING**  
by Marjie Olson

Backing up. Uh huh. Seems simple enough. We all back our cars, our motorcycles, our pedal bikes, ourselves. But why do so many people not teach their horses to back up? BECAUSE IT IS NOT EASY! Natural instinct for a horse is to 'roll on its haunches' and flee. The only time in the wild a horse will back up is if it has been going down a narrow gorge/cut/path and it comes to a dead end, such as a rock slide, blocking the way. And normally it will turn around, roll around, (rear up a little and roll back over its haunches) or if truly needs to, *step back*. So by rights...it is not a natural thing. They very seldom NEED to back up.

So...it is a man-made thing for them for to do. BUT! It is a great thing for them to be able to do! They flex their backs; they work their buttock muscles, the hocks, the gaskins, the stifle and the croup...all in a manner they do not do otherwise. It is physically a great thing for over-all muscle tone and body balance. UNLESS! You do it incorrectly. If you 'force' a horse to back and its head is in the air, fighting against a bit and its back is 'hollow' you have defeated the purpose and created a painful situation for your horse. A true, correct back is with head in a correct position, back lifted, not hollowed and loin up and rounded, not flat. Hocks come deep underneath and body weight is distributed to the back end.

Once the horse can do this balanced and without stress, we can now do a roll back, a figure 8 back, a flying lead change, come out of a trailer safe, get off the lead rope, the barb wire you just found on the ground or maybe your foot, or have a strong halt (stop). Without a strong backside, a horse will become sore and weak and agitated. And for trail riding, logging, plowing, jumping, carrying a load, these all weigh into how good a horse's back and loin muscle tone are. So it is not just about doing fancy maneuvers, but every day work. HOW IS YOUR HORSE'S BACK? Does he have one? Will he do it?

Resenting a back up command, at first, is normal. "It is not natural". But if taught correctly, and rounded, head level or slightly lower, and balanced, the back will be so helpful safer on a ride or in a carriage, or from the ground, no matter what you are doing.

Okay, so are you getting the idea a back on a horse is a good thing? YES IT IS. It should be taught from the time they are weanlings. Right along with leading, I teach hip movement as well when they are weaners.

So...how do you teach a horse who sets his hind feet, locks his hips, and raises his head and says "NO WAY DUDE! AINT GONNA BACK< NO WAY< UHUH< NOT HAPPENING!?"?

Okay, I never said it was easy. It is time, persistence and the right handling. Stay tuned for next issue, or check out my blog, or call me. But think about it; do not back a horse with his head in the air, from the ground or from the saddle. It 'hollows' his back and is no help for strengthening at all.

"Enjoy the ride"

Marjorie Olson (no longer Henley, thank you very much)  
Light Rein Farm, 5 Mile Mtn Pine Ridge Rd. Cayo Dist,  
Belize, C.A.

*All comments are of 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.*

**NOTICE : THE BELIZE AG REPORT WILL BE DOING AN ARTICLE ON CATTLE RUSTLING, EITHER ISSUE #7 or #8.**

If you have any information, experiences or suggestions on how to combat this that , you would like to share with us, please email [editor@belizeagreport.com](mailto:editor@belizeagreport.com) or call Beth at 664-7272 or 663-6777. Thank you.

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**Promefrut; Sweating It Out over Delicious Tropical Fruits.**

by Maruja Vargas

The Belize Regional Fruit Policy Formulation National Workshop conducted on January 20 in Belmopan was one of seven such working sessions concluded in the seven participating countries of Central America: Panama, Costa Rica, El Salvador, Honduras, Nicaragua, Guatemala, Belize.

Funded by the InterAmerican Development Bank, the project aims to develop a common regional policy aligned by regional cooperation in production, quality control and marketing in the fruit sector.

Opening remarks by Mr. Gabino Canto, CEO of Ministry of Agriculture and Fisheries, set the mood of the day. By effecting a 70% reduction in imported agricultural products used in the tourism sector in 2010, the Ministry is committed to promoting the Belize agricultural sector as the source of these purchases with emphasis on tropical fruits.

Over 40 enthusiastic participants labored the entire day on a series of well prepared survey sheets delineating the needs, strengths and potential for the fruit sector in Belize. Within 60 days, the results of the seven national surveys will be published.

The information generated will lead to the formulation of a Cooperative Regional Strategic Plan and Policy on national and regional level for the promotion of tropical fruits and fruit products.

*Continue on page 20*



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## JATROPHA CURCAS IN BELIZE

by Graham Herbert

This article is not to educate anyone about the plant *JATROPHA CURCAS* as being the perfect tree for the production of oil seeds, as there is more than enough educational sites on the web that can provide that information. We're simply out to present the activities related to this plant here in Belize and the opportunities that are available on the ground floor, so to speak, at this time.

It is generally accepted by all that the *JATROPHA CURCAS* plant originates from right here—in this segment of Central America. Growing conditions, soil qualities, rain fall, humidity, labor experience and production costs are all perfect for the successful production of bio-oil here in Belize.

There are approximately 900,000 hectares planted in Central & South America, with just 300-400 acres of productive trees planted on a commercial basis in Belize at this time. Without doubt there is a lot of interest in the tree, and the Government of Belize has announced that they are pursuing heavy incentives in this agriculture segment of the economy.

Our operation here is in the second year of build up, with a first year crop from plantations already harvested. The initial growth market has been to sell the seeds outright as there is a proven global demand for seeds to set up new plantations of this tree type. However, our own focus is on in-country bio-fuel production for use in local agriculture and over the highway vehicles.

Listed is the performance data related to trees here in Belize.

### Jatropha Products & Benefits

#### Fuel Oil for Diesel:

Jatropha oil is an environmentally safe, cost-effective renewable source of non-conventional energy and a promising substitute for diesel, kerosene and other fuels. Jatropha seed oil was used in engines in Indonesia by the Japanese during World War II. These are the uses where interest is highest and most research is being conducted. Biodiesel refers to oil which has been trans-esterified to produce methyl ester (biodiesel) and glycerin. (The process involves combining an

alcohol such as methanol with sodium or potassium hydroxide).

#### Seed-cake:

Seed-cake or press-cake is a by-product of oil extraction. Jatropha seed-cake contains curcin, a highly toxic protein similar to ricin in castor, making it unsuitable for animal feed. However, it does have potential as a fertilizer, discussed in the next section below on markets. It can also fuel a steam turbine to generate electricity.

#### Soil Improver:

Press cake cannot be used in animal feed because of its toxic properties, but it is valuable as organic manure due to a nitrogen content similar to that of seed cake from castor bean and chicken manure. The nitrogen content ranges from 3.2 to 3.8%, depending on the source. Tender branches and leaves are used as a green manure for coconut trees. All plant parts can be used as a green manure.

#### Erosion Control:

Jatropha has been used in many locations worldwide in erosion control.

#### Pesticide:

The oil and aqueous extract from oil has potential as an insecticide. For instance it has been used in the control of insect pests of cotton including cotton bollworm and on pests of pulses, potato and corn. Methanol extracts of jatropha seed (which contains biodegradable toxins) are being tested in Germany for control of bilharzia-carrying water snails.

#### Soap:

The glycerin that is a by-product of biodiesel can be used to make soap, and soap can be produced from jatropha oil itself. In either case the process produces a soft, durable soap and is a simple one, well adapted to household or small-scale industrial activity.

#### Potential Conservation Benefits

The primary conservation benefits to be derived from production of jatropha relate to improved soil management. In Africa and Central/Southern America the tree's most widespread use at present is as a live fence.

*Continues on page 19*

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**'Ready To Plant' Jatropha Seedlings For Sale**

Continued from page 18

## JATROPHA CURCAS IN BELIZE

In addition to protecting crops from livestock, this use reduces wind erosion and pressure on timber resources and increases moisture retention. The qualities that make jatropha especially desirable as a live fence include:

- **Rapid growth rates from both seed and truncheons.**
- **Low maintenance and drought resistance.**
- **Relatively low rates of natural spread (i.e., it tends to grow where it has been planted, without colonizing neighboring land).**
- **Unpalatability to livestock, making it a particularly effective barrier between livestock and either crop fields or homesteads.**

Jatropha's drought tolerance makes it a suitable species for reclamation of eroded and degraded areas. Moreover, although higher rainfall and fertilizer inputs can substantially increase its yields, it is an attractive species for resource-poor farmers since it will survive in drought and with little or no fertilizer input. Jatropha does not compete with food producing land, as sub-prime land is generally utilized.

As can be seen from this outline, what we have here in Belize is the 'perfect' location for the establishment of jatropha plantations!

*Graham Herbert is the owner of B-Oil Belize, in Cayo District.*



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Continued from page 1

## CANE ETHANOL FOR BELIZE ?

Why is cane ethanol superior to corn ethanol? Firstly, using cane eliminates a step in the processing. Corn (being a starch) has to go through the process to convert its carbohydrates into sugar. Sugarcane requires only milling for its sugars to be ready for the fermentation process. The energy balance (energy return over energy invested) is extremely high for cane ethanol – between 8.3 to 10.2, compared with corn ethanol's 1.5. Also, the technology is underway to improve cellulosic ethanol production– using biomass such as sugarcane bagasse and forestry waste. In existing technology, bagasse (sugarcane waste), is used to create steam-based power. The OAS recommended last year that it might be prudent for Belize to begin cane ethanol production, which they see as advisable for its own sake, as well as envisioning that it would ease our entry to the cellulosic ethanol field in the coming decade.

Environmentally, for GHG (Green House Gas), cane ethanol shines too, being the cleanest biofuel now commercially produced. If land use is not altered, (forest land not cleared), there is a 'zero net contribution' of CO<sub>2</sub> (the growing of the cane absorbing more CO<sub>2</sub> than the burning of its ethanol produces). A 2009 U.N. report found that cane bio-ethanol can even result in a 'negative emission' – cleaning the atmosphere more than polluting. Corn is not able to zero-out, although it is more environmentally friendly than fossil fuel. (Each hectare of sugar cane removes approx 10 -28 tons of CO<sub>2</sub> /year from the atmosphere, while corn removes approx 2-4 tons.)

Brazil's 3.7 M acres of cane is mainly in the central and southern tropical areas, on lands formerly cattle pasture. (The Amazon is less suitable than the drier southern regions for cane production. Amazon production is for local sugar and energy use only.) Less than 3% of Brazil's arable lands are used for sugarcane production, yielding an estimated 24.9 billion liters (6.58 billion U.S. gallons) of cane ethanol in the 2008/2009 harvest. Brazilian facilities integrate production of ethanol, sugar, and energy to be sold back to the grid, all in one plant. Efficiency in the process has increased from 2000 liters/hectare in 1975 to nearly 6,000 liters/hectare in 2004. Projections are that 9000 liters/hectare will be attained within the next decade. Although direct subsidies to the producer have ceased in Brazil, the agricultural research wing of the government, EMBRAPA, continues serious research to: 1. Develop new varieties of cane with increased sugar content, 2. Improve fermentation efficiency, and 3. Increase efficiency in sugar extraction. Over 500 varieties of sugar cane are cultivated there, in efforts to match variety to the field conditions. Currently in Belize less than 20 varieties are grown commercially. Other conditions Brazil has used to encourage the industry have included guaranteed purchases by their state owned oil company, low interest loans, and fixed gas and ethanol prices.

Since cane ethanol does not produce the equal energy output as gasoline, to be economically feasible cane ethanol must be 25-30% cheaper per gallon than gasoline. Brazil has addressed the fluctuating prices of cane ethanol through vehicles in which drivers can similarly vary the % of ethanol, even each time they fill up. Ninety percent of the new cars sold in Brazil are flex fuel vehicles and biofuel motorcycles, buses/commercial use is up too.

Additionally attractive to us as Caricom members: the CBI (Caribbean Basin Initiative) allows member states to export anhydrous cane ethanol, produced in Brazil in the hydrous state, into the U.S.A., without the .54 usd/gallon tariff that would apply if the ethanol was exported directly from Brazil into the U.S. This tax is circumvented by the Caricom member doing the value added procedure of refining from hydrous (7% water content) to anhydrous (.7% water content). There is a ceiling limit of 7% from CBI sources, based on previous year's consumption. Ethanol produced in a Caricom state would also be exempt from this tariff, making Belize a very attractive location for anyone including Brazilian companies to invest in cane ethanol production.

Ballpark figures for a modern facility is 150 M USD, and estimates for acreage of cane to service same is roughly 30,000 hectares, or 74,131 acres. Current figures indicate 65,000 Acres of sugarcane were harvested 2007/08 (MAF).

Jobs and income creation, reduction of GHG, decreasing reliance on imported fossil fuels - all are excellent reasons to seek investors, local or foreign, for sugarcane ethanol production in Belize. Estimates are that Belize uses approx. 2,600 to 3,000 barrels per day of imported fossil fuel. Even with our growing home fossil fuel industry, branching into cleaner and sustainable biofuels just makes sense.

Note: *The Belize Ag Report thanks the Brazilian Embassy who supplied information for this article. Other sources include Wikipedia.*

\*\*\*\*\*

Continued from page 17

## Promefrut; Sweating It Out over Delicious Tropical Fruits.

Within the year, the Ministry has committed funds to engage personnel and vehicles to implement this strategy.

Among the many benefits of regional cooperation will be technical training, exchange of genetic materials, supported marketing, regional database, and timely brokering of commodities.

For further information call Francisco Tzul, Belize Representative for Promefrut.

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### Belize Ripe for a Farmers Credit Union?

3) There are excellent investment opportunities in the rural sector that are bypassed or neglected simply because producers have no access to credit. Such opportunities include for example: farming, processing, storing, transporting, marketing and vending in the agriculture and food industries, and significant increase in fresh and processed foods. We import too much food, about \$160 million every year. Furthermore, there are multiple opportunities to establish linkages with the growing tourism sector; for example, feeding them with delicious, organic, fresh and safe food; and providing the cultural, natural and social attractions and tour/ hospitality services. Tourists pay big bucks for such services of high quality.

4) I would estimate that the volume of business that could be generated in the rural economy is in the range of \$50 million to \$80 million per year, probably with more than half of this business going to farmers and producers who have a potential to offer quality products and services at competitive rates. For example, small farmers in Orange Walk demonstrated that they can produce the best yielding and quality papayas (\$ 40,000 per acre) provided they are properly trained and have the capital to invest in the required land preparation, equipment and inputs.

5) Belize has approximately 30 functioning credit unions, and some ten of them are fairly large operations with significant growth rates in recent years; however, they are known to prosper in urban areas where the population has a larger proportion of salaried employees, and the economic activities are essentially commerce, construction, light industry and services. Credit unions generally do not service the rural areas and the agricultural sector, except for the Toledo Teachers, St Francis Xavier (Corozal), La Inmaculada (Orange Walk) and St Martin's Credit Unions, who have a significant and increasing portfolio on the agriculture and rural sectors. The outstanding example of success is the Blue Creek/ Spanish Lookout Credit Union. However, they serve only the Mennonite Communities.

To decide how to move forward with the establishment of a credit union for farmers and rural producers, an analysis of strengths, weaknesses, opportunities and threats (SWOT) would indicate what are the key issues and priority actions to consider in planning, initiating, building, managing, monitoring and evaluating such a credit union. A preliminary SWOT is presented below.

#### Strengths

- Credit unions have track record in Belize
- Central Bank is the regulatory institution
- Lowest interest rates are charged due to low management & overhead cost
- Flexible payback arrangements
- Expertise and mentoring available (through Belize CU League)

#### Weaknesses

- Members must built up savings to borrow
- Borrowers must have technical & financial services for success

#### Opportunities

- Government ready to support institutions that can reach small & micro producers
- Several donors have resources to invest, such as IFAD, USA, EU
- Food security and agricultural competitiveness is important, hence direct & complementary support is available

#### Threats

Leadership & management of CU take time to develop

- Markets generally do not work for small producers
- Natural disasters & emergency.

*Dr Marcelino Avila is from Orange Walk Town, has a PhD in Agricultural Economics from the University of Missouri in USA. Dr Avila's wide experience includes 5 years of lecturing in St John's College, 20 years as a scientist in international agricultural research in Latin America and Africa, 10 years of experience with agricultural and rural development with Government of Belize, and has produced over 80 scientific and technical publications.*



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## 2010 Central American Ag Calendar

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### Toledo CacaoFest - Friday 21st to Sunday 23rd May 2010

Join us over the **Commonwealth Day** holiday weekend for a family weekend celebration of cacao, culture, and the rich flavours of the Toledo District.

This year's Festival sees the return of old favourites, including our signature opening **Wine and Chocolate** evening, **Taste of Toledo** cookery and craft fair, **Sea Toledo** marine activities, and our inland **Cacao Trail** tours, alongside exciting new additions such as a special performance of the **Monkey Dance** at the Maya site of Lubaantun.

Use our [contact form](#) if you have any questions about the Festival, email us at [info@ToledoChocolate.com](mailto:info@ToledoChocolate.com), or call the Festival Office on 722-2531. [www.toledochocolate.com](http://www.toledochocolate.com)



### MEXICO

**EXPOFERIA GUADALUPE, Apr 22-June 22**, Ciudad Guadalupe, Nuevo Leon, Tel: (81) 8337-8823, Fax: (81) 8337-8508 [www.unionganaderanl.com.mx](http://www.unionganaderanl.com.mx), [Salazar@unionganaderanl.com.mx](mailto:Salazar@unionganaderanl.com.mx) *Livestock, trade, crafts and gourmet food*

**EXPO SONORA, Apr 29-May 16**, Hermosillo, Sonora, Tel: (662) 259-6919/ 254-0268, Fax: (662) 254-4978 [www.expogansonora.com](http://www.expogansonora.com), [expogansonora@prodigy.net.mx](mailto:expogansonora@prodigy.net.mx) *Livestock, industry, craft, cultural and trade exhibition*

**FERIA NACIONAL DE SAN MARCOS, Apr-May**, Tel: (449) 915-8620 Fax: (449) 915-8609 [www.feriassanmarcos.gob.mx](http://www.feriassanmarcos.gob.mx), [feriaags@aguascalientes.gob.mx](mailto:feriaags@aguascalientes.gob.mx) *Trade, industrial, livestock, agroindustrial fair*

**EXPO OBREGON, May 13-30**, Ciudad Obregon, Sonora, Tel: (664) 413-6621/ 415-1808, Fax: (664) 415-1153 [www.expoobregon.com.mx](http://www.expoobregon.com.mx), [direccion@expoobregon.com.mx](mailto:direccion@expoobregon.com.mx) *The largest trade, industrial and agricultural expo in northwest of México*

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Citrus Products of Belize Ltd. began test runs of their new Feed Mill to produce pelletized livestock feed, CITRAPULP, from the solid citrus waste stream, in late 2009.

Commercial production of the feed commenced in January 2010. This 5-6% crude protein and high-energy feed is available at their facility at Mile 14 1/2 Stann Creek Valley Road, Stann Creek District. Two by-products of feed production are delimonene and 'citrus molasses'.

The molasses is produced by evaporating the liquid containing residual sugars that was pressed from the solid waste stream. Forty percent of the molasses produced is added back to press cake that will be made into feed pellets, but 60% is not, and is available for separate sale. This is a welcomed product especially for southern livestock producers, they being the most distant from sugarcane molasses sources in northern Belize. Farmers countrywide are anxious to try this relatively reasonably priced, and local cattle feed.

It is expected that over 80% of this product will be exported to Dominican Republic until the Belizean market expands. The feed is being sold on the local market for 14centsBz/ pound in 100 pound sacks at CPBL. Price for the citrus molasses was not available at press time.

**YES, THE PARTIAL SCOPE TRADE AGREEMENT BETWEEN BELIZE AND GUATEMALA SHOULD BE IN EFFECT APRIL 4TH, 2010.**

**Source: USDA/FAS/Export Sales**

This agreement has been in process for about 3yrs. We are very grateful to the Ministries of Finance, Foreign Trade, Agriculture and our Guatemalan counterparts on the other side. This means a 15% tariff on Belizean corn to Guatemala will be removed. There is still a 12% E.V.A. tax but I understand the buyer can get credit like GST in Belize. Guatemala imports 26 times more corn from the United States than we have to export, so our competition is cheap corn from the U.S. We hope to be able to furnish corn continuously

and to concentrate on providing a high quality corn in order to compete with the U.S corn. It still appears we have some 400,000 or 500,000 bags of corn to export to somewhere. I am displaying the U.S export record to Guatemala as an order of encouragement to the Belizean corn producers that there is a market with our neighbor we just have to think quality and be patient. We also have to keep working on ways to lower our production costs so that we can compete. This always leads us to genetics, soil preparation, weed and insect control and drying procedures.

**Corn exports from USA to Guatemala**

Source: USDA/FAS/Export Sales

Date	Weekly	Accum.
	Exports	Exports
	Metric Tons	
09/03/2009	0	617,850
09/03/2009	0	0
09/10/2009	18,859	18,859
09/17/2009	34,845	53,704
09/24/2009	0	53,704
10/01/2009	25,623	79,327
10/08/2009	6,149	85,476
10/15/2009	6,748	92,224
10/22/2009	0	92,224
10/29/2009	27,198	119,422
10/29/2009	27,198	119,422
11/05/2009	0	119,422
11/12/2009	0	119,422
11/19/2009	18,092	137,514
11/26/2009	15,221	152,735
12/03/2009	0	152,735
12/10/2009	42,692	195,427
12/17/2009	0	195,427
12/24/2009	9,787	205,214
12/31/2009	0	205,214
01/07/2010	17,127	222,341
01/14/2010	18,500	240,841
01/21/2010	14,000	254,841
01/28/2010	9,504	264,345
02/04/2010	24,747	289,092
02/11/2010	0	289,092
02/18/2010	0	289,092
02/25/2010	16,500	305,592

6,721,044 bags

Metric tons converted at 22 100lb bags

**AG QUOTES OF THE MONTH:**

**“The Belize Ag Report can play a part in the process, acting as a shopping catalogue and information exchange for Mexican buyers and Belizean producers.”**

**L.C. Pedro Escobedo Vázquez, Playa del Carmen, Q.R. Mexico (see page 5, Letters to Editor).**

**“The section of AGRICULTURE PRICES AT A GLANCE is exquisite information for us and allows us to analyze feasibility of importing.”**

**Henning Bartsch, Akumal, Q.R. Mexico, FROM THE MEXICAN SIDE ( see article page 9 )**



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# ONLINE ANNEX

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## The Importance of Insect Pollination to Crops

### Table of Plants Pollinated by Insects

The following table was extracted and modified to reflect plants and trees grown in Belize.

Common name	Latin name	Pollinator	Pollinator impact
Okra	<i>Abelmoschus esculentus</i>	Honey bees (incl. <i>Apis cerana</i> ), Solitary bees ( <i>Halictus</i> )	2-modest
Onion	<i>Allium cepa</i>	Honey bees, Solitary bees	
Cashew	<i>Anacardium occidentale</i>	Honey bees, Stingless bees, Bumblebees, Solitary bees ( <i>Centris tarsata</i> ), Butterflies, Flies, Hummingbirds	3-great
Custard apple	<i>Annona squamosa</i>	Nitidulid beetles	4-essential
Celery	<i>Apium graveolens</i>	Honey bees, Solitary bees, flies	
Carambola, Starfruit	<i>Averrhoa carambola</i>	Honey bees, Stingless bees	3-great
Beet	<i>Beta vulgaris</i>	Hover flies, Honey bees, Solitary bees	1-little
Cauliflower	<i>Brassica oleracea</i> Botrytis Group	Honey bees, Solitary bees	
Cabbage	<i>Brassica oleracea</i> Capitata Group	Honey bees, Solitary bees	
Chinese cabbage	<i>Brassica rapa</i>	Honey bees, Solitary bees	
Chile pepper, Red pepper, Bell pepper, Green pepper	<i>Capsicum annuum</i> , <i>Capsicum frutescens</i>	Honey bees, Stingless bees ( <i>Melipona</i> ), Bumblebees, Solitary bees, Hover flies	1-little (pollinators important in green houses to increase fruit weight, but less in open fields)
Papaya	<i>Carica papaya</i>	Honey bees, Thrips, Large sphinx moths, Moths, Butterflies	1-little
Watermelon	<i>Citrullus lanatus</i>	Honey bees, Bumblebees, Solitary bees	4-essential
Tangerine	<i>Citrus reticulata</i>	Honey bees, Bumblebees	1-little
Tangelo	<i>Citrus</i>	Honey bees, Bumblebees	1-little
Coconut	<i>Cocos nucifera</i>	Honey bees, Stingless bees	2-modest
Coffee arabica, canephora	<i>Coffea</i>	Honey bees, Stingless bees, Solitary bees	2-modest
Cola nut	<i>Cola nitida</i> , <i>Cola vera</i> , <i>Cola acuminata</i>	Flies	3-great

Coriander	<i>Coriandrum sativum</i>	Honey bees, Solitary bees	3-great
Cantaloupe, Melon	<i>Cucumis melo L.</i>	Honey bees, Squash bees, Bumblebees, Solitary bees ( <i>Ceratina</i> )	4-essential
Cucumber	<i>Cucumis sativus</i>	Honey bees, Squash bees, Bumblebees, Leafcutter bees (in greenhouse pollination), Solitary bees (for some <u>parthenocarpic gynoecious</u> green house varieties pollination is detrimental to fruit quality)	3-great
Squash (plant), Pumpkin, Zucchini	<i>Cucurbita</i>	Honey bees, Squash bees, Bumblebees, Solitary bees	4-essential
Carrot	<i>Daucus carota</i>	Flies, Solitary bees, Honey bees	
Oil palm	<i>Elaeis guineensis</i>	Weevils, Thrips	1-little
Strawberry	<i>Fragaria</i>	Honey bees, Stingless bees, Bumblebees, Solitary bees ( <i>Halictus</i> ), Hover flies	2-modest
Soybean	<i>Glycine max, Glycine soja</i>	Honey bees, Bumblebees, Solitary bees	2-modest
Sunflower	<i>Helianthus annuus</i>	Honey bees, Bumblebees, Solitary bees	2-modest
Lychee	<i>Litchi chinensis</i>	Honey bees, Flies	1-little
Mammee	<i>Mammea americana</i>	Bees	2-modest
Mango	<i>Mangifera indica</i>	Honey bees, Stingless bees, Flies, Ants, Wasps	3-great
Sapodilla	<i>Manikara zapotilla</i>	Thrips	4-essential
Alfalfa	<i>Medicago sativa</i>	Alfalfa leafcutter bee, Alkali bee, Honey bees	
Pitaya	<i>Hylocereus undatus or polyrhizus</i>	Solitary bees	2-modest
Passion fruit. Maracuja	<i>Passiflora edulis</i>	Carpenter bees, Solitary bees, bumblebees, Humming birds	4-essential
Avocado	<i>Persea americana</i>	Honey bees, Stingless bees, Solitary bees	3-great
Lima bean, Kidney bean, Haricot bean, Adzuki bean, String bean	<i>Phaseolus</i>	Honey bees, Solitary bees	1-little

Allspice	<i>Pimenta dioica</i>	Honey bees, Solitary bees ( <i>Halictus</i> , <i>Exomalopsis</i> , <i>Ceratina</i> )	3-great
Almond	<i>Prunus dulcis</i> , <i>Prunus amygdalus</i> , or <i>Amygdalus communis</i>	Honey bees, Bumblebees, Solitary bees ( <i>Osmia cornuta</i> ), Flies	3-great
Guava	<i>Psidium guajava</i>	Honey bees, Stingless bees, Bumblebees, Solitary bees ( <i>Lasioglossum</i> )	2-modest
Raspberry	<i>Rubus idaeus</i>	Honey bees, Bumblebees, Solitary bees, Hover flies ( <i>Eristalis</i> )	3-great
Eggplant	<i>Solanum melongena</i>	Honey bees, Bumblebees, Solitary bees	2-modest (pollinators important in green houses, but less in open fields)
Hog plum	<i>Spondias</i>	Honey bees, Stingless bees ( <i>Melipona</i> )	1-little
Tamarind	<i>Tamarindus indica</i>	Honey bees (incl. <i>Apis dorsata</i> )	1-little
Cocoa	<i>Theobroma cacao</i>	Midges	4-essential
Vanilla	<i>Vanilla planifolia</i> or <i>pompona</i>	Solitary bees	4-essential
Broad bean	<i>Vicia faba</i>	Honey bees, Bumblebees, Solitary bees	2-modest
Cowpea, Black-eyed pea	<i>Vigna unguiculata</i>	Honey bees, Bumblebees, Solitary bees	1-little





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**MAJOR AGRICULTURAL PRODUCTION STATISTICS 2009**

estimates only

MAF

<b>CEREAL GRAINS</b>							<b>Total</b>	<b>Total</b>	<b>Percentage</b>
<b>PRODUCTS</b>	<b>Corozal</b>	<b>Owalk</b>	<b>Belize</b>	<b>Cayo</b>	<b>Stn Creek</b>	<b>Toledo</b>	<b>2009</b>	<b>2008</b>	<b>Change</b>
<b>CORN YELLOW</b>	<b>10,000,800</b>	<b>23,455,000</b>	<b>95,000</b>	<b>54,782,575</b>	<b>3,817,000</b>	<b>7,147,200</b>	<b>99,297,575</b>	<b>65,273,938</b>	52.1%
<b>Milpa:</b>									
Production (lbs)			95,000	203,275	3,545,000	7,147,200	10,990,475	7,988,738	37.6%
Acres harvested			50.75	229	2,998	4,764	8,042	4,691	71.4%
Average Yield (lbs)			1,872	888	1,182	1,500	1,367	1,703	-19.7%
<b>Mechanized:</b>									
Production (lbs)	10,000,800	23,455,000		54,579,300	272,000		88,307,100	57,285,200	54.2%
Acres harvested	8,334	6,290		15,024	120		29,768	24,263	22.7%
Average Yield (lbs)	1,200	3,729		3,633	2,267		2,967	2,361	25.6%
<b>RICE</b>		<b>35,428,000</b>	<b>0</b>	<b>5,220,700</b>	<b>0</b>	<b>4,800,000</b>	<b>45,448,700</b>	<b>25,970,825</b>	75.0%
<b>Milpa:</b>									
Production (lbs)				3,500		1,500,000	1,503,500	1,169,125	28.6%
Acres Harvested				4		1,000	1,004	791	26.9%
Average Yield (lbs)				875		1,500	2,375	1,478	60.7%
<b>Mechanized:</b>									
Production (lbs)		9,128,000		1,050,000		3,300,000	13,478,000	4,950,750	172.2%
Acres Harvested		2,415		402		1,320	4,137	2,382	73.7%
Average Yield (lbs)		3,780		2,612		2,500	8,892	2,078	327.9%
<b>Mech. Irrigated</b>									
Production		26,300,000		4,167,200			30,467,200	19,850,950	53.5%
Acres		4,820		1,350			6,170	5,200	18.7%
Average Yield (lbs)		5,456		3,087			8,543	3,817	123.8%
<b>WHITE CORN</b>	<b>7,338,000</b>	<b>420,000</b>	<b>40,000</b>	<b>5,361,420</b>	<b>621,000</b>	<b>13,323,000</b>	<b>27,103,420</b>	<b>16,409,984</b>	65.2%
<b>Milpa:</b>									
Production (lbs)			40,000	243,620	621,000	13,323,000	14,227,620	12,510,550	13.7%
Acres Harvested			22	254	564	8,785	9,625	7,051	36.5%
Average Yield (lbs)			1,818	959	1,101	1,517	1,478	1,774	-16.7%
<b>Mechanized:</b>									
Production (lbs)	7,338,000	420,000		5,117,800			12,875,800	3,899,434	230.2%
Acres Harvested	6,115	100		2,087			8,302	2,869	189.4%
Average Yield (lbs)	1,200	4,200		2,452			1,551	1,359	14.1%
<b>SORGHUM</b>									
Total Production (lbs)	2,537,500	16,048,200		1,974,300			20,560,000	23,567,100	-12.8%
Acres Harvested	1,015	11,463		716			13,194	13,325	-1.0%
Average Yield (lbs)	2,500	1,400		2,757			1,558	1,769	-11.9%
<b>GRAIN LEGUMES</b>									
<b>R.K. BEANS</b>	<b>2,538,100</b>	<b>449,000</b>	<b>36,000</b>	<b>2,459,600</b>	<b>279,000</b>	<b>112,000</b>	<b>5,873,700</b>	<b>5,532,700</b>	6.2%
<b>Milpa:</b>									
Production (lbs)			36,000	42,000	279,000	112,000	469,000	409,900	14.4%
Acres Harvested			40	40	238	112	430	513	-16.2%
Average Yield (lbs)			900	1,050	1,172	1,000	1,091	799	36.5%
<b>Mechanized:</b>									
Production (lbs)	2,538,100	449,000		2,417,600			5,404,700	5,122,800	5.5%
Acres Harvested	5,500	898		2,736			9,134	9,464	-3.5%
Average Yield (lbs)	461	500		884			592	541	9.4%
<b>BLACK BEANS</b>	<b>501,100</b>	<b>18,000</b>		<b>166,860</b>	<b>351,000</b>	<b>1,880,000</b>	<b>2,916,960</b>	<b>2,472,050</b>	18.0%
<b>Mechanized</b>									
Production (lbs)	501,100	18,000		4,000	201,000		724,100	442,000	63.8%
Acres Harvested	1,055	40		5	212		1,312	442	196.8%
Average Yield (lbs)	475	450		800	948		552	1,000	-44.8%
<b>Milpa</b>									
Production (lbs)				162,860	150,000	1,880,000	2,192,860	2,030,050	8.0%
Acres Harvested				146	200.0	1,880	2,226	2,182	2.0%
Average Yield (lbs)				1,115	750	1,000	985	931	5.8%
<b>SOYBEANS</b>									
Total Production (lbs)		810,000		480,000			1,290,000	54,000	2288.9%
Acres Harvested		450		300			750	45	1566.7%
Average Yield (lbs)		1,800		1,600			1,720	1,200	43.3%
<b>PEANUTS</b>									
Total Production (lbs)	25,000	9,000		102,000	3,650		139,650	218,750	-36.2%
Acres harvested	12.5	9		85	2		109	242	-55.1%
Average Yield (lbs)	2,000	1,000		1,200	1,825		1,287	906	42.1%



<b>SMALL RUMINANTS</b>									
<b>SHEEP</b>									
Sheep population (heads)	3,662	3,800	996	3,241	632	687	13,018	<b>9,911</b>	31.3%
Heads Slaughtered:	48	482	27	212	89	28	886	<b>1,494</b>	-40.7%
Liveweight (lbs)							66,450	<b>112,050</b>	-40.7%
Dressweight (lbs)							39,870	<b>67,230</b>	-40.7%
<b>POULTRY</b>									
No. of Bird Slaughtered By Processors	201,334	1,694,298		4,840,158			6,735,790	<b>8,314,376</b>	
<b>No of Birds slaughtered by Others (ONLY)</b>		1,682,271		10,550			1,692,821	<b>14,635</b>	
<b>Total birds slaughtered</b>	201,334	3,376,569		4,850,708			8,428,611	<b>8,329,011</b>	1.2%
Liveweight by processors	947,981	7,384,446		20,955,887			29,288,314	<b>18,839,266</b>	
Liveweight by Others		7,557,221		63,750			7,620,971	<b>83,746</b>	
<b>Total liveweights</b>	947,981	14,941,667		21,019,637			36,909,285	<b>35,348,891</b>	4.4%
Dressweight by processors	758,385	5,902,090		16,386,965			23,047,440	<b>14,812,049</b>	
Dressweight by Others		5,481,603		48,039			5,529,642	<b>61,656</b>	
<b>Total Dress weight</b>	758,385	11,383,693		16,435,004			28,577,082	<b>27,767,402</b>	2.9%
<b>LAYERS Population</b>									
Eggs (Doz)	291,654	588,966		2,546,820			3,427,440	<b>3,373,885</b>	1.6%
Eggs									
<b>TURKEY</b>									
No. of Turkey (Slaughtered)		4,851		35,897			40,748	<b>28,939</b>	40.8%
Live weight		82,619		523,454			606,073	<b>473,985</b>	27.9%
Dressweight (lbs)		67,999		418,100			486,099	<b>288,431</b>	68.5%
<b>13. SWINE Adjusted</b>									
Pig population (heads)	1,203	8,898	1,596	3,662	735	944	17,038	<b>13,146</b>	
Heads Slaughtered:	692	11,179	378	6,144	197	500	19,090	<b>19,602</b>	
Liveweight (lbs)				1,228,800			4,390,600	<b>3,920,400</b>	12.0%
Dressweight (lbs)				737,280			2,634,360	<b>2,352,240</b>	12.0%
Heads Exported									
<b>14. HONEY</b>									
Total Production (lbs)	10,080	59,000	8,860	44,115	7,280	1,010	130,345	<b>63,315</b>	105.9%
No. of Hives		624		645		110	1,379	<b>1,692</b>	
Pollen				275					
Average Yield (lbs/Hive)									

Source: District Agriculture Offices, BGA, CGA, BSI, TCGA, Quality Poultry, Homestead, Wetern daries, Tropical fruits

Ministry fo Agriculture, Fisheries and Cooperatives - Policy Analysis and Economic Unit

Livestock: \* Cattle - Estimated Liveweight = 900\*lbs, Carcass weight = 450\*lbs; \*\* Pig - Estimated Liveweight = 200 lbs, Carcass Weight= 120\*lbs

Banana Domestic Consumption estimated 12.5% total production

Papaya Domestic Consumption estimated 2% of total production

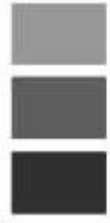
Orange Domestic Consumption is 5% total export

Grapefruit Domestic Consumption is 1% of total export

Marine Domestic Consumption is estimated 4% of total export

Pineapple Note: Heads were reported in the past and now (2003) it's being converted to pounds.

**Note: Livestock Statistics are from DAC Report**



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The following article has been extracted from:

Colloidal Silver, The Forgotten Antibiotic, Volume I

By K. Adachi , published May 1998

## COLLOIDAL SILVER

### The Universal Antibiotic – Nature's Antibiotic

Prior to 1938, Colloidal Silver was considered to be one of the mainstays of antibiotic treatment. It is still considered to be the most universal antibiotic substance that is nontoxic in its micro-concentrations of 3 to 5 ppm. It has been proven to be useful against over 650 different infectious conditions, as compared to traditional antibiotics, which are effective against 6 to 7 conditions. (1)

The comeback of silver in medicine began in the 1970's. The late Dr. Carl Moyer, chairman of Washington University's Department of Surgery, received a grant to develop better treatments for burn victims. Dr. Harry Margraf, as the chief biochemist, worked with Dr. Moyer and other surgeons to find an antiseptic strong enough, yet safe enough to use over large areas of the body. As a result of their efforts, and that of other researchers, hundreds of important new medical uses for silver were found. (2)

Colloidal Silver, is the only form of silver that can be used safely as a supplement. It is absorbed into the tissues at a slow enough rate that it is not irritating to the tissues, unlike silver nitrate which reacts violently with body tissues because of its caustic action. The colloidal particles diffuse gradually throughout the blood and give prolonged therapeutic action. (3)

Many forms of bacteria, fungus, and viruses utilize a specific enzyme for their metabolism. Silver acts as a catalyst, effectively disabling the enzyme. It is toxic to all tested species of fungi, bacteria, protozoa, parasites and many viruses. (4) To primitive life forms, silver is as toxic as the most powerful chemical disinfectants.

*There is no known disease-causing organism that can live in the presence of even minute traces of the chemical element of simple metallic silver.* Based on laboratory tests, destructive bacteria, virus, and fungus organisms are killed within minutes of contact. Larry C. Ford, M.D. of the Department of Obstetrics and Gynecology, UCLA School of Medicine, Center For The Health Sciences, reported in a letter dated November 1, 1988 that silver solutions were antibacterial and fungicidal for *Candida Albicans* and *Candida Globata*. E.M. Crooks has stated that Colloidal Silver kills pathogenic organisms in three or four minutes or less... and there are no side effects whatsoever from the highest concentrations.(5)

Colloidal Silver is effective against infections, colds, influenza, and fermentation. Parasites are also killed while in their egg stage. It is tasteless, odorless, and non-toxic. It's effective with meals as a digestive

aid, as it slows down fermentation of undigested food in the intestines: allowing greater freedom from flatulence and gas pains.

A.B. Searle has pointed out that one advantage of using colloidal silver is that it has no recorded side-effects. It also does not stain the skin, unlike certain pharmaceutical preparations of silver that do stain the skin quite strongly. (6)

Dr. Leonard Keene Hirschberg, A.M.M.D. of John Hopkins concluded that from a therapeutic point of view, only the electrical colloid metals present the necessary homogeneity, minuteness of granules, purity, and stability for maximum health benefits.

Colloidal Silver has been well documented to be the best broad spectrum antibiotic available. The reason that it has not been more widely used in the past, is because of the high cost of production. Retail prices have ranged as high as \$100-200 per ounce, even during The Depression era of the 1930's!

With advancements in the manufacturing process in recent years, the average person can afford to take advantage of this wonderful product. Colloidal Silver is now an economical and effective resource for maintaining good health and preventing many illnesses.

Silver kills over 650 different disease-causing germs. It is tasteless, odorless and non-stinging to sensitive tissues. All harmful bacteria, fungi and viruses are killed within 6 minutes of contact with silver. When antibiotics were discovered in the 1940's, clinical uses for Colloidal Silver as an antibiotic were discarded, until now.

The following is a list of some of the (pre-1938) documented uses of silver, particularly in the colloidal form, for the treatment of various conditions and pathogens:

Acne, Arthritis, Athlete's Foot, Bladder Inflammation, Blepharitis, Blood Poisoning, Burns, Cancer, Cholera, Conjunctivitis, Cystitis, Dermatitis, Diabetes, Diphtheria, Dysentery, Ear Infection, Eczema, Eustachian Tubes, Eye Drops, Feminine Douche, Fibrositis, Gargle for Throat Conditions, Gastritis, Gonorrhoeal Herpes, Impetigo, Intestinal Trouble, Influenza, Keratitis, Leprosy, Lupus, Lymphagitis, Malaria, Menier's Symptoms, Meningitis, Neurasthenia, Ophthalmology, Parvo Virus (canine), Pleurisy, Prostate, Pruritis Ani, Rheumatism, Rhinitis, Ringworm, Scarlet Fever, Seborrhoea, Septicemia, Shingles, Sinus Disorders, Skin Cancer, Soft Sores, Staph and Strep Infections, Syphilis, Tonsillitis, Toxemia, Trachoma, Trench Foot, Tuberculosis, Ulcers, Viral Warts, Whooping Cough, Yeast Infections.

NASA researched 23 different methods of water purification and selected a silver system for the space shuttles. Not only does NASA use the silver system, but half of the world's airlines use silver water filters to guard against waterborne diseases. There are many practical uses for silver including Colloidal Silver as an all-natural antibacterial alternative.

Colloidal Silver was widely used in the U.S. 60 to 70 years ago as an antibacterial. Although silver had an excellent reputation as an effective infection fighter, its utilization was limited due to cost. Current dollars would put the price of Colloidal Silver in the 1930's at nearly \$100 per ounce.

1. South, James, *Electro-Colloidal Silver: The Amazing Anti-Microbial*, lecture given at Natural Products Expo West, Anaheim, 3/10/94

2. Powell, Jim, Science Digest, March 1978, *Our Mightiest Germ Fighter*

3. Hartman, R.J., *Colloidal Chemistry*, Houghton Mifflin, Co., Boston, 1939, p 359

4. South, James, op.cit.

5. Crooks, E.M., *Metals and Enzyme Activity*, Cambridge at The University Press, MA 1958, pp 15-18

6. Searle, A.B. *The Use of Colloids in Health and Disease*, E.P. Dutton & Co., N.Y. 1919, p. 75

*Note: The Belize Ag Report is neither promoting nor prescribing treatments for health conditions. We are merely giving voice to a formerly well known and according to many, quite effective treatment that has been overlooked in recent years. All persons should investigate and discuss with their health professionals before making medical decisions. Editor.*