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Jan-Feb 2010

Belize's most complete independent agricultural publication

Harvesting the Ag News from All of Belize

THE SUN SHINES FOR THE AGRICULTURE SECTOR IN BELIZE

By Dr. Gabriel Rodriguez Marques

Representative, IICA Office in Belize

Agriculture in Belize has an extraordinary potential and a great future. Belize agriculture is like a jewel unpolished with their sub-sectors growing and getting ready to reach new markets. The recent agreement between Belize and Mexico opened the market for live cattle, the shrimp from the aquaculture reached France, one of the most important markets in the world, commodities such as maize is going to be exported to Guatemala, the developing of an horticulture sector using high technology (greenhouses, irrigation and good IPM systems) could give the opportunity to this country to be the backyard of the Caribbean. There are more examples too numerous to mention.

Continues on page 7

Increasing Citrus Production and Citrus Profits: grove management is the key

by Dr. Stephen Williams

As any citrus grower knows, producing citrus in Belize is a costly venture. However, although grove inputs are expensive, growers can significantly increase their profits by increasing production: production costs are high mainly because average yields are low. Fruit processing costs are also high in Belize: this is partly because the factory does not have the volumes of fruit it needs to achieve maximum efficiency. Both grower and factory need more fruit to reduce costs and increase profits.

This article presents data from the Citrus Research & Education Institute (Citrus Growers Association) that shows how growers can reduce costs (per box) by increasing production. The data also demonstrates how, if less than one quarter of citrus growers increase their production to a relatively modest minimum of 250 boxes (cxs)/acre for orange (and a similar proportion for grapefruit), the industry's total production will increase from the current 6.5 million cxs and exceed 10 million.

Continues on page 13

Ylang-ylang
by
Alfredo and Yvonne Villoria from Dem Dats Doin

Ylang-ylang (Cananga odorata) has strong fragrant chartreuse/yellow droopy 3" to 5" flowers which produces an aromatic essential oil. The leaves are long, smooth and glossy. This tall, fast growing tree prefers full or partial sun and the acidic soils of the rainforest.

The exotic sounding name Ylang-ylang is derived from the Tagalog language of the Philippines meaning "flower of flowers". It is native to the Philippines and Indonesia and can now be found growing throughout Belize.

The essential oil of ylang-ylang is obtained through steam distillation of its flowers and is a major ingredient in the production of most exotic and expensive perfumes. It is used in aromatherapy and recommended for anxiety, depression, insomnia, treating high blood pressure and skin conditions. Essential oils are part of things we use everyday such as soap, toothpaste, shampoo, medicine and food (chewing gum, candies, confectioneries). When extracted from fruits, flowers and spices, essential oils are as close as one can get to the good scents of nature.

At Dem Dats Doin about a half dozen trees are growing throughout the property. The first two trees were planted from seeds in 1984; three years later it blossomed into a profusion of fragrant greenish yellow flowers. These flowers bloom throughout the year but not as much during the cool months of Nov/Dec/Jan. At Dem Dats Doin the mature flower petals are placed between sheets and towels to keep them smelling fresh. The scent is stronger as the flower dries. The original trees are still producing flowers and berries and have reached a height of about 60'. We suggest you not plant this tree near your house due to its very strong fragrance which can be very overwhelming especially at night. Birds consume the pulp surrounding the seeds leaving the remains to fall to the ground and germinate many small plants. As a source of income, we export thousands of seeds annually, wholesale, to one catalog company. The extraction/distillation of Ylang-ylang flowers to produce perfume for our enjoyment is one of our many accomplished activities.

Procedure simplified…

1) Harvest fresh mature flowers.

2) Pack flower petals into a glass container (with cover)

4) Add 3-4 tablespoons of melted animal lard

5) Allow lard to absorb fragrance; turned over several times; for several days

6) Add one fluid ounce of 100% proof rum; shake vigorously

7) Process by steam distillation using coiled copper tubing

8) Add a fixative – cohune oil.

More information in our ONLINE ANNEX

Ylang-ylang (Cananga odorata)

FROM THE EDITOR

As we end the year, upbeat agricultural news has continued to flow, with the GOB and the private sector working together in harmony as never before. The strongest example of this new joined effort is the fact that each has realized the need for the other to move forward in export marketing. Export markets have developed and expanded, and agriculture seems more in the limelight here at home.

One of the limiting obstacles agrarians face in Belize is the lack of affordable capital. Hopes had been for procedures to be in place already for applications for CDF (CARICOM Development Fund) monies, as the clock is turning already for phase 1, a 4-year cycle focusing on 'disadvantaged' countries (Sept 09-Dec 2013). CDF is still working on how to process loans to the productive sector, which includes farmers at the forefront. We need to act quickly to maximize the opportunities available to us. Monies will be available both as grants (max 400,000USD) and as loans. One of the liveliest items discussed at the consultation with the private sector was who would be processing these applications for funds, which might originate at 3% interest. We are informed that all favor maintaining the interest as low as possible, and that it will be consistent for all countries. Current discussions seem to advocate applications being made directly to CDF in Barbados. Good work GOB, and let's keep the ball rolling so farmers can apply for and receive some of this low interest funding early in 2010.

It's time again to think and plan for NATS 2010. With all the expansions in agriculture, might it better suit the ag community if the fair was split and farmers have their own NAS, a National Agriculture Show?

Thank you to the writers, advertisers, and readers who have contributed to the success of the Belize Ag Report. We highly value all of you!

Best Wishes for Agricultural Success in the New Year,
Beth Roberson, Editor

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Inquiries have been made to us, as to why an ag publication devotes space for the Belize National Youth Chess Foundation (BNYCF). Simply put, chess is nutrition for the brain for Belize's most valuable crop, the next generation of Belizeans. BNYCF, in our view, is one of the most effective and valuable programs in the country. Since its founding in 2007, BNYCF now has over 700 students participating in chess clubs. Improved learning habits and behavior of students involved in chess clubs is remarkable, say teachers and parents. The growing list of schools waiting for chess clubs to be established attests to the success of BNYCF. Two factors are adversely affecting growth: funds to sponsor the chess clubs and volunteers to assist in teaching and monitoring activity. If you are interested in helping BNYCF contact the director, Ella Anderson, belizechess@cavesbranch.com or visit the BNYCF web site www.belizechess.org. In each issue we plan to introduce one of many selfless, enthusiastic volunteers who have contributed to so much of the success of BNYCF. David Martinez, from Belize District, is featured in this issue. His passion for the game and what it taught him drives his untiring effort to volunteer at chess camps, chess clubs, and tournaments.

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Belize addresses: price for 6 issues (one year, at current rate of publication) is $15.00(fifteen) Bz$.

U.S./Central America/Caribbean: price for 6 issues, as above, is $36.00(thirty-six)Bz$, or $18. US$

U.K./Europe/South America/Africa: price for 6 issues, as above is $44.00(forty-four)Bz$, or $22US$

Other regions, contact us for rates please. Payment should be sent to Belize Ag Report, PO Box 150, San Ignacio, Cayo, Belize. Payment should be in BZ$ or International money order.

Due to postage constraints, only Belize subscribers will receive inserts (if any), inside the magazine.

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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.

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Editor: Beth Roberson
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Submissions as follows:

Ads: ads@belizeagreport.com
Articles: articles@belizeagreport.com
Letters to the Editor: editor@belizeagreport.com
Deadline date—15th of month prior to printing
Printed by BRC Printing, Benque Viejo, Cayo, Belize

Circulation: 2,500 Printed Copies & Approx. 8,000 Visitors per month

Distributed in Belize; Peten, Guatemala & So. Mexico
Find printed copies at our advertisers businesses and at Ministry of Agriculture offices countrywide.

Farm Neighbors in Action

A very heartwarming experience was carried out at Kitty Bank near Saturday Creek recently. The Ben Penner family of Spanish Lookout has been going through some very heavy medical pressure the last couple of years. One member is fighting renal failure and the expense has been enormous for dialysis and other medical costs both local and foreign.

A local church pastor got an idea of volunteer support and Harvest Day happened at Kitty Bank. Thirteen John Deer combines varying from 6020's, 7720's and 9500's gathered to harvest 200 acres of corn in six hours.

This Pioneer variety of 30F35 yielded right at 6000 pounds per acre (an above average yield). Truckers and grain haulers brought their equipment to the field and delivered the 22% moisture corn to the Spanish Look Out dryers. The dryer folks worked at a discount. In the end, the harvest project that would have taken several days and several thousands of dollars was all minimized by a good neighbor system.

One of the contributors stated that what would be considered work, turned out to be an exciting experience that resulted in tears and swollen hearts. In this time of economic chaos and a great deal of negativism, this Harvest Day demonstrated love and neighbors helping neighbors in a true spirit of giving.

By John Carr
Banana Bank Ranch

Organic Production

By Greg Clark

How to Raise Whiteflies and Nitrogen

If I wrote this article on how to raise Whiteflies, the article would be very short, so I will be more long winded with the ways to combat the Whitefly. Whiteflies are a continuous threat to the crops of Belize, especially vegetable production. The fly is most damaging to the vegetables due to being a carrier host of viruses. When a fly bites an infected plant, and then moves on to bite a healthy plant, the virus is introduced. The Tomato Yellow Leaf-Curl Begomovirus is one of the prevalent issues with growing Tomatoes in Belize. The fly began to develop immunity to most commercial insecticides in the 1980's, and has required a broad spectrum approach to combating the pest. Millions of dollars are being spent for shelters, and increased insecticide use to make cocktails of chemicals, to combat the fly. In the organic process, there are plants that, if made into a spray, will assist in the fight against the fly. The extracts from the Stinging Nettle has shown promising results when applied as a spray. The spray should be applied every two weeks. The other extracts are Neem Oil and Garlic Oil. The Garlic is mostly used as a deterrent.

The next item I would like to cover is the cost and application of Nitrogen. Due to the ever-increasing cost of Nitrogen, we are seeking other methods to reduce the cost per acre of addition. In working with the USDA in the United States, we are testing a new crop for nitrogen introduction as a cover crop. The test crop is Sunn Hemp and will fix 200lbs of nitrogen per acre in 60 days. A research scientist in Hawaii has been conducting testing on the plant for many years. It is a legume and also produces long fibers. In the US, the plant is sought to be used after a cotton crop to give the free nitrogen back to the soils. In Belize, the plant can be used after Corn or Sugarcane to provide the nitrogen for the next crop. After 60 days of growth the plant is cut into the soil to provide the nitrogen and organic material. As the crop progresses, we will keep you informed of the viability for Belize.

Organic@Belizeagreport.com

The Sunshines… Continues from page 1

In general terms the conditions are in place to have a successful agriculture sector. However, some requirements should be completed and one of the most important is that the farmers of the different sub-sectors need to work together as a real team. The private sector plays the main role in the development of agriculture, and they need to learn to assume their own risks and not always wait for Government funds. The world with globalization changed the rules for agriculture and farmers need to manage their land and production as a business enterprise.

As it was said before the livestock sector of Belize will start shortly their exportations to Mexico, and for this reason we will analyze how the beef exports of Uruguay reached the most important markets.

The meat sector has always been for Uruguay the leading export sector, and nowadays solid work is being done to reaffirm the hegemony of the sector by applying projects and programs in search for the most demanding certifications concerning international quality.

400 years ago, in July 1608, Hernandarias defined the Uruguayan territory as one of great use for farming and cattle rearing, owing to the excellent quality of its land.

Ever since that moment, the origin of cattle raising the meat has been the country's main economic resource. 400 years later this product is accompanied by all the information allowing it to tell its own history, from nature to consumer.

Meat production in Uruguay is supported by the ability and expertise of all links of the agro-industrial chain, as well as by the Institutions that ensure animal health, meat safety and the commercial quality required by customers.

Uruguay has had a traceability system for over 30 years and more recently, it has implemented individual traceability mechanisms that make it possible to trace animals from their origin up to slaughter plants.

At processing plants, by combining the information provided by the double ear-tag with the electronic information system for the beef industry, it is possible to identify each beef cut and the animal that it came from. The combination of both systems turns Uruguay into the only country in the world capable to have records of its entire cattle herd, and of all its beef exports. This, whose main strength is to offer guarantees as to cattle health controls and meat safety, also allows the country to ensure the chain of custody, meaning it is possible to know about changes in ownership of products during production, transport, processing, storage and trade, i.e. from calf's birth to the final consumer.

Uruguay ranks second worldwide in beef consumption per capita with 53 kg. per person per year. It produces about 600 thousand tons of beef a year. 150 thousand tons are consumed in the domestic market, and 450 thousand tons are exported. In 2008, nearly 1.5 million head were sent to the abattoirs and the average price paid to farmers was US$ 2.25 kg. Uruguay exports beef to over 100 countries, however 80 percent of the volume goes to United States, Mexico, Canada, European Union, Russia and Brazil.

Accessing the most demanding markets requires a lot of work in safety measures. Therefore, meat certification allows Uruguay to ensure that products obtained throughout a series of stages are under control. Certification allows processing plants to meet specific commercial requirements from customers.

From the beginning, certifications have been issued for final products. Towards this end, for 30 years Uruguay has been guaranteeing a minimum level of commercial quality for all its meat exports through the official certification of quality control. Product certification requirements are becoming more and more demanding as to the industrialization process itself, which made the traceability system, both for cattle and beef, and indispensable tool to grant these kinds of certifications.

The highest consumption of beef in the domestic market makes the monitoring fundamental to help establishing a public policy that ensures access to animal protein for the greatest number of people.

After this brief overview of the meat sector in Uruguay, the question is if Belize is ready to export live cattle to Mexico. The reply is YES, once the requirements of the Mexican authorities are fulfilled. This won't take long as by the end of this year Belize will have implemented their National Livestock Registry, the first step of the traceability system and a sweep of the livestock at national level will take place in the following months to put ear-tags and ensure the health conditions of the herds.

Taking into consideration the current situation, bright prospects for the future of the agriculture sector in Belize are foreseen.

Note: Dr. Rodriguez Marquez is the Country Representative of IICA, (Inter-American Institute for Cooperation on Agriculture), one of the main agriculture NGO's in Belize.

Rice Purification in Belize

Mitylene Bailey

Rice Status.

Rice is the second most important cereal grain for majority of the world's population and is cultivated primarily in the tropics and subtropics. It is also hypoallergenic and versatile because of the relatively mild flavor. As the world population increases it creates a demand on basic foodstuffs such as rice. Since the rice stocks are being depleted faster than it can be replenished the cost of rice has been on a sharp incline since 2007 as dictates the command of supply and demand (FAO). The Government of Belize is armed with the purpose of increasing food security in Belize and is currently sustained in rice.

A quality rice seed is the basis of productive rice plants which can not only satisfy the country's need for this basic food crop and improve food security but provide a means of foreign exchange. Before the advent of mechanized farming and superior techniques, the Milpa System prevailed among the indigenous Maya people. According to Mr Manuel Trujillo, National Crops Coordinator at Central Farm, Cayo, this system of rice planting was first introduced to the Maya by the British through the Toledo Rural Development Program (TRDP) to supplement and diversify the corn based diet. While this system is the oldest practice in Belize it is by far the least productive approximating about 1,500 pounds per acre.

More quantifying practices such as the Upland Mechanized technique for higher land elevations used in Blue Creek in the north and Spanish Lookout which utilizes the power of advanced machinery and rainfall to produce 4000 to 6000 pounds of rice per acre. There is also Lowland Mechanized technique for lower, naturally inundated areas, which presents the same yields as the Upland Mechanized technique. This is mostly practiced in Toledo the largest area for commercial rice production. These systems depend on the natural cycle of the wet and dry season for planting and harvesting and it is for this reason there are limited crops per year. Conversely, there is the Irrigated Mechanized System which uses a water source rather than the chance of rain to irrigate the fields and is by far the most fruitful with up to two (2) crops per year. This system allows continuous production throughout the year and is practiced in large scale areas such as Poppy Show farm producing about 4000 pounds of rice per acre as well as the experimental acreages in Central Farm while areas further north experience similar yields.

Objectives of ROC in Rice Seed Production

The Republic of China Taiwan Technical Mission (ROC TTM) has provided Belize with various assistant services. The objectives and purposes for rice seed production are outlined as follows:

1. Assist the Ministry of Agriculture and Fisheries (MAF) to provide rice seeds and thereby solve the reduced rice seed availability in the Toledo District. Also, the Mission intends to expand acreage and increase production of quality seeds to provide enough food for the country and stabilize the price of rice.
2. Assist MAF to establish the rice seed production as well as provide training for 12 technicians to aid in the rice seed production.
3. To introduce and guide the irrigation system and management. This will be most beneficial to farmers since they will have two (2) crops per year and the increased opportunities for good yield and quality rice seeds at an affordable cost.
4. Support MAF in Central Farm to produce small quantity of quality stock seeds for multiplication in Poppy Show for use as commercial seeds.
5. Contribute to the production of upwards of 100,000 pounds of quality rice seeds to the farmers of Toledo in 2009.
6. Expand the commercial seed production annually to 940,000 pounds to supply to the entire country from the Blue Creek (Toledo) area.
7. Guide MAF in the organization of the "Rice Production Association" and set up seed production with an eclectic group of farmers (~30%) for stock seed production only while the other 70% focus of rice for food production. The aim is to expand acreage yearly to 500 acres of prime land in Blue Creek (Toledo) with the use of high technology machinery.
8. Purification of rice varieties for the stabilization of quality and quantity in Central Farm.

Rice Seed Purification Procedure.

For the purpose of purifying a variety, more than a hundred rice plants are first selected from an impure variety for desirable traits (Picture 1,8) such as: height, disease and pest resistance, drought tolerance higher yield and genetic stability. These plants are harvested singly and are each collected in separate paper bags, labeled and sealed. Later the rice seeds are threshed by hand with great care to keep seeds from another plant from mixing. The seeds from each plant are then transferred to separate zip-top plastic bags and punctured with tiny holes to allow water to pass through. These bags are soaked overnight to induce germination. (Picture 2) The seeds are then drained and left covered for another day. Each bag is then planted in a tray with soil media composition one parts each of sand, peat moss and sandy loam, in single lines. (Picture 3) Insecticide is used to control insects and small rodents while the young seedlings develop. After ten days urea is applied for fertilization before transplanting in the fields. When the seedlings are about 15 to 21 days old they are transplanted in the field by **single lines** one foot apart from each other in both rows and column. (Picture 4) Here they are observed for any differences; single plants may be removed at any point in the life cycle of the rice: **Seedling, flowering, milk and mature stages**. (Picture 3,6,7,9)The even or like plants are collected at harvest time and are mixed together to either run another experiment to further purify the variety or for use as stock seeds for multiplication. This is a very important process which is performed periodically to keep the variety stable with uniform height constant yield, continued pest and drought resistance.

(Find Photos in Online Annex) *Continues on page18*

Non-Chemical Mosquito Control

By

Ed Boles, Aquatic Ecologist

Mosquitoes and the diseases they carry, such as malaria and dengue fever, are a serious concern in Belize. The wet season is particularly troublesome when mosquito breeding sites are far more abundant. When mosquito biting rates and incidents of diseases are high, spray trucks belch out plumes of malathion and other insecticides over the urban landscape. Sometimes this strategy may be effective, but many other insects, including mosquito predators and honey bees, are also killed by these chemicals. Besides that, people throughout towns and villages where spraying is conducted are exposed to pesticides and that can impose health consequences. However, there is an alternative first choice control strategy that involves targeting mosquito larvae and does not rely on chemicals.

Non-chemical mosquito control strategies offer several advantages to spraying chemicals. The larvae or 'wigglers' are the target, killing mosquitoes before they turn into adults and become a problem. Non-chemical methods are much cheaper that chemical control tactics. Interested local youths can be trained and employed on a part-time basis as mosquito control technicians within their respective communities. This approach helps to reduce the use of chemicals, thus reducing exposure of the people and ecosystems to proven carcinogens while saving money. This also minimizes exposure of mosquito predators (dragonflies, damselflies) and pollinators (bees, flower flies, moths, butterflies) to pesticides. Eliminating routine use of chemicals reduces the chance of pesticide-resistance building up in mosquito populations. This helps to ensure that those chemicals will be effective during emergency outbreaks of mosquitoes and mosquito-borne diseases.

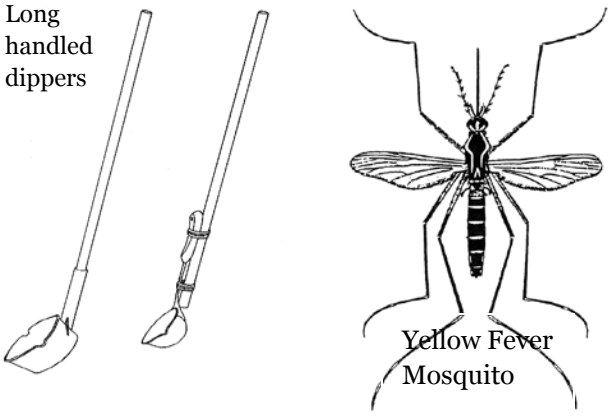
Effective non-chemical mosquito control strategies are based on an understanding of the biology and ecology of local mosquito populations and other organisms sharing their habitats. Different species of mosquitoes have different breeding habitat requirements, flight ranges, behavior patterns and disease vector potential, thus requiring different control strategies. The first job is to cleanup the neighborhood, encouraging people to remove old drums, bottles, cans and appliances from their yards to the roadside. A good neighborhood cleanup can remove most of the Yellow Fever Mosquito breeding sites, the same mosquito that carries Dengue Fever.

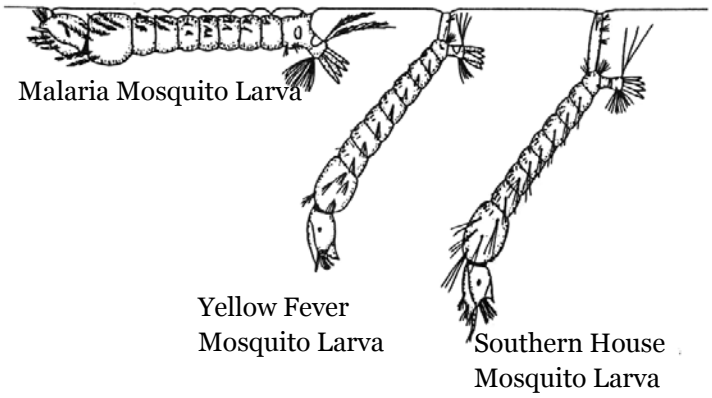
The next job is to walk through the neighborhood, covering all streets, vacant lots, parks, school yards and drainage systems and map out all standing water areas found. Each water body is sampled with a long handled dipper or a kitchen ladle and examined for mosquito larvae. All clogged drains are cleared of trash and sediment and allowed to flow. Leaky septic tanks and poorly constructed out houses that contaminate local water bodies create ideal sites for Southern House Mosquitoes. These areas should be addressed and sewage pollution issues corrected.

Permanent water areas that are growing mosquitoes and have no fish are stocked with mosquito fishes and mollies from nearby water bodies, where these fishes usually occur in abundance.

Low areas that hold water in the wet season and other temporary water bodies where mosquitoes are growing can be treated with a commercially available formulation of a bacteria (Bacillus thuringiensis israelensis) that specifically kills mosquito larvae but does not harm mosquito predators. All water areas where mosquitoes are found growing are routinely checked (every one to two weeks) and treated when mosquito larvae are found. One gallon of the liquid bacteria formulation will often last a small community for a season and is much cheaper than conventional pesticides.

Mosquito control is not a one time effort, but must become a continual service, from season to season and year to year. One of the most important elements of a successful non-chemical mosquito control effort is educational outreach and public support. Outreach to local schools is offers a way to connect with the larger community. Mosquito awareness activities provide an avenue to introduce applied concepts of biology and ecology into classrooms. Besides that, future mosquito control technicians may be discovered during outreach efforts. Involvement of informed and active local community members of all age groups is essential to creating a successful long-term control program.





ASK RUBBER BOOTS

Dear R.B.,

I have a helpful hint for your readers. A couple of months ago I received a really bad burn on my leg. I used man-made remedies to try to heal it, but it was taking a long time for it to heal. My friend told me to try unrefined honey, which I did. Once I started using the honey - it was incredible how fast it works. Just spreading over the wound every day you will see amazing results.

Bigga

Bullet Tree Falls

Hi Bigga,

Honey has many marvelous qualities besides its tantalizing taste. Bacteria cannot live in its high concentrated sugar, and, because it is hygroscopic, it draws liquid out of the wound (so the infection moves out of, and not deeper into the flesh.

R.B.

Dear Editor,

Thought you might enjoy reading and also for the Ag Report

Mariam Roberson, San Ingacio Resort Hotel

Attached article from economist.com, "IF WORDS WERE FOOD NOBODY WOULD GO HUNGRY" NOV. 19th, 2009 Find article in our ONLINE ANNEX

rubberboots@belizeagreport.com

Corn Production Considerations

Belize is a great place to grow corn. The temperatures are 80 degrees or higher every day and we get 80 to 90 inches of annual rainfall. Our acres are increasing and through better farming practices and more adaptable genetics, our yields are increasing. Most corn farmers feel that we can double our production to 2,000,000 bags in maybe 5 years if:

1. We can export.
2. We can find credit at some side of 8%.
3. We get some tax break on fuels and other inputs. (Cane farmers get a fuel tax break- Why not us?)
4. We have an abundance of black clays and minimum amounts of brown sandy loams. Farmers have to learn to like and deal with black clay soils, even if it means planting only once a year.

By getting the GOB and other stakeholders on board, this train will take us on an exciting ride.

By John Carr
Banana Bank Ranch
For more on corn cost see article on page 26

BEYOND THE BACKYARD

CULANTRO; A GARDEN ESSENTIAL

BY JENNY WILDMAN

Having a lime tree in the yard is very very necessary, especially if you like to make ceviche. Another ingredient you will need is cilantro unless you have the wondrous cilantro readily available. So many times when I mention this people say " what is that !" Those who do know may be under the impression it is the poor man□s cilantro . The appearance of the two plants is quite different but the aroma is similar ,a bit more pungent and can be used as a substitute.

With the influx of ethnic groups introducing their native tastes CULANTRO is becoming widely popular in North America and Europe. Even chefs of the Food Network have this included this in their recipes. It is a good export crop for Trinidad and Puerto Rico. Even for home use we should grow more. Culantro or ERYNGIUM FOETIDUM (translation stinking sea holly!!) is a member of the same family as parsley , carrots and celery, a biennial or short lived perennial. Owing to its curative properties it is also called FITWEED plus ngo gai, alcanate, recao, herbe a fer , and Mexican coriander in other parts.

It grows well in moist sandy loam and shaded areas throughout the tropics, Caribbean Islands and Asia. Supposedly indigenous to this area, it must have been very popular with the ancient Maya as it is often found growing at the foot of temples . Perhaps they kept it close in case of emergency. Apart from being a delicious accent to any dish its uses are:

TEA for FLU.....(with swine, equine, avian et al ,we most certainly could use this)
CALMING OF FEVERS MALARIA AND PNEUMONIA
TONIC FOR DIABETES
RELIEF OF CONSTIPATION
ANTI INFLAMMATORY
ANTICONVULSANT
ANALGESIC
and eating ground root is good for SCORPION STINGS

As a dietary supplement it is rich in calcium ,carotene, iron and riboflavin. When growing you may want to add nitrogen, a bit of your chicken manure and such to promote its leaf growth but it is relatively disease free. In fact if you plant it around your vegetable garden it may keep away little pests such as aphids.

Give it some space plant 6 inches apart . Its germination time is about 3 weeks but after it flowers the leaves get tough so for home use stagger the planting a few per week so as not to get everything at one time.

Use it in salsas, sambals, ceviches, seasoning for soup, beans and meat dishes . Make SOFRITO which is a bit like pesto and is used in the same fashion for pasta or stir fry or like a chutney. Very easy just blend garlic, chopped onion, green pepper, mild pepper, cilantro and culantro put in a clean jar and it will keep well for months . That□s the green version but if you prefer the red add chopped tomatoes . So get growing and experimenting and please send any comments or your favourite Culantro recipes to the editor or Jenny Wildman
spectarte@gmail.com

Notice to Readers of the Printed Issues:

Please thank the Belize Ag Report advertiser, in whose business you found your copy.
Their ads are what make this all possible.

Citrus- Continues from page 1

This is the amount that the processing factory, Citrus Products of Belize Ltd., says it needs,

As orange production per acre increase, costs of production fall and profits increase.

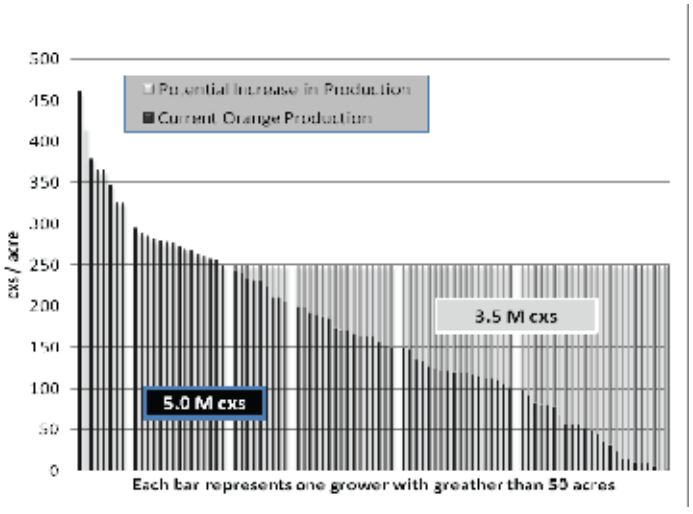
Orange Production	Cost of Producing one box[1]	Profit[2] ($/acre)
50 cxs/acre	$7.48	$50
175 cxs/acre	$6.34	$373
275 cxs/acre	$5.27	$880
375 cxs/acre	$5.72	$1,030

cxs: abbreviation for 90 lb box
[1]including costs of harvesting and haulage
[2]Based on current price of $8.47 / cx
Dec 2009 figures in Bz$

in order to maximize the efficiency of its operations. The article ends by providing some tips to growers on the things they should consider doing in their groves to increase production.

The table below presents figures that were collected by a group of Belizean citrus agronomists and growers and compares the costs of production and the expected profit at four farms with levels of orange production that range from low to high.

Current orange cxs/acre production in Belize vary greatly from grower to grower ■. If growers follow simple steps to increase production to a minimum of 250 cxs/acre orange production would increase by at least 3.5 m cxs ■.



At the lower levels of production, such as 175 cxs/ acre, cost of production is around $6.34/cx. With the current prices for orange, which are fairly good, a profit of $373 / acre could be expected at this low level of production. By increasing production to 375 cxs/acre, however, the cost of production per box falls to $5.72 and profits increase substantially to just over $1,000/acre. Readers will notice that there is a slight increase in costs of production from 275 to 375 cxs/acre. This is because of increased harvesting costs (due to increased production) and increased levels of fertilizer application in this range of production, but profits per acre can still be seen to have increased substantially. At low levels of production, harvesters will charge more for harvesting fruit (it takes longer to find enough fruit to fill a bag) and weed control costs tend to remain constant for each acre (weeds grow at the same rate regardless of the amount of fruit on the tree). This is why at low levels of production; costs per box are relatively high but become lower as production rates increase, followed closely by profits!

So, how do these production levels relate to production on an industry scale? Each black bar on the graph (right) represents the current production (■) for each of the 121 growers (there were 467 growers who delivered citrus to the factory in 2008) that have more than 50 acres of orange grove. The reader will see that there is one grower producing an average of just over 450 cxs/acre, a small number of grower's producing above 250 cxs/acre but that a significant number of growers are producing less than 150 cxs/acre. The grey bars (■) represent the potential increase in production if each of these growers could produce at least 250 cxs/acre. If this could be achieved this would increase orange production from the current 5.0 million boxes to over 8.5 million boxes. If similar increases can be achieved for grapefruit the 10 million box target will be exceeded.

How should growers go about increasing production? In January 2008, CREI Extension staff conducted a survey amongst 45 small, medium and large-scale citrus growers to find out what their farm practices were and to relate those practices to levels of production in their groves. The survey showed that those growers who have the highest citrus production levels, as would be expected, apply lime if their groves are on acid soils (to adjust the pH of their soils to 6.0), apply granular fertilizer in split applications three time a year, apply higher amounts of fertilizer than those with low production and regularly implement programmes to control the fungus *Phytophthora,* and to control wee wee (leaf cutting) ants. These findings might not be surprising to many but just underline the point that regular inputs at the correct quantities are required if farmers are to maintain high yields.

The box on the right summarizes some of the tips that growers should follow for maximizing citrus production. If citrus is grown on acid soils it is important that the soil pH is adjusted to 6.0.

Light Rein #3

Scenario: You are focusing intently on something, maybe enjoying something tasty, and then your spouse/friend pokes you in the ribs. Reactions: You may ignore them, react by moving over a little, or possibly overreact and jump sideways or get angry. But if you did not know what the poke was for, you may not react in the manner your spouse/friend was hoping for and maybe even make that person respond back in a poor manner as well.

Now, if your spouse/friend poked your ribs EVERY time, in the same manner, when she did want you to move over, you would figure it out and eventually just do it without any hassle. It would just become a **routine** thing, and unless you are extremely dense, the pokes could get lighter and lighter and you would possibly even sense when they were coming due to the spouses/friend movement. But, the key here is that it was consistent, routine behavior asked in the same manner, every time. Hence forth, it became second nature. Ya got it!

Now some of us may be more stubborn in nature and we may have to ask our spouse to modify the procedure of his/her asking a little, or he/she may just have to push the issue a little harder to get the point across, but within a mild moderation, the consistency and repetition will get through.

Generality: A horse moves away from pressure. Honestly, a lot of horses push into pressure. That's what I referred to in the last article about being squashed. If you have ever 'pushed' a horse over in a stall or horse trailer, only to have them flatten you against a wall, you know what I mean.

A 'poke' is usually a more defining point. My thumb in your ribs gets a better response then my flat palm, or my shoulder into your shoulder. A 'dead' push, or a 'dead' pull usually gets you very little response. (My idea of a dead push/pull is to just put weight into a flat hand, hip or shoulder as you lean in to a horse, or just hang on a lead rope or rein.) But a bump-bump, or poke-poke, maybe several repeats, will cause a reaction. Of course, there is always that "HAPPY MEDIUM"!!! What's too much, what's not enough? That will depend on your horse and your personality.

Remember, try to start out soft and light, you can always get stronger. Once a horse has gotten the general command, then every time I ask it, to reinforce, I usually go for a three to four count in triples. I ask soft… soft…soft, hmmm… Trigger had it yesterday. Ok I'll ask again, a tad firmer… firmer… firmer, okay, Trigger has had a memory lapse… ask a little stronger yet, maybe hold the ask a little, but not a dead weight, oh, there it is! Now reward and don't make the memory lapse an issue. Start the procedure again and see if ol' Trigger's memory is a little quicker now. As for a reward, that can be as simple as just stop asking, or a verbal "good boy," to a verbal and a pat on the neck. If the horse responds on the first or second ask, great, do it one more time, then move on.

Know when to stop as well. If you have gotten the correct response three times, fabulous, go onto the next project. If you ask later in the session and Trigger says "NO", be ready to start over. Don't ever end with the horse winning. But that certainly does not mean 'demand the correct response at all costs, it means back to square one and repeat it till it is there, and that my friend can be time-consuming and frustrating. As a result, sometimes small victories can be great! Keep in mind, horses can get very **bored** with training.

There will also be times when an hour and half, a lot of sweat (both you and Trigger) and some down right arguing, will take place. That's ok. Just settle for a small victory and go back to it later. There will be days when you can expect it to be hard to give yourself enough time, enough daylight, to really get the training done. Then other days will seem like a gift. It is all a **'HAPPY MEDIUM'**. If your asking for several days has still not accomplished the desired response, you may need to look at the physical aspect of the response. Can Trigger actually do it? Or is there something physical preventing him from the 'good boy' he would normally be.

And that is a whole other topic.

Enjoy the ride, be safe and Happy Holidays to all! Marjie

An Introduction to the Belize Agro-productive Sector Group

The Belize Agro-productive Sector Group (BASGroup) commenced operation in October 2005 as a private sector non-profit entity with its central mandate of advocating the consensus interests of its members. It is however, a successor to a previous quasi-government entity called the Belize Commodities Secretariat which was established in January 2000. The Commodities Secretariat was housed within the Ministry responsible for the Citrus and Banana Industries at the time. These two industries and the Government of Belize each contributed equally to its budget. The Commodities Secretariat was established with an initial mandate to assist with the reform of the citrus and banana industries by facilitating stakeholder dialogue, trade negotiation and domestic policy formulation. The sugar industry, specifically Belize Sugar Industries (BSI), requested and was granted membership shortly after and the mandate was expanded to include sugar. The Commodities Secretariat functioned very well for a few years with its involvement in some key reform initiatives such as the revised sugar industry legislation; the buy-over of citrus processing by the growers and fighting the never ending banana war in the WTO. However, the constant shifting of portfolio responsibilities in government and related unpredictability led to diminished interest in the Commodities Secretariat. The private sector partners then decided to expand their base and co-opted the mixed farming Mennonite Communities and took the initiative to fully privatized by forming BASGroup.

We often hear of the potential for agriculture and indeed we have some very good success stories. However, agriculture's (including fisheries and forestry) contribution to the total national output is declining and this is due to three major factors. Firstly, other sectors have experienced greater growth such as tourism and now oil. Agriculture is now a smaller portion of a bigger pie. Secondly, no new major crop or "agriculture industry" has taken hold over that last two decades except papayas, which experienced significant growth (shrimp had both its boom and bust in this period). Thirdly, the traditional export crops are facing increased competition in their once near exclusive and price preferential markets. While bananas experienced a tremendous increase in productivity and efficiencies, the price decrease eroded most of these gains. In short, agriculture must run twice as fast just to keep up the pace! How do we ensure that agriculture and its related industries remain viable in the long-term? Addressing this question is the underlying purpose of BASGroup!

BASGroup Secretariat acts as a focal point for members to discuss issues of mutual concern and provide consensus action such as: identifying and using synergies at the enterprise level; identifying market opportunities; formulating policy suggestions for a better business environment and maintaining constructive dialogue with government and other stakeholders. Through this coordinated approach we have influenced change such as a reduced tax on land for the agro-productive sector and significant concession on GST waivers for agriculture. The work is far from complete!

A fundamental problem affecting the agriculture/food sector in Belize is the absence of a comprehensive policy and development plan for the sector that forms a consensus from which all stakeholders including government will act. This is nothing new, it has been this way long before Independence. However if the sector is to remain viable and expand, this must change. In addition to the usual agronomic issues, a comprehensive agriculture/food policy should include detailed pronouncements on investment, financing, taxation, importation regime, export regime among many others while addressing the peculiarities of both small and large farmer/ business operations.

BASGroup Continues to page 18

Agriculture Prices at a Glance- $$$$$

January 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

Belize Cattle	T	A	B
Young strs. & bulls- 750- 1100 lbs	S	.98 -1.03	.93 - .98
Cows & Heifers	S	.80 - .90	.70 - .80
Heifers for breeding 650-900 lbs	S	1.05 - 1.20	.95 - 1.05
Young grass cattle- 350- 650 lbs	S	1.05 - 1.15	1.00 - 1.05
U.S price -corn fed- 1000- 1200 lbs	L	160 - 170	150 - 160
U.S price - feeders 600- 800 lbs	L	1.80 - 1.90	1.70 - 1.80
U.S price- calves 450- 600 lbs	L	2.10 - 2.20	2.00 - 2.10
U.S price- aged butcher cows	L	.85 - .95	.75 - .85
Belize Hogs			
Weiner pigs- 30 -50 lbs- by the head	S-H	$85.00 - $95.00	
Butcher pigs 125 - 200 lbs	H	1.75 - 1.80	1.70 - 1.75
Belize Sheep			
Butcher lambs	H	2.50 - 2.75	2.25 - 2.50
Mature ewes	S	1.70 - 1.75	1.60 - 1.70
Belize Chickens			
Broilers- live per lb	S-L	1.25- 1.27	1.23- 1.25
Old hens	H	.83- .90	.77- .83
Belize Milk			
Pd to farmer per lb	S	45 contract	25 noncontract
Special farm items			
Shrimp Retail- Farm Raised	S	7.00 - 9.00	6.00 - 7.00
Honey- per litre	S	Whosale 9-11	Retail 12-14
Eggs-case of 30 dozen	L	59- wholesale	68 retail

Grains, Beans & Rice	T	A	B
Belize yellow corn	L	.17 - .19	.16 - .17
White Corn	L	.20 - .22	.19 - .20
Corn/ Local retail	S	.25 - .30	.22 - .25
U.S corn price	S	.13 - .15	.12 - .13
Guatemala corn price/Peten	L	.25 - .28	.22 - .25
Belize Milo	L	.15 - .16	.14 - .15
R-K's, little reds & blacks (beans)	L	1.20 - 1.30	1.10 - 1.20
Black eyed peas	S	1.00 - 1.25	.75 - Spa Lt
Paddy rice/ from combine	S	.33 - .36	.30 - .33
Milled retail rice .per pound	S	whosal 105-112	Ret 120-125
Citrus			
Oranges per 90 lb box-lb.solid basis	H	$9.00 Est. final 2009 price	
Grapefruit- per 90 lb box	H	$4.80 Est. final 2009 price	
Sugar			
Cane per ton- after final payment	H	$67.14 per ton	
White Sugar- 112 lbs- controlled	S-L	$44.42 per bag	
Brown Sugar- 112 lbs- controlled	S-L	$38.31 per bag	
Bananas			
Export @ 40 lb box	L	July-Dec.price- 12.36	
Local Wholesale #2 quality- 40 lb	S	7.00-10.00	
Retail #2 @ 8 per sale	S	$1.00 - $1.50	
Fruits & Vegetables			
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. ***

Notes - Imagine in this world of 6 billion plus people with many of them hungry, We are dealing with lower prices from having food surpluses. What a blessed problem to deal with. We are looking at a partial scope agreement with Guatemala that will ease corn and beans surpluses.We just took a giant cattle exportation step forward in farm registration and cattle identification with an informative meeting, sponsored by the Mexican Ambassador. Spanish Lookout is putting in a corn processing plant that separates parts of a kernal which will cause new buyers and importers to buy exactly what they want. When I visit the local produce markets and I see a surplus of everything. It seems there is a big price spread between producers(big risk -little profit) retailers (lower risk - greater profit) and consumers who pay a rather high price and are normally facing budget problems. What is the answer? Please don't consider a more aggressive marketing board. A private marketing CO-OP owned by farmers is more plausible. We also need a small CO-OP canning factory for production surpluses. **Just Ideas.** Happy Holidays and may God bless you richly in 2010- Material and information gathered by John Carr.

BASGroup Continues from page 15

Contradiction in government policy is also nothing new and quite frankly it is inevitable in trying to steer the ship of state in a constantly changing world. However, allowing the contradictions to fester usually causes uncertainty which in turn undermines confidence and deter investments. A good example is the contradiction between the noble policy objective of reducing the cost of food locally and our investment and tax policy. Many food products for export are produced within Export Processing Zones (EPZ) which are defacto tax free environments. This reduces the cost of the food exported and in many cases is required to keep the operation "competitive". On the other hand, food produced for local consumption bears the full tax burden of all the taxes on inputs and post production taxes. If we want cheaper food locally, should we not extend the same treatment that we are prepared to offer the food we export? This will also help level the playing field between large and small operators in Belize.

Unlike manufacturing or the mercantile sector, agriculture carries a higher risk because of the potential for losses throughout the cycle from planting to post harvest handling. Why then is agriculture taxed like other sectors? Agriculture inputs are taxed while it may all end up down the river in a flood or dried up in the sun. These are losses that you can't recover while you must still pay your bank loans at a high interest rate. Should we then as a policy begin to tax agriculture at the point of production and sale? Please note we are not suggesting avoiding payment of taxes, we believe it is just fair that you pay taxes based on profit, not losses.

These are but only two of the bottlenecks we believe must be addressed if we seriously want to see agriculture proposer in Belize. We have used this opportunity to introduce BASGroup but also to hopefully spur debate. We therefore want to cast a wider net to solicit your views on the core issues you believe are bottlenecks to the development of agriculture in Belize and some possible solutions.

Please contact us with your comments and questions at:

Belize Agro-productive Sector Group

B. E. S. T. Building, 54 Hummingbird Highway, Belmopan.

Tel 822-2901 or email basgroup@btl.net

We wish you the very best for this New Year!

Contributed by Jose Alpuche, CEO BASGroup.

Rice—Continues from page 8

Purified seeds are known as breeder seeds and are the best quality and are kept in Central Farm. These are in very small amounts and are used to maintain the characteristics of the variety. The stock seeds are sent to Poppy Show in Toledo for multiplication. These large quantities, upwards of 100,000 pounds are the made available to rice producers who plant these seeds for food provision.

At Central Farm, Cayo District Rice Seed production operated by myself and supervised by Mr Frank Lin of the Taiwan Technical Mission seeks to provide quality rice seeds by the purification of the previously developed rice variety, CARDI-70. This project is also collaborated with the Central Farm Research and Development Center.

Mr. Anil Sinha, representative of the Caribbean Agricultural Research and Development Institute (CARDI) in Belize recalls the inception of the CARDI-70 variety. Over 1200 lines were brought in from Colombia, Brazil and the United States of which only 34 were selected. Further selection turned out 5 more lines and in 1988 the CARDI-70 variety was born. This variety was chosen according to the Breeding Objectives outlined by Poehlman in *"Breeding Field Crops"* (p359) which includes grain quality, insect and disease resistance, drought resistance and high yield potential.

The Taiwan Technical Mission has extended this project to the farmers in the Toledo District. Most farmers in Toledo chose the CARDI-70 variety to plant for these selected qualities. These rice plants respond well to the environmental condition and are economically feasible in reference to required amount of fertilizers and pesticides. The CARDI-70 has been also well adapted to the growers in the north.

The Future of Rice in Belize.

Since 1991 the Republic of China (ROC) Taiwan Technical Mission (TTM) in Belize has produced commercial rice seeds for farmers of the Toledo District using the irrigated mechanized system. With this practice two crops can be harvested for the year and this result in more seed production which is effective and highly profitable. This commercial rice seed production project is being done at the Toledo Agriculture Station in the Poppy Show area.

Continues on page 27

Oil Palms: Potential Problems and Opportunity
by *Heather duPlooy*

Oil palms are of the genus *Elaeis* which contains two species, one from Africa, *E. guieensis* and one from the Americas, *E. oleifera*. Both are very similar oil-bearing palms, but the African variety, *E. guieensis,* is widely cultivated around the world's tropics as a commercial crop and ornamental. The *E. oleifera* which is native to Central and South America can be used for oil production, but is not as popularly cultivated.

Both species of oil palms are very attractive, they have a wide feathery canopy and a trunk that is thick with persistent leaf bases. The main differences are that the leaves of the American oil palm are arranged regularly, spreading on the same plane and while the young part of the trunk will be upright, the older trunk can be found to grow along the ground. In the African oil palm you will find the leaves spreading on different planes and the trunk remains upright.

The African oil palm can be seen around Belize grown in home and business gardens as ornamental palm. Although a popular landscape palm in other parts of the world as well, its predominant use, as the name suggests, is for the extraction of oil. Currently the top palm oil producers are Malaysia and Indonesia.

The palm produces densely packed clusters of fruit from which comestible and combustible oil can be extracted. This oil is widely used around the world. Palm oil is an ingredient in a wide variety of foods and products ranging from soaps and cosmetics to margarine, baked good and a host of other products. It may be listed as palm oil, dende oil or just vegetable oil on product ingredient information.

One factor for its rising popularity is consumer desire to eliminate harmful trans fats which come from hydrogenated vegetable oils to solidify them. Because palm oil is high in saturated fat and it is therefore semi-solid at room temperature and does not need to be hydrogenated.

The oil of the African oil palm, as other vegetable oils, can also be used as biodiesel. As the world looks for ways to reduce carbon emissions the quest for clean burning, renewable sources of fuel palm oil has emerged as a big contender.

The following is an excerpt from a 2007 article on mongabay.com by R. A. Butler that illustrates the fantastic opportunity to be found in African oil palms:

...a single hectare of oil palm may yield 5,000 kilograms of crude oil, or nearly 6,000 litres of crude oil that can be used in biodiesel production. At $400 per metric ton, or about $54 per barrel, palm oil is competitive with conventional oil.

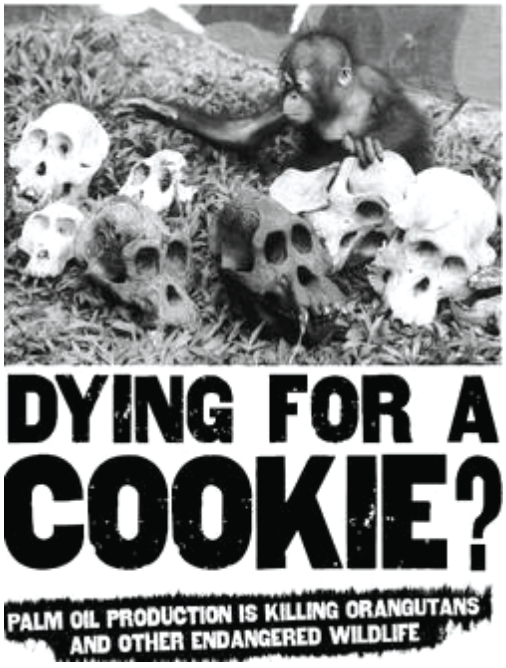
Though Butler mentions that these prices should drop as palm oil becomes more abundant it still offers a high yield, low maintenance crop.

the Earth, is a good idea. Crops like physic nut (*Jatropha curcas*) and African oil palms get extra points for sustainability when they are grown on previously cleared non -arable land.

In other words land that is not needed for food production, which is one of the main arguments against crops, such as corn, being used for this purpose. With so many people to feed, we should not waste fertile soil burning what can be eaten.

Many people choose and many countries promote palm oil in the global effort to reduce carbon emissions, however much pristine rainforest has been cleared in order to provide land for palm oil farms. The destruction of the rainforest leaves in its wake a broken ecosystem that compromises the well-being of the species that inhabit it and the people that live around it. Removing rainforest to grow biofuels to reduce carbon emissions is an irony and a travesty when such habitats are carbon sinks that reduce carbon emissions and help control global warming. Such forests have far more value intact than replanted with any crop, even tree crops.

Below is an ad for a campaign urging people to avoid products with palm oil or at least unsustainably harvested palm oils.



Some companies such as ASDA have vowed to remove all unsustainable palm oil from their offered products. In response there is now a large movement in producer and consumer countries working to develop international standards of production and traceability as well as commitments to grow only sustainable palm oil plantations.

There is a lot of potential in palm oil particularly making use of marginal land and creating trans fat free food and biodiesel. As long as a healthy policy is developed to ensure that we do not duplicate the problems created by this crop in other countries it could well be an interesting investment.

Book Review of Guide to the Orchids of Belize

By Roni Martinez

is the new book produced in 2009 by Belize Botanic Gardens (BBG) in conjunction with the National Botanic Gardens of Ireland. The authors, Brendan Sayers and Brett Adams, have spent many years in the field collecting, and countless hours studying specimens. The convenient size of the book, specific data, and up-to-date information will quickly make it a must for the field and office.

The book is dedicated to Ken duPlooy, founder of BBG, whose passion for orchids laid the groundwork for the conservation of Belizean flora in contemporary times. To date, the BBG stands as a foremost source of botanical information and conservation education.

A brief history of orchid collecting by both Gardens lets us understand the rich orchid flora Belize holds within its small borders. Thanks to the mutual efforts, some 30 species of the 312 recorded for Belize, have been new additions to the orchid list for the country. The anatomy of orchids is explained in a complete and understandable manner to a general audience. Topics such as: leaves, pollination, roots and habitats are all described in ample paragraphs and simplified language, making it easy to learn and retain the information. The book contains full color photographs of over 75 species of native orchids and abundant information - from the common and massive *Myrmecophila tibicinus* to the rare and elusive *Pleurothallis duplooyi* which has so far been recorded only in Belize. Over 50 genera are covered in depth, but more than triple that amount of species are cited with vital information such as: species descriptions, regional and local distribution, blooming periods, and species pollination.

Guide to the Orchids of Belize

by Brendon Sayers and Brett Adams

may be purchased at:

duPlooys Resort or at the Belize Botanic Gardens

TEL: 824– 3101

Info@belizebotanic.org

Retail Price $25.00 BZE

David Martinez with young chess players.
(See article pg. 23)

David Martinez, a Chess Role Model Volunteer for Belize National Youth Chess Foundation

by
Dottie Feucht

David Martinez, a volunteer for the BNYCF in the Belize District, has been playing chess for 20 years, enthusiastically supported by his parents as a youngster. At the age of 4, he was taught the game by his father and by the age 8 had already participated in the *Belize Games 1993*, winning his first gold medal. His dad promoted the game by having a chess club at their house involving neighborhood kids and most of Belize City's Elite players who were adults. David's dad insisted he play against the Elites, saying, "You can never be a winner if you don't learn to lose." And lose he did – most of the time. But by the age of 11, he was considered to be one the best for his age, having participated in international tournaments held in Honduras and Cuba. In the Belize National Chess Tournament 2005 David competed against veteran players more than 10 years older than he, losing only to the national champion for Belize.

When the BNYCF advertised for volunteers for their first chess camp in 2006, David jumped at the chance to take youngsters from Belize City and volunteer his time at the camp. He has been involved with BNYCF ever since: as a full-time worker until he had to quit to go to college, and now, as a volunteer. He assisted in conducting workshops for teachers, volunteers in the community, and BDF soldiers nationwide, started two chess clubs in Belize City, and now coaches players and assists at tournaments.

David continues to volunteer his time because he firmly believes that youngsters and teenagers are the foundation for a better Belize. His vision is to see the chess spirit revive in Belize. He has seen first-hand the positive effect that chess has on youngsters. It is a sport of discipline and focus which requires analytic thinking. David says that after learning chess at camp kids who had failed their classes at school became more focused on their work; those same kids, after enrolling in the chess club at their school, began to pass with much better grades. They began to be more disciplined, pay more attention to the teacher and began doing home work. Education is the key to acquiring life skills; chess helps to enrich the learning process.

Why We Need a Seed Bank

by Mark Miller

Plants provide us with food. What might happen if these plants disappeared? Think of a seed bank as a savings account. Seeds are "deposited" into the seed bank (a storage area) with the intention of "withdrawing" them in the future when they are needed. Just as you might keep money saved for a future need, we are saving up seeds to use for replanting not just for the next crop, but also in case certain crops die out or are destroyed in any given year. If farmers and gardeners do not have enough seeds to plant, we will have a shortage of food. Saving seeds in Belize is an important part of ensuring our Food Security as a nation.

We humans have been doing agriculture, growing plants, for thousands of years. From the beginning, farmers have realized that they need to save seeds to ensure next season's crops. Seed harvesting and saving was an important ritual in all ancient cultures. These historical seed banks protected the seeds from animals, pests, disease, and weather conditions.

Today, we need to store seeds for similar reasons. We can get seeds from outside of Belize, but there are several problems with relying on these foreign sources. Different varieties of plants grow in different places. Cabbage that grows well in New York, USA may not grow well in Belize. The same is true for most other plants. If we run out of the seeds for the types of plants that grow well here, we may not be able to grow enough food to feed ourselves.

Disasters and Diseases do not respect national boundaries. If another country faces the same seed shortage as Belize, we may not be able to import appropriate seeds to allow us to replant.

It is important for we Belizeans to save seeds, and store sufficient seeds for the future!

Some seeds, called orthodox seeds, can be saved in a cool, dry environment. Examples of this are tomatoes, pumpkin, and pepper. These types of seeds are saved in seed banks.

Other seeds, called recalcitrant seeds, must be continuously replanted to replenish stocks. An example of this is cacao. These plants are saved by continuously growing them, also called in-situ conservation. It is important that these plants are grown in a number of different places, so they are not all wiped out by the same disaster or disease. In-situ conservation is promoted by using a mixed cropping system of agriculture, and avoiding mono-culture agriculture – we should grow lots of things on our farm, not just one or two crops.

Orthodox seeds are collected from plants when ripe, cleaned, dried and prepared for storage. In the hot moist climate of Belize, refrigerated storage provides the lower temperature and humidity needed for longer life of the seeds. The seeds need to have some air, but also need to be protected from a changing environment, so are packaged carefully prior to refrigeration. The seeds still need to be replenished periodically.

The Government of Belize, along with partners, is looking at seed banks seriously as a means of ensuring our Food Security. Corn and beans are being saved in the Toledo District. Mark Miller works with Plenty Belize in Toledo.

Citrus - Continues from page 13

Tips for Maximizing Citrus Production

Know the pH of your grove soil

Apply the required amount of lime to adjust soil pH to 6.0

Get a soil and leaf nutrient test to ensure the correct amounts of fertilizer are being applied.

Use the following table as a guide to how much granular fertilizer should be applied based on the current year's yield.

Orange production cxs / acre		Fertilizer application (lbs/yr)	
		tree	acre
105		2	220
209		4	440
314		6	660
418		8	880
523		10	1,100
627		12	1,320

Assuming 110 trees an acre and use of 18:9:18 fertilizer + trace element mix (TEM) and adequate levels of nutrients in the soil and trees. Fertilizer application rates assume that each box of orange removes 0.4 lb N from the grove. Recommended rates will of course vary depending on soil type, tree age etc.

Apply granular fertilizer in split applications – splitting into three or even more applications per year will give the best results.

Ensure to apply micronutrients either through foliar fertilizer or mixed in with granular fertilizer

Probably most importantly – be consistent with maintaining the

At low levels of soil pH many nutrients are no longer available (they become chemically "locked-up" by the soil") and aluminium becomes soluble in the soil water. Aluminium is toxic to the tree and inhibits root growth. Fertilizer application rates should be calculated based on the fruit for the current year. When fertilizing, growers are replacing the nutrients removed when the fruit is harvested and need to apply additional amounts of fertilizer if the soil or the trees are found to be nutrient deficient. Sandy soils will likely require higher amounts of fertilizer as the fertilizer will be more easily washed away (or leached) during heavy rains. By implementing grove activities that increase the organic matter of the soil (such as applying compost or using cover crops) growers can increase the soil's capacity to hold onto the nutrients that are applied through fertilizer. A soil and leaf analysis test (available from CREI) will enable the grower to decide what nutrients are deficient, the type of soil in their grove and thus enable them make the right decision about amount and type of fertilizer that needs to be applied. If a grove is presently producing 100 cxs / acre, growers should not expect to increase production the next year just by increasing fertilizer application rates. Application rates should be gradually increased year by year as yields are seen to increase. Growers should also remember that N, P and K alone, as is provided with the standard 19:9:19 or 22:11:22 fertilizers, will not produce high yielding citrus trees. Applications of micronutrients will also be required if the trees are to produce large quantities of high quality fruit.

In summary groves that have low production will require two to three years of enhanced management and inputs before higher yields can be achieved. Growers should not be discouraged but talk to their neighbours who have already completed the journey. CREI staff can put you in touch with growers who have made changes in their levels of production by making small changes in their farm management practices. Now is the time, when prices paid for fruits are relatively good, to increase grove fertilizer inputs, to increase production and so realize increased profits in a few years time. Higher production also allows growers to continue to make some profit from their citrus at times of low prices – to be in a better position to "ride out any economic storm" and ready to make good profits when prices rise again (as they always do). So don't wait; fertilize, increase the production of your grove and stay in citrus for the long term.

Contact the Citrus Research & Education Institute at the Citrus Growers Association for any additional information or advice or services on the issues raised in this article – 522 3535

Corn Production Sequence and Cost

Obviously there are variations from one farm to another and the following are examples only-numbers computed at 45 bags (4500 lbs.) per acre.

1. Disk/ and or likewise prepare field.	**Per Acre**	**$ 22**
2. Field finisher or seed bed preparation.	**Per Acre**	**$ 10**
3. Corn Seed (imported) -27,000-30,000 plants per acre.	**Per Acre**	**$ 95**
4. Fertilizer - 200 lbs of 14-36-12 or 46-0-0 (dry prill)	**Per Acre**	**$120**
5. Planting – 6 or 12 row planters.	**Per Acre**	**$ 17**
6. Herbicide (weed killer) Example – prowl or Atrazine	**Per Acre**	**$ 50**
7. Application – ground rig or spray plane	**Per Acre**	**$ 10**
8. Insecticide – worms and/ or spider mites – 2 or 3 times.	**Per Acre**	**$ 40**
9. Application - ground rig or spray plane	**Per Acre**	**$ 20**
10. Combine harvest – $1.55 per bag times 45 bags	**Per Acre**	**$ 70**
11. Freight – to the dryer or storage location ($1.00 per bag.)	**Per Acre**	**$ 45**
12. Butane drying - 25% moisture down to 13% for storage. $ 2.40 x 45 bags =	**Per Acre**	**$108**
13. Storage - .12/ bags*45bags*6 months	**Per Acre**	**$ 32**
	Total	**$639**

Break – Even is 14.2 ¢ / lb. (no interest, rent or contingency)

14. Contingency cost (some farmers utilize the following procedures and want them included in the cost.) – mold board plow or soil ripper $42.00 - leveling beam $8.00. Cultivation $20.00	**Per Acre**	**$ 70**
	Total	**$709**
15. Interest - $709.00 at 14% x 6 months.	**Per Acre**	**$ 50**
16. Rent or Return on Investment @ 15% of 45 = 6.75 bags Estimating sales price @ .20 cents per pound.	**Per Acre**	**$135**
	Total	**$894**

Net Break- Even is $18.3 ¢ / lb. (without contingency)

Net Break - Even is $19.8 ¢ / lb. (with contingency)

As you examine the numbers and consider the current corn price at 17 to 18 cents a pound, we are breaking even at best and probably losing around $100 per acre. Farmers always try to know their cost of production and strive to make 10 to 20% return on investment. This would mean that corn should sell for around 23 or 24 ¢ a pound to make a fair profit. Risk is always a factor in agriculture and it may run from a decrease in yield, or an increase in production costs due to overrun of insects, or we could have a complete wipe-out from floods or hurricanes. We had some corn fields in 2009 that yielded only 25% of the expectation due to a massive infestation of spider mites. In spite of these negatives there is some form of satisfaction in a farmer's head and heart that cause him to always be optimistic about next year.

By John Carr
Banana Bank Ranch

Ag Quote of the Month

"We need to grow our way out of this recession".

By Ambassador Adelbert Tucker, Ministry of Foreign Trade

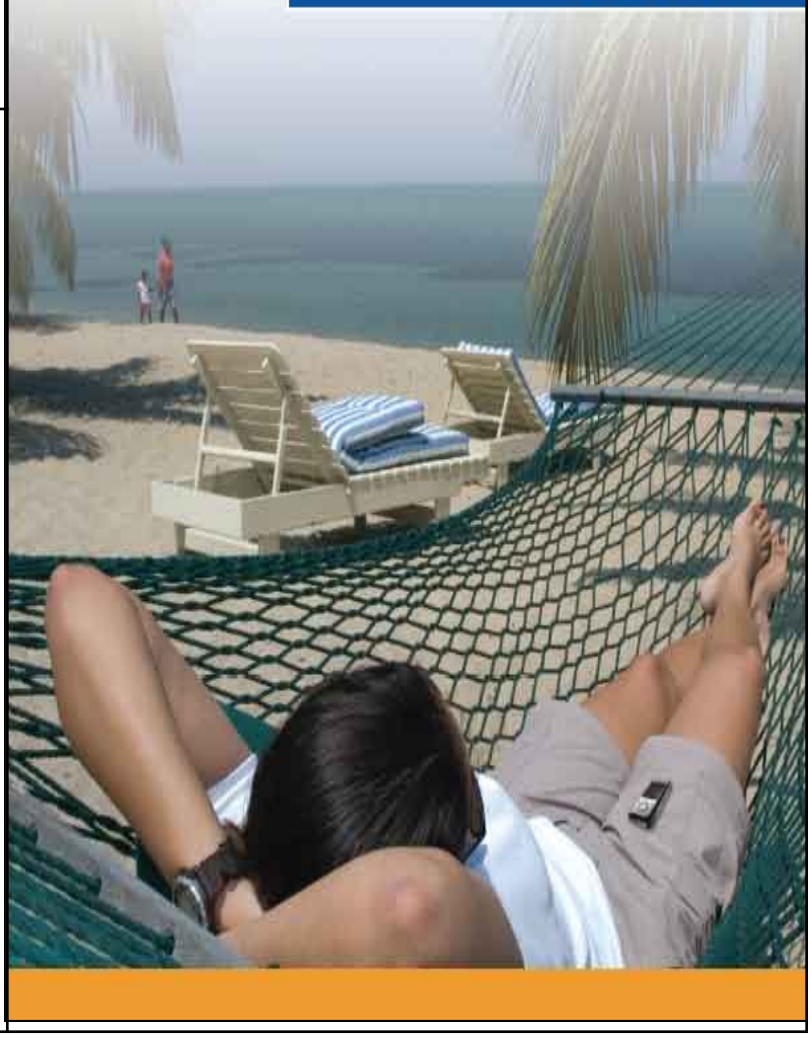
Rice—Continues from page 18

The Ministry of Agriculture and Fisheries (MAF) is in a collaborative association with the ROC TTM producing quality and affordable rice seeds to the producers of the Toledo District where they are encouraged to adapt new technology to their current system of producing rice seeds such as having the flooded and irrigated rice plots. The prospect of adapting to new technology is continually being revised such as the replacement of diesel powered pumps to solar powered units to flood the rice field. This new addition will further reduce the price of rice seeds for the farmers in the near future.

Conclusion:

Successful production and marketing of quality Commercial Rice Seeds in the Toledo District will be an important factor in expanding the countrywide rice production. Within a three year period it is expected that a significant increase in rice production will be apparent in the Toledo District. Income generation amongst the farmers will create economic stability and export material to the neighboring countries. This will create more opportunity for Belize to be thrust into the market for exporting rice and provide food security for a developing nation. MAF and ROC TTM will continue to work on this effort, continually evaluating it as time progresses.

*Photos that accompany article can be found in the **ONLINE ANNEX** addition at www.belizeagreport.com*



CLASSIFIEDS

Classified prices
2-3 lines = $22, 4-5 lines = $30, 6-7 lines = $38

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Call: 664 7272 or email:
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YOUR HELP PLEASE..... Trying to compile a complete list of people and businesses countrywide that are involved with RECYCLING and GREEN SERVICES send information to spectarte@gmail.com

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PROPERTY: MAGNET HILL, magnificent 16 acs on Hummingbird Hwy. Mile 28. Creek + All Yr River, bounded in back by Nat'l Park. Elec line. Hills, Road to bldg. site, bearing fruit trees.
INCREDIBLE vistas, perfect for estate or resort/restaurant. $145kusd HOLDFAST LTD 663-5263

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PROPERTY: Bullet Tree Falls Village, Cayo Lot on Mopan River, $ 45k usd. 662-5263

PROPERTY: Calla Creek, Cayo, 21 ac. River front Mopan River,$188kusd Holdfast Ltd. 662-5263

PROPERTY: RENTAL, RURAL, Cristo Rey Rd, 10 mins from San Ignacio. All utilities, incl. internet, 1 luxury bdrm, + , 2 full baths, deck, barbq, views, breeze, maid and yard sevice and security on working farm. 750usd/month. 6 mths min. 664 - 7272

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Tres Caballos Mowing and Hay: Variety of baled grasses for horses and cattle. Plan ahead for the dry season. Cayo District. Delivery available. Call 600-2853 between 6 am and 6 pm.

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WANTED: Used file cabinets, Cayo District Tel: 664 7272 or editor@belizeagreport.com

WANTED: Please call with information on purchase of African Pygmy, Nigerian Dwarf or Kinder Goats.
Nadja: 667– 9481(if no answer call back)
or email: nadjablz@hotmail.com

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ADVERTISER INDEX

PHOTO CONTEST

Sweet Ting, where you will find the best desserts in Cayo & the Belize Ag Report announce the winners of issue 4's photo contest!

1st place winner: Mrs. Eva Friesen, with her photo of her menfolk: Dustin, Cody, Adrian, Joe Jr. and Joe, on the fence at their Rocking J Ranch, located in the Ignaua Creek area of Spanish Lookout.

2nd place winner: Norman Smith, with his photo of young man resting against orange sacks

3rd place winner: Ms. Miriam Serrut with "Weeding by Hand in an Organic Vegetable Garden in Santa Familia", and printed in our ONLINE ANNEX

1st prize photo is shown on facing page 31. 2nd and 3rd place photos are in our ONLINE ANNEX of issue #5

Submit entries in jpg before February 15, 2010, to editor@belizeagreport.com All submitted entries become property of Sweet Ting and the Belize Ag Report. Yes, you may enter more than once. Theme will remain 'People in Belizean Agriculture'.

1st Prize: Specialty cake of your choice, up to $50.

2nd Prize: Cheesecake of your choice

3rd Prize: Pastries of your choice, up to $15.

First Place Photograph by Mrs. Eva Friesen

Cedar Bluff

Residential Riverfront Community

Birder's Paradise, Large Trees
Garden Area, Edge of Town
San Ignacio, Cayo
Mile 1.2 Cristo Rey Rd.
662-5263 / 662-5700
HoldfastBelize.com

ONLINE ANNEX
Table of Contents

RURAL ROOTS
By Mathew James

Maya, Olmec's, Toltec's, Wari,Tiwanaku, all were capable of feeding themselves without using chemicals or synthetic pesticides. Last month's article mentioned the importance of healthy soil for healthy plants and this simple lesson has far reaching effects. It is impossible to grow sustainable crop production without replacing nutrient matter to the soil for uptake by growing crops; since Liebig discovered the potential for chemical fertilizer in the 1880's this replacement has been achieved by chemical means. In 2000 Belize used 112,000,000 lbs of fertilizer on farmland; given that around 40% is immediately lost to runoff ,the excess is washed into OUR waterways and into OUR Sea.

Unless this situation is changed our waterways and sea will become a mess of high potency chemical nutrients that will have a devastating impact on the country. Clean water from rivers is now a matter for debate as the most common elements present are chemicals from farm runoff.
Using compost and other means it is possible for Belize to dramatically reduce use of chemical inputs(often a high a cost for farmers to use, further reducing yields) while still retaining the benefits of soil improvement without the damaging side effects. Although results may appear slower over time there will be an increase in quality and yield both of which translate to higher margins for farmers/growers.

Several efforts are already started to give farmers access to non-hybrid seed and to source traditional crop seed as well as new to Belize varieties all of which will allow the local farmer to spread out and diversify into other crops.

New initiatives are coming in 2010 from several Ministries to assist local crop production with forage crops available allowing farmers to grow their own feed that is as good ,nutritionally,as commercial feed.

Finally I would like to acknowledge the passing of my best friend Spike, Spike has been around for 18 years during his time he stopped 4 attempted burglaries and 1 auto theft.
Yes he is only a dog but he was a giant among cannines R.I.P. Brother.

Mathew James resides in Dangriga and covers issues from the Stann Creek District for
The Belize Ag Report.


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Rice Purification in Belize

EL SOL BRILLA PARA EL SECTOR DE AGRICULTURA EN BELICE

Por Dr. Gabriel Rodriguez Marques,
Representante, IICA Oficina de Belice

La agricultura en Belice tiene un potencial extraordinario y un gran futuro. La agricultura de Belice parece una joya sin brillo con el crecimiento de subsectores y la preparación de alcanzar a nuevos mercados. El acuerdo reciente entre Belice y México abrió el mercado para el ganado vivo. El camarón de aquacultura alcanzó a Francia, uno de los mercados más importantes en el mundo, los productos como el maíz van a ser exportadas a Guatemala, el desarrollo de un sector de horticultura usando la tecnología avanzada (invernaderos, irrigación y sistemas de buenos IPM) podrían dar la oportunidad a este país para ser el patio del Caribe. Hay más ejemplos demasiado numerosos para mencionar.

En los términos generales las condiciones están listas para tener un sector de agricultura exitoso. Sin embargo, algunos requisitos deberan ser completadas y uno de los más importantes es que los agricultores de los subsectores diferentes tendran que trabajar juntos como un verdadero equipo. El sector privado desempeña el papel principal en el desarrollo de la agricultura, y tendra que aprender a asumir sus propios riesgos y no siempre esperar fondos del Gobierno. Con la globalización, el mundo cambió las reglas para la agricultura y los agricultores tienen que manejar su propia tierra y producción como una empresa comercial.

Como fue dicho antes que el sector ganadero de Belice comenzará dentro de poco sus exportaciones a México, y por esta razón analizaremos como las exportaciones de carne de vaca de Uruguay alcanzaron a los mercados más importantes.

El sector de carne siempre fue para Uruguay el sector de exportación principal, y hoy en día se está haciendo buen trabajo para reafirmar la hegemonía del sector aplicando proyectos y programas en la búsqueda para las certificaciones más exigentes acerca de la calidad internacional.

Hace 400 años, en julio del 1608, Hernandarias definió el territorio uruguayo como uno de uso esencial para el cultivo y crianza del ganado, debido a la calidad excelente de su tierra.

Después de aquel momento, el origen del ganado creciendo la carne ha sido el recurso económico principal del país. Después de 400 años, este producto es acompañado por toda la información que le permite decir su propia historia, de la naturaleza al consumidor.

La producción de carne en Uruguay es apoyada por la capacidad y la maestría de todos los eslabones de la cadena agro-industrial, así como por las instituciones que aseguran la salud del animal, la seguridad de la carne y la calidad comercial requerida por el cliente.

Uruguay ha tenido un sistema de rastreo por más de 30 años y recientemente, esto ha puesto en práctica mecanismos individuales de rastreo que hacen posible trazar a un animal de su origen hasta el matadero.

En plantas procesadoras, combinando la información proporcionada por la doble etiqueta de oreja por el sistema de información electrónico para la industria de carne de vaca, es posible identificar cada corte de res y el animal del cual vino. La combinación de ambos sistemas convierte Uruguay en el único país del mundo capaz de tener archivos de su entera manada de ganado, y de todas sus exportaciones de carne de vaca. Esto, cuya fuerza principal es la habilidad de ofrecer garantías en cuanto a mandos de salud de ganado y seguridad de carne, también permite que el país asegura la cadena de custodia, significando que es posible saber de cambios de la propiedad de productos durante producción, transporte, procesamiento, almacenaje y comercio, es decir del nacimiento del ternero al consumidor final.

Uruguay clasificado como el segundo en el mundo en el consumo de carne de vaca per cápita con 53 kg. por persona por año. Esto produce aproximadamente 600 mil toneladas de carne de vaca al año. 150 mil toneladas son consumidos en el mercado doméstico, y 450 mil toneladas son exportados. En 2008, casi 1,5 millones de cabezas fueron enviados a mataderos y el precio promedio pagado a agricultores era 2.25 US$/kg. Uruguay exporta carne de vaca a más de 100 países, sin embargo el 80 por ciento del volumen va a Estados Unidos, México, Canadá, Unión Europea, Rusia y Brasil.

Tener acceso a los mercados más exigentes requiere mucho trabajo en medidas de seguridad. Por eso, la certificación de carne permite que Uruguay asegure que los productos obtenidos en todas partes de una serie de etapas están bajo control. La certificación permite que plantas procesadoras satisfacen las exigencias comerciales específicas del cliente.

Desde el principio, las certificaciones han sido publicadas para productos finales. Con esta finalidad, durante 30 años Uruguay ha estado garantizando un nivel mínimo de calidad comercial para todas sus exportaciones de carne con la certificación oficial del control de calidad. Los requisitos de certificación de producto se hacen cada vez más exigentes en cuanto al proceso de industrialización, que sucesivamente hizo que el sistema de rastreo, tanto para el ganado como para la carne de vaca, un instrumento indispensable para estas clases de certificaciones.

El consumo más alto de la carne de vaca en el mercado doméstico hace que la monitorización sea fundamental para ayudar al establecimiento de una política pública que asegura el acceso a la proteína de animal para el mayor número de personas.

Después de esta breve descripción del sector de carne en Uruguay, la pregunta es si Belice está lista para exportar ganado vivo a México. La respuesta es SÍ, una vez que las exigencias de las autoridades mexicanas esten realizadas. Esto no tomará mucho tiempo como ya que al final de este año Belice habrá puesto en práctica su Registro de Ganado Nacional, el primer paso hacia un sistema de rastreo y un repaso del ganado al nivel nacional ocurrirá en los meses siguientes para poner etiquetas de oreja y asegurar las condiciones de salud de las manadas.

Teniendo en cuenta la situación corriente , las perspectivas para el futuro del sector de agricultura en Belice son brillantes.

Translation by Derry Roberson & Henning Bartsch

Belize Botanic Gardens

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info@belizebotanic.org;
www.belizebotanic.org

Guide to the Orchids of Belize

by Brendan Sayers, Foreman of the Glasshouses at National Botanic Gardens, Glasnevin and Brett Adams, Foreman, Belize Botanic Gardens

After years of research together Brett and Brendan began work on the *Guide to the Orchids of Belize*. We are excited to announce it is now available!

This book is a laymen's guide to Belize's most commonly encountered orchids as well as some of the more unique species. It is the first publication of Belizean orchids with the latest taxonomic updates. An excellent book for orchid enthusiasts and anyone interested in tropical or Belizean flora.

Throughout history this large and diverse family has intrigued people of many backgrounds from all over the world. This book is a beautiful photo and informative guide to many of the wonderful orchid species of Belize.

Our special Belize Ag Report price for this beautiful book is just $25Bz, plus shipping, if purchased in Belize. To order email brett@belizebotanic.org.

Brendan Sayers of the Irish National Botanic Gardens, Glasnevin has been working on the orchids of Belize since 1996. He began annual expeditions in Belize with Ken duPlooy, the Belize Botanic Gardens founder, in 1997.

Brett Adams, the Foreman and Information Manager of Belize Botanic Gardens, joined as a volunteer in 2002. He took over the care of the orchid collection and in 2003 resumed the annual expeditions with Brendan.

The two continued the joint work of National Botanic Gardens of Ireland and Belize Botanic Gardens to record the orchid flora of Belize. This work led to 23 new orchid records for Belize 1 new to science and now to the *Guide to the Orchids of Belize*.

Become a member

Support the work of Belize Botanic Gardens and treat yourself to year-round admission to the gardens, by becoming a member. To see more about our work and why the garden is a great place to visit, check out:

www.belizebotanic.org

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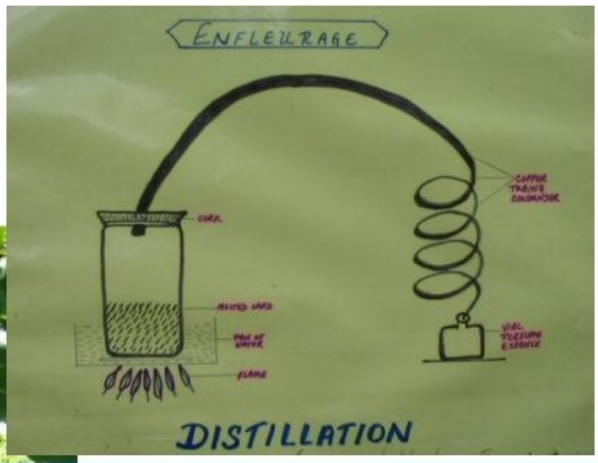
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FEEDING THE WORLD

If words were food, nobody would go hungry

Investment in agriculture is soaring. So, worryingly, is distrust of markets and trade

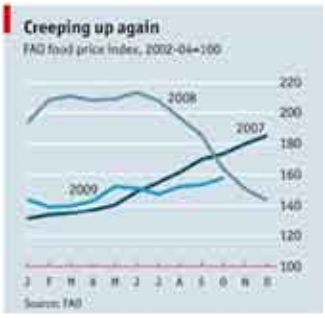
Nov 19th 2009

ROME: "The world's attention is back on your cause." That was Bill Gates talking to agricultural scientists gathered recently to honour the late Norman Borlaug, father of the Green Revolution. The tycoon-turned-philanthropist was right. This week, the world—in the guise of 60-odd heads of state including the pope—held the first United Nations food summit since 2002. As the world's attention turns from the receding financial crisis, it is switching to one emerging in agriculture.

The U.N. conference on food security took place at a point of relative calm between two storms. The first occurred in 2007-08, when world food prices experienced their sharpest rise for 30 years. Food riots swept through three dozen countries and two governments (Haiti's and Madagascar's) were overthrown by the events that the price rises set in train.

The next storm is likely within a few years and everyone fears its arrival. The price spike of 2007-08 was the result of structural imbalances in the world food chain, not just temporary fluctuations like bad weather or government mistakes. These imbalances have not gone away: food demand is still rising because of changing appetites and rising incomes in emerging markets; biofuels are still competing with food crops for available land; yield growth in cereals is declining.

In 2008-09 food problems were masked for a while by the financial crisis. But as Jacques Diouf, head of the UN's Food and Agriculture Organisation (FAO), said this week, "when the recovery picks up, we will be back to square one." Jeffrey Currie of Goldman Sachs argues that while most recession-hit industries in the rich world are operating at 60-70% of capacity, agriculture is at full capacity, in the sense that last year's cereals crop was the largest on record and there is little fallow land ready to be taken under the plough. If there were another supply or demand shock, the farm-trade system would not cushion the blow.



It may not be many years away. In the first ten months of this year, food prices rose by 9.8%, prompting fears of a resumption of the surge that began in 2007, the first of the two years of crisis (see chart, left). The "breakfast commodities" (tea, cocoa, sugar, important sources of calories in some parts of the world) are trading at their highest levels for 30 years. Worse, the price respite, while it lasted, did nothing for the poorest and most vulnerable. According to the FAO, the number of malnourished people in the world rose to over 1 billion this year, up from 915m in 2008 (see chart, below). Economists at the World Bank reckon that the number living on less than $1.25 a day will rise by 89m between 2008 and 2010 and those on under $2 a day will rise by 120m. A quarter of a century after a famine in Ethiopia which dramatised failings in the food system, famine is again stalking the Horn of Africa. Has anything been done to prepare for future food shocks?

Certainly, say most governments. Money is starting to pour into agriculture after 30 years of neglect. There has been a spasm of institutional reform. And public and private sectors are doing more to help farmers than ever.

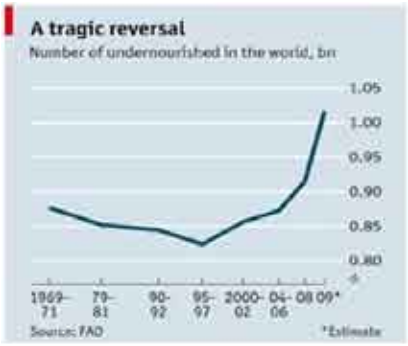
At their meeting in L'Aquila in July, the Group of Eight (G8) large rich economies promised to increase spending on agricultural development by $20 billion over the next three years. Not much of this was new money (probably $3 billion-5 billion) and it is not clear how much, if any, has been delivered. The amount also falls far short of the $44 billion that the FAO guesses will be needed each year to end malnutrition (and even shorter, aid agencies reflect, of the $14 trillion poured by rich countries into their banks). Still, the amount is not trivial. It would finance for three years the annual $7 billion that the International Food Policy Research Institute (IFPRI), a think tank in Washington, DC, estimates will be the bill for developing countries to protect agriculture from the impact of climate change. And it excludes the far greater sums developing countries themselves are promising to farming.

Agriculture and food security have become "the core of the international agenda", as the G8 called it. In 2009, the World Bank increased its spending on agriculture by 50%, to $6 billion. The Islamic Development Bank is creating an agriculture department for the first time.

Barack Obama asked Congress to double to just over $1 billion America's aid for agricultural development in 2010. And in a sign that food productivity means more than warm words and cash, he nominated a pundit, not a politician, to head USAID, the assistance agency: Rajiv Shah, the chief scientist for the Department of Agriculture. In the West, there is a new consensus on the need to invest more in agriculture in emerging markets.

Jeffrey Sachs, an economist at America's Columbia University, has argued that the next step should be to create a new international agency to co-ordinate all the money and perhaps have a big budget of its own. He wants something similar to the global fund to fight HIV/AIDS, a public-private partnership. Earlier food shortages, in the 1970s, had also produced institutional shake-ups: the International Fund for Agricultural Development (IFAD) and the Consultative Group for International Agricultural Research (CGIAR), influential groups in the field, were both set up then.

But the latest crisis has not spawned any institutional children, mainly because the U.N. food agencies—FAO, IFAD and the World Food Programme—spent too much time bickering. Instead, institution-building took the form of tinkering. The idea for what was grandly labelled a global partnership on food security began with the French president, Nicolas Sarkozy, in the spring of 2008 and morphed into a U.N. committee and a "high-level task force" attached to the secretary-general's office. So far, this modest arrangement seems to be working rather well, at least in terms of mobilising attention and resources.



The most important activity, though, is taking place at the national level. Here, the price rises of 2007-08 have unleashed an unprecedented pack of policies. Practically every developing country, however cash-strapped, has done something (often a lot) to help farmers. African governments are finally starting to fulfil a promise they made in 2003 to spend 10% of their budgets on agriculture. The most popular measures have been to build rural roads, subsidise inputs such as seeds and fertilisers, give special help to the poorest smallholders as a kind of safety net, and to intervene in the operation of markets, sometimes to improve and sometimes to control them.

The Philippines set up a seed bank to improve the quality of seeds and provide a reserve against occasions when crops are wrecked by typhoons (the country is prone to such disasters). Lesotho and Uganda created "seed fairs" in the hope of increasing the varieties on offer to give farmers. Tanzania and Mali tried to achieve the same end by subsidising the grain and fertiliser merchants directly. Nepal and Jamaica offered cheap kits (pumps, drip feeds) to persuade smallholders to irrigate their fields. Malawi kept going its much-studied fertiliser subsidy, which practically gives the stuff away to the poorest farmers. The jury is still out on what will happen if and when the country can no longer afford the programme, which is eating up 4.2% of GDP. But there is no doubting the impact so far: the programme has turned Malawi into a breadbasket: in 2005, the country imported over 40% of its food; this year, it will export more than half its output, including to famine-stricken Kenya, having trebled the maize harvest in four years.

Brazil also subsidised inputs, launching a programme that provided credit for 14,000 tractors in its first year. But its bigger intervention was to expand a safety net which allows family farmers to sell $800 worth of food to the government each year; the government uses part of the food for reserves to help stabilise prices and another portion for school meals which are part of the country's much-admired conditional-cash transfer scheme, Bolsa Familia.

Many countries are using help to farmers as an anti-poverty measure. India, for example, last year extended to every rural district its National Rural Employment Guarantee Act, which guarantees 100 days of minimum-wage employment on public works to every rural household that asks for it. The act, one of the biggest job-creating schemes in the world, is widely credited with maintaining rural demand in the face of one of the worst monsoons for years. India also introduced a one-off agricultural-debt waiver programme for about 40m farmers.

At the height of the food-price spike in 2008, many of the biggest food producers banned the export of crops (they sought to cushion the domestic impact of rising world prices). Most of these restrictions have been lifted and replaced by a variety of price and marketing policies. Many of them are sensible. Uganda, for example, reckons farmers got 5-15% more for their crops after publishing price and market information more widely. Kenya improved peoples' nutrition by removing restrictions on the sale of unpasteurised milk (milk is one of the most important foodstuffs in east Africa). There is also a fashion for creating grain reserves to smooth out local price fluctuations by building silos in villages: Burkina Faso, Burundi and Gambia are doing this.

It all sounds admirable. And it is matched by an almost equally frenetic pace of change among commercial food companies. Some have started to invest directly—often for the first time—in farming in poor countries, providing farmers with new varieties of seeds or drought- and disease-resistant plants (see article for a case study of Monsanto). Agricultural business centres—one-stop shops where farmers can go to buy seeds and fertilisers, rent farm equipment, and get crop insurance—are springing up everywhere.

THIS LITTLE PIGGY DIDN'T GO TO MARKET

Yet there are worrying signs that all is not well. For alongside the increases in investment and attention is something more insidious: a turn away from trade, markets and efficiency. Depending on how far this goes, the trend could undo much of the benefits of new investment.

The price rises of 2008 were traumatic. When Thailand and Vietnam, the world's two largest rice exporters, banned exports, the Philippines, the world's largest importer, concluded that the international grain trade could no longer be trusted to supply its needs. Fearing what might happen as a result of India's poor harvest this year, the Philippines in the past two weeks has concluded contracts to buy 1.5m tonnes of rice—equivalent to 5% of the total annual trade in the grain. This is panic buying driven by mistrust. In turn, India is negotiating directly with Thailand and Vietnam for rice, which would further reduce the tradable supply of an already thinly traded commodity.

The large "land grabs" in Africa and Asia are also signs of distrust in world markets. Food importers which can afford it—like Saudi Arabia, Kuwait, China, South Korea—have opted to grow food on land they own or control abroad rather than import it through international trade. "Land grabbers" (mostly state companies or governments) have concluded contracts to buy or lease roughly 20m hectares (50m acres) of the best farmland in poor countries.

Trust in world grain markets seems weak among industrial countries, too. Western countries share the blame for the failure to complete the Doha round of trade talks. They have done little to reduce subsidies to biofuels, which have taken large quantities of maize out of food markets and put it into petrol tanks. IFPRI and others have urged countries to calm the wildest price fluctuations (and hence provide a measure of reassurance to importers) by setting up a system of international or regional grain reserves or by providing emergency financing to be drawn upon if prices spike. But the summit did nothing to improve the operation of world markets or to cut biofuels subsidies.

And just as distrust of world trade seems to be growing, so confidence in domestic markets seems to be falling. According to a review of national farm policies by the FAO, around two-thirds of developing countries have undertaken some sort of non-market-based measures to support farmers since 2007, including input subsidies and price interventions. The governments of Burkina Faso and Sierra Leone have started to negotiate with wholesalers to control prices indirectly. Other countries, such as Madagascar, have imposed direct price controls. The picture here is mixed: some countries are seeking to improve the operation of their markets. But six of 34 African countries which reported their policy responses to the FAO said they were proposing price controls.

Perhaps the most striking trend is the move from "food security" towards "food self-sufficiency" as a goal of national policy. The first means ensuring everyone has enough to eat; the second, growing it yourself. The Philippines says it hopes to grow 98% of the rice it needs by next year, though whether it can meet this target is unclear. "Indonesia must struggle to reach food self-sufficiency," said President Susilo Bambang Yudhoyono last year, announcing big increases in seed, fertiliser and credit subsidies. Senegal imports 80% of its rice, putting this small African nation in the top ten rice importers. Rocked by food riots in 2008, the government responded with what it called the "Great Offensive for Food and Abundance", and promised to become self-sufficient in staples. Others with the same aim include China, Malaysia, Colombia and Honduras.

This shift towards self-sufficiency coincides with growing scepticism about world trade, examples of price controls and more extensive government involvement. The FAO has even suggested the shift may amount to "a change of paradigm" in farming.

Such a shift could undermine the hopes raised by new investment because farmers would get bogus price signals, efficiency would be compromised and because, says IFAD's head of operation, "it's harder to do good projects where the policy environment is poor." Food policy has never been free. For the past 20 years, agriculture in developing countries has been dominated by a gradual decline in investment and a shift towards a somewhat more liberal policy environment. The first trend is now being reversed, for the better. The worry is that the second trend will be reversed, too—for the worse.

La Necesidad de un Banco de Semillas

Las plantas nos proveen de alimentos. ¿Qué podría pasar si estas plantas desaparecieran? Piense en un banco de semilla como una cuenta de ahorros. Las semillas son "depositadas" en el banco de semilla (un área de almacenamiento) con la intención "de retirarlas" en el futuro cuando se tenga necesidad de ellas. Como usted podría guardar el dinero para una futura necesidad, guardamos semillas para plantar de nuevo, no sólo para la siguiente cosecha, sino también en caso de que ciertas cosechas mueran o sean destruidas. en cualquier año. Si los agricultores y los jardineros no tienen suficientes semillas para sembrar, tendriamos una escasez del alimento. El ahorro de semillas en Belice es una parte importante de asegurar nuestra Seguridad de Alimento como nación.

El humano ha estado creando la agricultura y cultivando las plantas durante miles de años. Desde el principio, los agricultores han realizado que se tienen que guardar semillas para asegurar las cosechas de la siguiente temporada. La cosecha y el ahorro de las semillas es un ritual importante en todas las culturas antiguas. Estos bancos de semilla históricos protegían las semillas de los animales, los parásitos, las enfermedad, y los estados del tiempo.

Hoy tenemos que guardar semillas por motivos similares. Podemos conseguir semillas fuera de Belice, pero hay varios problemas con confiar en estas fuentes extranjeras. Las variedades diferentes de plantas crecen en áreas diferentes. Puede ser que el repollo que crece bien en Nueva York, EE.UU. no puede crecer bien en Belice. Lo mismo es válido para la mayoría de las plantas. Si nos quedamos sin las semillas de las especies de plantas que crecen bien aquí, podríamos ser incapaces de cultivar suficiente comida para alimentarnos.

Los desastres y las enfermedades no respetan límites nacionales. Si otro país afronta la misma escasez de semilla que Belice, seriamos incapaces de importar semillas apropiadas para sembrar de nuevo.

¡Es importante que nosotros los Beliceños guardemos semillas, y almacenemos semillas suficientes para el futuro!

Algunas semillas, llamadas semillas ortodoxas, pueden ser guardadas en un ambiente fresco y seco. Unos ejemplos de estas son el tomate, la calabaza, y la pimienta. Estos tipos de semillas son guardadas en bancos de semilla.

Otras semillas, llamadas semillas recalcitrantes, deben ser continuamente sembradas de nuevo para reponer reservas. Un ejemplo de esto, es el cacao. Estas plantas son asegurados por cultivación continua, también llamada conservación “in-situ”. Es importante que estas plantas sean cultivadas en varios sitios diferentes, para no ser exterminados por el mismo desastre o enfermedad. Conservación “in-situ” es promovido usando un sistema variado de cultivo de agricultura y evitando la agricultura de monocultura – Deberíamos cultivar muchas cosas en nuestra granja, no sólo una o dos cosechas.

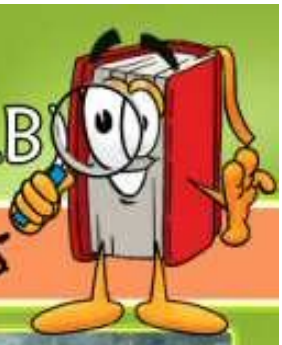
Las semillas ortodoxas son coleccionadas de plantas cuando son maduras, y son limpiadas, secadas y preparadas para el almacenaje. En el clima húmedo y caliente de Belice, el almacenaje refrigerado proporciona la temperatura baja y la humedad necesaria para una vida más larga de las semillas. Las semillas no solo deben tener algún aire, sino también tienen que ser protegidas de un ambiente cambiante, y por eso son embaladas cuidadosamente antes de la refrigeración. Las semillas tienen que ser repuestas periódicamente.

El Gobierno de Belice, junto con unos socios, considera seriamente bancos de semilla , como un medio de asegurar nuestra Seguridad de Alimento. El maíz y el fríjol están siendo almacenados en el Distrito de Toledo. La Misión Taiwanesa esta considerando un sistema de banco de semilla para guardar la semilla de arroz. “Plenty Belize” está estableciendo un banco de semilla para verduras. ¡Este es un buen comienzo , pero mucho más sobra por hacer! Mark Miller trabaja con Plenty Belize en Toledo.

Por Mark Miller, Plenty Belize, Punta Gorda, Toledo
Translation by Derry Roberson & Henning Bartsch

CITRUS GREENING HUANGLONGBING (HLB)

WHAT TO LOOK FOR IN YOUR GROVES



Blotchy mottle on sour orange leaves

Blotchy mottle on Grapefruit leaves

leaf with blotchy motttle, prominent midrib and corky lateral veins

Blotchy mottle leaves

HLB-affected fruit with brownish-black aborted seed & orange stained vascular bundles

Blotchy mottle leaves

HLB-affected lopsided fruit

Lopsided Fruit

IF YOU SEE ANY OF THESE SYMPTOMS CONTACT

Citrus Research & Education Institute @ 522-3535
Belize Agriculture Health Authority @ 824-4872 / 604-0319
Ministry of Agriculture & Fisheries @ 824-4872 / 604-0319
Organismo Internacional Regional De Sanidad Agropecuaria (OIRSA) @ 822-0521

El CONTROL DEL MOSQUITO SIN SUSTANCIAS QUIMICAS

Por Dr. Ed Boles, Galen University, Central Farm, Cayo District

Los mosquitos y las enfermedades que llevan, como la malaria y el dengue, son una preocupación grave en Belice. La temporadade lluvia es especialmente problemática en cuanto las áreas de reproducción del mosquito son mucho más abundantes. Cuándo el índice de piquete del mosquito y los incidentes de enfermedades son altos, camiones de rocío pulverizan con malathion y otras insecticidas el paisaje urbano. A veces esta estrategia puede ser eficaz, pero muchos otros insectos, incluso los depredadores del mosquito y abejas de miel, también son matados por estos insecticidas. Aparte de eso, las personas de los pueblos y las aldeas que fumigadas estan expuestas a problemas de salud a consecuencias del uso de insecticidas. Sin embargo, hay una alternativa preferida de estrategia de control que consiste en concentrar en la larva del mosquito y no depender de productos químicos.

Las estrategias del control del mosquito no químico ofrecen varias ventajas sobre el uso de sustancias químicas. La larva es el objetivo, matando las antes que se vuelven adultos y lleguen a ser un problema. Los métodos no químicos son mucho más baratos que el uso de químicos. Los jóvenes locales que están interesados pueden ser capacitados y pueden ser contratados tiempo parcial como técnicos de control del mosquito en sus respectivas comunidades. Este enfoque ayuda a reducir el uso de sustancias químicas, reduciendo de esta manera la exposición de las personas y ecosistemas a cancerígenos demostrados y al mismo tiempo ahorra dinero. Esto también minimiza exposición de los depredadores del mosquito (libélulas,) y insectos polinizadores (abejas, moscas de flores, las palomillas, las mariposas) a pesticidas. Eliminando el uso rutinario de sustancias químicas reduce la oportunidad de resistencia al pesticida que se acumula en poblaciones de mosquito. Esto ayuda a asegurar que esas sustancias químicas serán efectivas durante estallidos de emergencia y enfermedades provocados por mosquitos.

Las estrategias efectivas de control del mosquito no químico son basadas en una comprensión de la biología y la ecología de poblaciones locales de mosquito y otros organismos que comparten su hábitat. Las especies diferentes del mosquito tienen diferentes requisitos de hábitat de reproduccion, diferentes alcances de vuelo, y diferentes patrones de comportamiento y potencial de vector de enfermedad, así requiriendo estrategias diferentes de control. El primer trabajo es la limpieza general de la zona, animando a las personas a quitar bidones viejas, botellas, latas y los aparatos de sus patios. Una limpieza buena de la zona puede quitar la mayor parte de los sitios de reproduccion del Mosquito de la Fiebre amarilla y el Dengue.

El próximo trabajo es andar por el vecindario, ver todas las calles, los espacios vacíos, los parques, los patios de las escuelas, sistemas de desagüe y revisar todas las áreas de agua estancado. Cada area de agua es probada con un cucharón de mango largo o un cucharón de la cocina y revisado por larvas de mosquito. Todos los resumideros atascados son vaciados de basura y sedimento y permitidos a fluir. Los pozos sépticos agujerados y letrinas mal construidas contaminan las áreas locales de agua creando sitios ideales para el Mosquito Casero del sur. Estas áreas deben ser tratadas y la contaminación por aguas residuales debe corregirse. Permanentes áreas de agua que crean mosquitos y sin peces deben ser llenados con peces de mosquito y molliesias de aguas cercanas, donde aparecen generalmente en abundancia.

Las áreas bajas que tienen agua en la temporada de lluvia y otros cuerpos de aguas temporales donde el mosquito crece pueden ser tratados con una formula disponible comercialmente de bacterias (israelensis de thuringiensis de Bacilo) que matan específicamente larvas de mosquito pero no daña los depredadores del mosquito. Todas las áreas de agua donde se encuentra mosquitos creciendo son verificados rutinariamente (cada uno a dos semanas) y tratados cuándo larvas de mosquito son encontradas. Un galón de la formula líquida de bacterias usualmente durará a una pequeña comunidad una temporada y es mucho más barata que los pesticidas convencionales.

El control del mosquito no es un esfuerzo de una sola vez, sino debe ser un trabajo continuo, de una temporada al la otra, y de un año al otro. Uno de los elementos más importantes de un trabajo exitoso de control de mosquito no-químico es el educativo y el apoyo público. El involucrar a escuelas locales ofrece una manera de conectar con la comunidad en general. Las actividades de la consciencia del mosquito proporcionan una avenida para introducir conceptos aplicados de la biología y la ecología en las clases. Aparte de eso, futuros técnicos puedan ser descubiertos durante esfuerzos de educacion. La participación de miembros informados y activos del vecindario de todas las edades es esencial para crear un programa exitoso de control a largo plazo.

Translation by Derry Roberson & Henning Bartsch

PHOTO CONTEST WINNERS - Nov-Dec 2009 Issue

1st, 2nd and 3rd place winners, are as follows:

1st Place - Mrs. Eva Friesen, with picture of her family at their Rocking J Ranch, Iguana Creek Area, Spanish Lookout. That photo is printed on page 31 of this issue, #5.

2nd Place - Mr. Norman Smith, with his picture of a young man resting against orange sacks.

3rd Place - Ms. Miriam Serrut, with her "Weeding by Hand in an Organic Vegetable Garden in Santa Familia".

Sweet Ting and The Belize Ag Report thank all the entrants for taking their time and sharing their work with us. See page 30 for details on how you can enter the next PHOTO CONTEST.

1st place picture by Eva Friesen

2nd place picture, by Norman Smith

3rd prize, Miriam Serrut ‘woman weeding’