

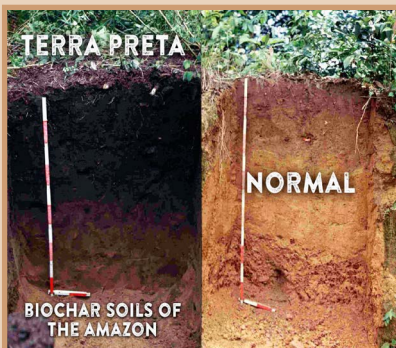
REGENERATION INTERNATIONAL & REGENERATION BELIZE  
Present



# The First Annual Tropical Agriculture Conference



13-14-15 November 2018 in Belmopan, Belize  
National Agriculture & Trade Show (NATS) Grounds





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# Opening Ceremony Program

Tuesday, November 13, 2018

1:30 - 4:30 P.M.

Master of Ceremonies

**Mr. Santiago Juan**  
*Vice-Chair, Regeneration Belize*



1. National Anthem - Sung by Ms. Vianny Alvarado, El Progreso Community School - Please join in
2. Invocation: National Prayer - Led by Mr. Santiago Juan - Please join in
3. *Welcome and Introduction to Regeneration International* - Ms. Ercilia Sahores, Latin America Director, Regeneration International, Mexico
4. *Introduction to Livestock/Sylvopastoral Systems* - Dr. Alvaro Zapada Cadavid, CIPAV, Colombia
5. *Introduction to Regeerative Poultry Management* - Mr. Reginaldo Haslett-Marroquin, Regeneration International, Guatemala
6. *Carbon Sequestration from Regenerative Agriculture* - Mr. André Leu, International Ambassador of Regeneration International, Australia
7. Remarks from the Hon. Senator Godwin Hulse, Minister of Agriculture, Fisheries, Forestry, the Environment, Sustainable Development & Immigration.

*It is the vision of members of Regeneration Belize to transform Belize into a leading producer of nutrient-rich agricultural products and a showcase for carbon sequestration through soil regenerative practices.*

*RB is an alliance member of Regeneration International.*

**Thank you, Ministry of Agriculture, for your support,  
especially the use of the NATS grounds!**



[www.regenerationinternational.org/belize-conference-2018](http://www.regenerationinternational.org/belize-conference-2018)

[regenerationbelize@gmail.com](mailto:regenerationbelize@gmail.com)

**FACEBOOK** info, RI and local RB

Regeneration International & Regeneration Belize



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# Tropical Agriculture Conference Speakers, Presentations & Panels (Wednesday - All English)

Wednesday 14 November 2018

Belmopan NATS Grounds Free Admission



	Blue Stage	Red Stage	Green Stage	Yellow Stage	Orange Stage
8:30 - 8:45	Introduction to Regenerative Agriculture Ronnie Cummins				All presentation on this stage will be translated to <b>Kekchi</b> Maya
9:00 - 10:00	Tackling Large Scale Regenerative Ag Challenges Dr. Fernando Tersi	Beekeeping - Regenerative Style Elder Adrian Calderon	Under-utilized Native Crops Santiago Juan	Repairing Degraded Land Using Agroforestry Christopher Nesbitt	Building Topsoil with Regenerative Practices Andre Leu <b>Kekchi</b>
10:30 - 11:30	Building Topsoil with Regenerative Practices Andre Leu	Watershed Management: Why Trees Are Important to Agriculture Dr. Ed Boles	Medicinal Plant Gardening Dr. Rosita Arvigo	Greenhouse Management Dr. Carlos Itza	Open Pollinated Corn & Beans Omaira Avila Rostant <b>Kekchi</b>
11:30 - 1:00	<b>Lunch</b>				
1:00 - 2:00	Integrated Livestock/ Silvopastoral Systems Dr. Alvaro Cadavid	1:00 - 1:30 Funding Agriculture Jeanclaude Mbazumutima of DFC	Panel #1: Building Topsoil with Regenerative Practices	Biochar Basics Christopher Nesbitt	Regenerative Poultry Mainstreet Project Reginaldo Haslett-Marroquin <b>Kekchi</b>
2:30 - 3:30	Edible Landscaping Taylor Walker	1:45 - 2:15 Starting a Co-op Hugo Miranda	Rebuilding Soils with Cover Crops & Farmer-to-Farmer Learning Henry Anton Peller	Open Pollinated Corn & Beans Omaira Avila Rostant	Greenhouse Management Dr. Carlos Itza <b>Kekchi</b>
4:00 - 5:00	Regenerative Poultry - Mainstreet Project Reginaldo Haslett-Marroquin	BioFertilizer Success in Large & Small Scale Ag Dr. Carlos Itza	Panel #2: Agroforestry Food Production	The Seed: The Success for Good Coconut Production George Emmanuel	Comments on Regenerative Agriculture Ronnie Cummins <b>Kekchi</b>



# Tropical Agriculture Conference Speakers, Presentations & Panels

Thursday 15 November 2018  
Belmopan NATS Grounds Free Admission



	Blue Stage	Red Stage	Green Stage	Yellow Stage
8:30 - 8:45	Introduction to Regenerative Agriculture Ronnie Cummins <b>Spanish</b>			
9:00 - 10:00	Citrus Challenges, Focus on HLB: Dr. Fernando Tersi	Greenhouse Management Dr. Carlos Itza <b>Spanish</b>	Edible Landscaping Taylor Walker	Repairing Degraded Land Using AgroForestry Christopher Nesbitt
10:30 - 11:30	Building Topsoil with Regenerative Practices Andre Leu <b>Spanish</b>	Beekeeping - Regenerative Style Elder Adrian Calderon <b>Spanish</b>	Regenerative Poultry - Mainstreet Project Reginaldo Haslett-Marroquin	AgriTourism Santiago Juan
11:30 - 1:00	Lunch			
1:00 - 2:00	Integrated Livestock/ Sylvopastoral Systems Dr. Alvaro Cadavid	1:00 - 1:30 Funding Agriculture Jeanclaude Mbazumutima <b>Spanish</b> 1:45 - 2:15 Starting a Co-op Hugo Miranda <b>Spanish</b>	Panel #3: Seed Saving	Bio-Fertilizer: Success in Large & Small Scale Ag Dr. Carlos Itza <b>Spanish</b>
2:30 - 3:30	Under-utilized Native Crops Santiago Juan <b>Spanish</b>	Rebuilding Soils with Cover Crops and Farmer-to-Farmer Learning Henry Anton Peller	Panel #4: Integrated Livestock & AgroForestry: Sustainable Livestock & Silvopastoral Systems	Biochar Basics Christopher Nesbitt
4:00 - 5:00	Medicinal Plant Gardening Dr. Rosita Arvigo <b>Spanish</b>	Watershed Management: Why Trees Are Important to Agriculture Dr. Ed Boles	Panel #5: Marketing Challenges for Non-traditional Crops	Open Pollinated Corn & Beans Omaira Avila Rostant <b>Spanish</b>



# International Speakers In Alphabetical Order

Regeneration International (RI) has generously arranged for 6 international tropical farming experts to come to Belize to share their experiences with Belizean farmers at the TTA Conference.



**Ronnie Cummins:** A short introduction to familiarize attendees with the basic concepts of regenerative agriculture will be given by **Ronnie Cummins** to begin both full-day schedules. Ronnie is a steering committee member of RI and is the co-founder of the Organic Consumers Association (OCA) and its Mexican affiliate, Via Organica.

## Regenerative Food, Farming and Land Use as Next Stages of Organic Agro-Ecology

### Elder Adrian Calderon: Benefits of Ecological Beekeeping

Elder Adrián Calderón Granados is an agronomist and ecological beekeeper from Petén, Guatemala. His presentation will discuss how ecological beekeeping offers a range of benefits to rural families and the natural environment. He will address how beekeeping offers rural families the opportunity to produce a number of products derived from bees and how apiculture can be an excellent source of employment and income in rural areas. He will also share how beekeeping can contribute to restoring degraded landscapes and the health and well-being of forest ecosystems.



### Reginaldo Haslett-Marroquin: Regenerative Poultry Management

Reginaldo will present on a revolutionary *Poultry Centered Regenerative Farm* model that is a success in Guatemala, Mexico and the US. The model is built not on a nearsighted drive toward maximum profit, but on a *triple* bottom-line being ecological, economical and socially viable. At the system's center are free-range meat/egg poultry, raised in a well-managed paddock planted with a combination of perennials, cover crops, and small grains that provide additional cash value to the farmers and nutrition and shelter for the chicken. In exchange, the chickens provide the manure to fertilize not only the paddock and the plants within, but also other vegetables and perennials for additional agricultural enterprise. With their short life cycle, chickens provide a positive revenue stream at a low cost of entry.



Reginaldo Haslett-Marroquin is a founding member of RI, and is the chief strategy officer in the Main Street Project. Raised in the Guatemalan rainforest, Reginaldo has an agronomy degree from the Central National School of Agriculture in Guatemala and international business and communication degrees from Augsburg College, Minnesota.

### Andre Leu: Building Topsoil with Regenerative Practices

Topsoil is where the majority of the plant available nutrients, beneficial microorganisms and crop available water are found. The most important component of topsoil is organic matter composed mostly of soil organic carbon (SOC). It is estimated that agricultural soils have lost 50% to 70% of their original soil organic



carbon pool and the depletion is exacerbated by further soil degradation. Longer rotations, cover crops, green manures, legumes, compost, organic mulches, biochar, perennials, agro forestry, agroecological biodiversity and livestock on pasture using holistic grazing systems are starting to come under the heading of Regenerative Agriculture because they regenerate SOC.

Andre is a founder of RI and serves as their international director. He was the longest serving president of IFOAM – Organics International. Andre has over 45 years' experience in almost every aspect of agriculture; he and his wife have an organic fruit farm in Daintree, Australia.

### Fernando Tersi: Tackling Large Scale Regenerative Ag Challenges including Cover Crops and Tillage

In this presentation Dr. Ademir Calegari will share his experience with large scale regenerative agriculture systems including challenges, lessons learned and successes with no-till, min-till and cover crop techniques in the tropics.

### Citrus Challenges, Focus on HLB

Fernando will address regenerative citrus management techniques and, specifically, experience with HLB, based on his work with farms, including Fazenda de Toca, in Brazil.



Dr. Tersi's agricultural expertise and leadership experience over the past 13 years are reflected in numerous scientific and technical papers and speaking engagements in Brazil, United States, Europe and Latin America. The development of a unique citrus greening control system and maintenance of "stand" losses due to greening led to excellent regional competitive advantage for the business. His expertise in business administration and managerial experience is reflected in his successful increases in productivity, quality control, and profit margins for several agribusiness companies producing bioenergy, citrus, rubber, coffee, sugar cane, soybeans and maize. As current Agriculture Operations Director for Rizoma Agricultura Regenerativa S.A in the state of São Paulo he is implementing a silvopastoral system among other regenerative projects.

### Dr. Alvaro Zapata Cadavid: Integrating Livestock and AgroForestry: Sustainable Livestock and Silvopastoral Systems

Silvopastoral systems (SPS) are a type of agroforestry that allows the intensification of cattle production by integrating trees and shrubs in pastures with animals, an integrated approach to sustainable land use. SPS improve overall productivity and provide additional economic, environmental, and social benefits for livestock farmers compared with grass monocultures.



Dr. Alvaro Zapata Cadavid is a technical expert with Fundacion Centro para la Investigacion en Sistemas Sostenibles de Produccion Agropecuaria (CIPAV – Centre for Research on Sustainable Agriculture). He has been working more than 20 years in Colombia and many other countries with these methods. In addition to being a veterinarian, Dr. Zapata holds a M.Sc. in Renewable Energy and the Environment (University of Reading, England).

### Panel #1: Building Topsoil with Regenerative Practices

### Panel #3: Seed Saving

### Panel #4: Integrating Livestock and AgroForestry: Sustainable Livestock and Silvopastoral Systems



# Local Speakers

## In Alphabetical Order



**Dr. Rosita Arvigo DN** is a naprapathic physician, herbalist, international lecturer and author of eleven books on medicinal plants and traditional healing. She has lived in Belize for forty years where she studied with many traditional healers the most notable of whom was Don Eljio Panti, recipient of the coveted National Living Treasure Award of Belize. She and her husband, Dr. Greg Shropshire founded Ix Chel Tropical Research Centre, an organization dedicated to the preservation and study of medicinal plants of the Belizean rainforest. They founded Bush Medicine Camp for children, Ethnobotany in the Classroom, The Rainforest Medicine Trail and Rainforest Remedies, a herbal concentrate company. In 1987 they founded the Belize Ethnobotany project with Dr. Michael Balick of the New York Botanical Garden. Dr. Arvigo's organic garden in Cayo District supplies most of the family's vegetables and medicinal plants.

### Medicinal Plant Gardening

Rosita Arvigo's slide presentation will discuss how to grow common medicinal plants considered household remedies for household ailments in Belize.



**Omaira Avila Rostant**, CARDI representative in BELIZE since October 2016, has extensive experience working directly with famers in the Caribbean region. Her passion for any area of agriculture and especially in plant biotechnology, low cost agricultural systems, germplasm collection, seed improvement, ICT and the use of new technologies in agriculture has complemented her managerial skills. At the Trinidad and Tobago Agribusiness Association (TTABA) she managed the team researching technologies adequate for agro-production (varieties), processing technologies and equipment, and management of waste from processing for several crops, including vegetable, cassava, sweet potato and coconut. As the national coordinator of root crops under the large scale farmer's project she also coordinated the AgriNeTT project that created information and communication tools specific for the Agricultural sector, all available online. Now at CARDI her research team is working with rice, corn, beans and soya, hemp and coconut.

### Open-Pollinated Corn and Beans

**Omaira Avila Rostant** will explain CARDI's main mandate: to support farmers in their effort to identify, improve and conserve seed diversity. She will describe the research for improving the production and marketing of open-pollinated varieties of corn and true seeds from beans including cowpeas, red and black beans, soya and peanuts as well as hot peppers. She also present CARDI's research involvement in the selection of climate resilient varieties and describe small scale technologies for the handling and storage of grains and seeds to reduce post-harvest losses. Omaira will briefly review the past success of developing a rice variety still being used as a preferred variety in the milpa production system.



### The Seed: The Success for Good Coconut Production

**Mr. George Emmanuel**, the CARDI agronomist for the National Coconut Stakeholders Platform (NCSP), will share useful information on coconut varieties and getting started with coconuts.



**Dr. Ed Boles** holds B. S. and M. S. degrees in biology from University of Southern Mississippi and a Ph. D. in environmental science from Jackson State University. He has been a field biologist with US Army Corps of Engineers, Entomologist Senior and State Shellfish Survey Officer with Mississippi State Department of Health, director of New Mexico State University Faculty-led International Program, director of a Mountain Pine Ridge field station, faculty in the UB Natural Resource Management Program, an environmental consultant, international field course instructor, Provost at Monkey Bay Wildlife Sanctuary, and adjunct faculty for Galen University. During the past 30 years in Belize, field and conservation efforts have involved conducting rapid ecological assessments of watersheds and wetlands; promoting protection and restoration of steep slope, riparian, and wetland forests as critical components of watershed management; helping standardize water and watershed assessment methodologies and protocols; encouraging environmental research projects that inform conservation initiatives; and involving Belizean and international youth in these activities.

### Watershed Management Why Trees are Important to Agriculture

Following a brief overview of a watershed ecology, the functions of watersheds as the terrestrial components of the hydrological cycle that sustains farming, will be presented. The importance of three forest types in particular (steep slope forests, riparian forests, wetland forests) in maintaining watershed functions, and their subsequent importance to agriculture in Belize, will be highlighted. A quick summary of ideas and working solutions to protecting and restoring these forest types within the agricultural landscape, and the immediate and long term benefits of these actions will complete the presentation.



**Dawn Dean** is a 45 year old Belizean who immigrated from the US to the Toledo District 27 years ago. She lives in Barranco Village with her 2 teenage daughters and has her own business, Barranco Botanics, making natural soaps from 100% local Belizean ingredients. She has been fascinated with plants since she was a tiny child, and now has experience growing almost all the edible plants of southern Belize. She wrote the book "Gardening in Southern Belize". Her #1 favorite plant is vanilla (with cacao a close #2). On her farm right outside of Barranco she has hundreds of vanilla plants, including a living ex-situ gene bank of almost a hundred plants collected from the wild in the Toledo District. She co-authored the chapter on Belizean vanilla in an obscure English textbook entitled "Handbook of Vanilla Science and Technology".

### Vanilla Production

Covered in the presentation will be the history of vanilla in Belize, beginning with the ancient Maya and moving all the way through to today's wild vanilla in the Toledo District. The Vanilla Data Collection Project and its possible use in the future will be described. The world market for vanilla will be touched on; vanilla growers in Belize and vanilla growing regions worldwide will be highlighted. Potential for expansion of cultivation of vanilla in Belize will be considered. A crash course on how to identify and plant vanilla, and what makes it flower will conclude the presentation.

**Dr. Carlos Itza's** bachelor degree in agronomy and PhD in agriculture and agro-ecological development have resulted in extensive experience over the past 15 years in his home country of Belize. His list of positions and accomplishments include:



- » Coordinating small, medium and large projects for implementation in the agriculture sector as director and project manager of projects for the Ministry of Agriculture.
- » Managing agriculture/farm field production projects using ecological and environmentally friendly technologies.
- » Publishing environmental solutions to pesticide and fertilizer contamination: *Guide to Organic Pest Management for Vegetable and Other Crops in Belize*.
- » Heading several scientific and technical teams that focused on solutions to production, environmental and socio-economic problems related to the banana, sugarcane, and cattle industries and watershed management.
- » Working on a project of ecologically friendly and permaculture designs that included exotic animals, white tail deer, gibbon and other species of flora and fauna.
- » Past chairman of the Sugar Industry Research and Development Institute (SIRDI).
- » Chairman of the Sugar Cane Production Committee and Technical Team.
- » UBCF lecturer/agronomist and trainer to students, farmers and producers in the areas of animal and plant nutrition, pest management and agriculture projects.

Board member of the Friends for Conservation and Development (FCD). Has headed several multi-million dollars projects for international donor in Belize for the government of Belize thru the Ministry of Agriculture including EU, IDB, UNDP and others.

### **Biofertilizers Success in Large and Small Scale Agriculture**

The development of biofertilizers is not a new knowledge in the agriculture sector. In fact the knowledge has been here even during prehistoric time periods for a common use product. In his presentation Dr. Itza will be explaining how this tendency changed after the green revolution and the development of the creation of synthetic fertilizers and pesticides. He will talk about the trade-offs between increased production of monoculture crops and negative impact to the environment, the consumers of food products obtained in agriculture and users of the products, directly and indirectly.

Dr. Itza will cover (1) the factors to be considered and challenges of producing biofertilizers in Belize agricultural sectors, (2) the acceptance and use of biofertilizers by farmers and resulting consequences compared to synthetic products, (3) the high volume of biodegradable materials generated by the different industries (sugar, banana, cattle, poultry, residential etc), that could be turned into biofertilizers and (4) the attempts and success at producing and using biofertilizers by the citrus, banana, and sugar industries.

### **Covered Structure Management**

Dr. Itza will trace the history of covered structures in Belize, from the introduction of covered structure technology in 2009 to the present day common use in many villages and locations throughout Belize and their varying levels of success. He will note the limitations caused by a number of factors including weather. His presentation will also include challenges ranging from the misuse of the technology, the limited coordination in data collection and record keeping to competition generated among imported and local products, marketing, limited trained personnel, lack of clear biosecurity protocols. The solution he will present includes guidelines for managing cover production toward a coordinated focus on a high end market or value added products, with resulting wins for the farmers and the country.

**Santiago Juan** was born and raised in Cayo District, Belize, where his family owns and operates Nabaitunich Resort. He began his formal agriculture schooling at UB CF (The College of Agriculture at the University of Belize, Central Farm) which was at the time Belize College of Agriculture; afterward he attended EARTH University in Costa Rica, specializing in humid tropical agriculture. While studying at EARTH U, he was introduced to EM (effective microorganisms) a technology developed in Japan. Santiago was one of the founding partners of the first Belizean business which developed EM products here. His passions include his organic vegetable gardens and his extensive stables (Hanna Stables) which cater to horseback tours and horse racing at San Lorenzo Farm, neighboring Nabaitunich Resort.



### **Underutilized Native Crops**

Sweet potato, amaranth (calaloo) and chaya are crops that are well known throughout Central America and the Caribbean. Although they are well known very little consumption in the day to day local cuisine occurs. In recent years in Europe and North America sweet potatoes and amaranth are being hailed as super foods. Universities across Mexico have studied extensively the nutritional value of chaya and its ability to contribute to the alleviation of nutritional deficiencies in our population. Although volumes of information on the importance of these crops are available globally we have difficulty finding them in our local and regional stores and farmers' markets.

We will cover a brief description of all three crops: their origin, ease of cultivation, nutritional value, and products and foods that can be prepared. The contribution to the crucial role of mitigating shifting weather patterns and climate change will focus on a regenerative approach to growing food either commercially or in our back yards.

### **Agritourism**

Belize as a country has promoted itself as a new and unique destination for holiday seekers from around the globe. Recent governmental reports show a increase in visitors to our country. The year 2017 saw close to 500,000 overnight visitors and another 1,000,000 cruise ship visitors. A growing percentage of these travelers are venturing into our remote villages and countryside to experience an authentic Belize. This brings challenges in a dance of balancing development, increasing foreign exchange, preserving cultures, identities and showcasing our natural resources. Agritourism is one of those tools at our disposal to help balance development and preserving our forests. Agritourism can assist in the global interest in reducing our carbon footprint by eating locally and enjoying low impact tourism.



**Dr. Carlos Itza**  
**Agricultural Consultant**  
**belizeagricpro@gmail.com**  
**620-7155**



**Jeanclaude Mbazumutima** is an Agronomist with over a decade experience in agricultural production, environmental conservation, agroforestry, agro-export, food safety certification and development financing. He has worked six years with a development bank, with focus on agriculture, climate resilience and agribusiness and has also worked in the Caribbean and Central America. Jeanclaude has travelled and worked in all the major agricultural areas in Belize, from Toledo to Stann Creek, Cayo to Corozal.

### Funding Agriculture

**The Development Finance Corporation (DFC)** is Belize's only Development Bank. Our purpose is to support the strengthening and expansion of Belize's economy by providing developmental financing on an economically sustainable and environmentally acceptable basis to individuals, businesses and organizations.

Financing Description:

The DFC has been financing Agriculture for over 55 years. In addition to their afternoon presentations, the DFC staff is available at their booth all day Wednesday and Thursday to discuss your financing needs.

[www.dfcbelize.org](http://www.dfcbelize.org) 822-2350 / 60



**Mr. Hugo Miranda**, Education Officer in the Department of Co-operatives, is a career public officer who has been working in the Department of Co-operatives since 1990. Over the course of that twenty-eight years, all spent with the department, he has held various posts, including acting as registrar over several periods. In his current position as education officer, he is responsible for planning, developing, and delivering training

programs to current and prospective co-operatives and other interested stakeholders.

### Department of Co-operatives Services

Mr. Hugo Miranda, Education Officer of the Department of Co-operatives, will cover the benefits and the processes for small-scale farmers organizing into co-operatives and on the work of and support provided by the Department of Co-operatives. He will explain the department's regulatory services that conform to established standards and provide dynamic and proficient entrepreneurial development programs that are responsive to the increasing human resource, financial, and technical needs of the co-operative sector in Belize. Hugo will present an overview of the (1) regulatory programs, including registration, dissolution, conflict resolution, and inspection, auditing, and inquiry of finances and records and (2) business development programs, including entrepreneurship development: guidance, advise, counsel, and training on business performance.

### Panel #2: Agroforestry Food Production

Agro forestry is a well developed science and practice in many tropical regions of the world. Belize has some of the most beautiful weather and soils for growing crops. Our Maya heritage gives us Ramon, Sapodilla, Mamee, Custard apple, Cow sop, and many other natives to the region including palms such as cohune, heart of palm, (cabbage). Our different governmental ministries especially the Agricultural Ministry has introduced dozens of new species like Jack Fruit, Rambotan, Mangoes, Tamarind, and the list goes on. Probably one of the most productive trees per unit area in an agro forestry food system is breadfruit along with bread nut. Our genetic diversity in tree species is equivalent to a gold mine. Food security and poverty alleviation through food production utilizing trees in Belize is a must. Climate change mitigation can be best done with deep rooted tropical trees, this in its core best demonstrates a regenerative agriculture approach. The recycling of nutrients, carbon and water cycles are best seen in agro forestry food systems.



### Panel #5: Marketing Challenges for Non-traditional Crops

Amaranth (calaloo), chaya and sweet potato are easily recognized by most Belizean consumer's, and yet they cannot be found in our super markets and with some exceptions our farmers markets. We all know of the nutritional and health value, the ease of cultivation, the versatility in food preparation and again availability is minimal at best in our markets. Jointly we will try to unravel the reasons for such a phenomenon and come up with possible solutions in making underutilized native crops available as they are some of the most adaptable and productive crops to us and no better crops come to mind in this new era of regenerative agriculture.



**Christopher Nesbitt** has been practicing regenerative agriculture on a formerly damaged piece of land in the foothills of the Maya Mountains since 1988. Working with degraded citrus and cattle land, he has created a diverse polyculture home to hundreds of species of trees.

From 1997 to 2004 he managed the Toledo Cacao Growers Association, retaining their organic and fair trade certification, and grew their membership from 225 people to 750. In 2004, after 7 years of commuting

daily, he left TCGA to create a demonstration project on the land where he lives, called Maya Mountain Research Farm.

Maya Mountain Research Farm is located up river from the village of San Pedro Columbia, Toledo, Belize. Spread out over 70 acres are multiple species of trees that comprise a functioning agroforestry system that provides food, fuel, fodder, fiber, medicinal and marketable crops, and functions as analog to primary forest. It is one of the oldest permaculture projects in the world. Christopher has consulted on damaged land issues in Belize, Guatemala, the Dominican Republic, Peru and Venezuela.

### Repairing Degraded Land

Maya Mountain Research Farm is a 30 year ongoing work in repair of degraded land. Globally there are 950,000,000 to 1.1 billion acres of degraded agricultural land that have never been returned to its previous use. Much of this land is in the lowland humid tropics. In this presentation we will be looking at ways to transform those degraded landscapes into highly productive landscapes that provide multiple harvestables while drawing down atmospheric carbon by mimicking natural processes of succession. Based on our successful regenerative practices, we will examine how using the principles and ethics of permaculture we have converted what was formerly degraded land into a lush, stacked polyculture of species of tropical staple tree crops, fruits, nuts, timber, medicinal and marketable crops. We will also show how resulting landscapes can be used to draw down atmospheric carbon, reestablish broken hydrological cycles, retain and build soils, and provide habitat.

### Biochar Basics

Biochar is the conversion of biomass to a form of stable carbon that can be stored in the soil using pyrolysis, or the combustion of biomass in an oxygen free environment. The use of biochar has shown to increase habitat for soil biota. In this presentation we will look at the basics of biochar making, examine some ways to make and apply biochar, and discuss feed stocks appropriate to farmers in Belize.





**Henry Anton Peller** is a PhD student in soil science in Dr. Rattan Lal's Carbon Management and Sequestration Center at Ohio State University. He was born and raised on a small farm in southeast Ohio, and has worked in the Caribbean region since 2011. Henry's dissertation research focuses on soil fertility, milpa agro-

ecology, and cover crop breeding. He collaborates with farmers in several Maya villages to understand soil fertility and farm management issues, and to breed & disseminate cover crops. Henry strives to build the power of ecological and regenerative agriculture, people-to-people learning, and social organization to confront our planetary emergency. He urges others to reflect on the urgency and interconnectedness of climate change, sea level rise, topsoil destruction, theft of indigenous lands, exploitation of workers and women, and other forms of violence on our planet. Henry encourages others to research La Via Campesina, the world's largest farmers association, and to seek ways of loving and organizing with each other to build a peaceful, just, and living world. He is grateful for the opportunity to share about cover crops and farmer learning programs with the conference.

**Rebuilding soil with cover crops & farmer-to-farmer learning**

This presentation will give attendees the basic knowledge, confidence, and seeds they need to transform their soils with cover crops. Around the world, farmers have rebuilt damaged soils into super-productive, living soils by growing cover crops. Cover crops are exceptionally vigorous plants that quickly cover the land. They are easy to chop and manage, and offer drought resilience, nitrogen fixation, soil organic matter, weed control, and food & fodder yield. Today, tens of millions of growers around the world use hundreds of cover crop systems at all scales of production, from gardens to industrial farms. This presentation will teach the fundamentals of tropical cover crops for Belizean and Mesoamerican growers. First, we review the soils of Belize and the principles of ecological soil management. Second, we study nine cover crops: mucuna, jackbean, lablab, ricebean, pigeon pea, madre de cacao, inga, moringa, and perennial peanut. We share practical information about how tropical growers can establish and manage each species successfully for particular crops: Third, we learn about a farmer-to-farmer learning program to breed and disseminate cover crops in several Maya communities of Toledo District, Belize. Supplies permitting, all attendees will also receive some cover crop seeds to begin.

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**Umeeda Switlo:** Following various volunteer assignments in other parts of the world, Umeeda Switlo came to Belize in 2015 from Canada as a Cuso International advisor to the Department of Youth Services in Belize. Her goal here reflected her years of experience: to innovate, share ideas, spawn new opportunities, guide and support those ideas to successes in a community and its environment. Engaging both farmers and youth, she initiated a social enterprise in the Toledo District to create the first turmeric paste in the world; that effort led to the founding of Naledo, Inc. a Belize social enterprise. Now with 300 farmers and 12 youth, Naledo exports over 1 container of turmeric products to Canada per month.

Umeeda is currently serving as VP of the Toledo Chamber of Commerce. In Canada she was active in her community serving as an officer or board member of many organizations. Umeeda's past functional experience includes corporate relations, communications, fundraising, sponsoring, directing and producing large-scale events, as well as Habitat Protection Biologist for the Canadian Ministry of Environment and Sport Fisheries Biologist for Federal Fisheries and Oceans. She has also received awards for landscaping and gardening.

Do you want healthy, productive soils?

**Yes, you do! Cover crops are a critical tool for healthier soils and better yields.**

**For more information, contact soil scientist Henry Anton Peller**  
[henryantonpeller@gmail.com](mailto:henryantonpeller@gmail.com) (501)- 627 7683

**Turmeric Production and Marketing**

Umeeda will talk about how she started her turmeric business and the characteristics of the turmeric grown in Toledo. She will share her experience recruiting and training a young Belizean team, finding farmers to source the turmeric and her success at developing a turmeric paste using high quality Belizean ingredients. She will also talk about marketing her products, tracing her efforts from the grand success of showcasing it in Canada to the expansion of her export market to the Bahamas and many more countries. Umeeda will also include her focus on a triple bottom line: profit, community and environment, and the measure of success using all three parameters. Umeeda will stress Toledo's great potential in its agricultural products: sorrel, cacao, moringa, cardamom, cassava, pineapples, coconuts and so much more.

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**Taylor Walker** has designed and established many urban gardens, and small farms with a focus on hardy fruit trees, perennial vegetables, and edible ecosystems. Before moving to Belize he worked and managed projects with many organizations in the U.S. including Naples Botanical Gardens, Inland Ecology Research Group, Sanibel Sea School, and Florida Edible Landscaping and Green Dreams Ecological Edible Landscaping. In Belize he is managing Tropical Agro-Forestry farms and has recently

partnered with Belize Botanic Gardens. His vision for sustainable edible landscaping is a culmination of his knowledge of ecology fused with horticultural science.

Taylor has led numerous walks on natural history, coastal ecology and ethnobotany with a variety of local community groups. The topics he has focused on include sub-tropical fruit trees, ecological gardening, agro-forestry, organic gardening, edible landscaping, wild edibles, composting, perennial vegetables, sub-tropical herbs, and ecology.

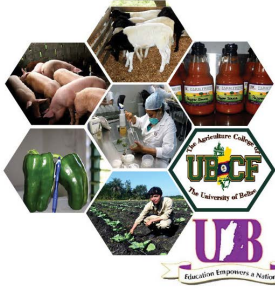
Taylor has taught many classes, given numerous presentations, workshops, educational tours, and demonstrations for Belize Botanical Gardens, Florida Gulf Coast University, The Naples Botanical Gardens, Lee County Extension, Collier Fruit Growers, USDA Farm to School Program, California Rare Fruit Growers, Permaculture Voices, Learning Gate Community School, St. Petersburg Community College, Dunedin Community Garden, Swallow Tail Farms, and the Sustainable Living Show. Taylor has also co-operatively taught sessions with Eric Toensmeier of Perennial Solutions, and Wayne Weisman of the Permaculture Project. Edible Landscaping

**Edible Landscaping**

Edible landscaping is really just another term for what many call tropical home gardening. Traditionally many tropical home gardens contained a wide variety of vegetables, greens, fruits, and herbs and added much to the family diet and overall health. Many of these species are perennial, and easy to maintain. Learn which of these are most suitable for growing in Belize and how to implement them beautifully into your landscape.



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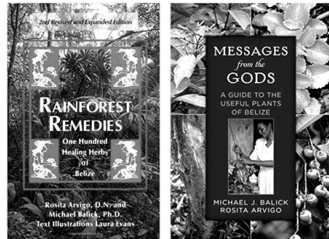
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