

ECOLOGY ACTION'S GARDEN COMPANION

GROW BIOINTENSIVE News from Around the World

A Reunion of Biointensive Farmers in the Sacred Valley of Peru

By Matt Drewno, Victory Gardens for Peace Mini-Farm Manager



Front L to R: Tour guide, Diego, Eric, Luke, Yessica. Back row: Matt Drewno, Ryan and Matt Anderson.

In January of 2019, a group of Ecology Action Farmer-Teachers took a 2-week trip to Peru to visit some of our friends in the larger Biointensive community and to explore the countryside in search of seed, soil and culture. The group included former Golden Rule Mini-Farm Field Coordinator (2012), Lucas Howerter; former The Jeavons Center Mini-Farm Manager (2011), Ryan Batjiaka; former The Jeavons Center Mini-Farm Manager (2013), Eric Buteyn; along with videographer, Matt Anderson; Diego Fragozo Hernandez, former Victory Gardens for Peace Intern (2013) and Biointensive Farmer-Teacher from the Chinampas, Mexico City; and me. We visited some great Biointensive projects, hiked ancient trade routes to mystical ruins and were privileged to meet some wonderful Biointensive leaders who are keeping the movement growing south of the equator.

We spent almost all of our time in and around the Sacred Valley near Cusco, Peru. This special area was the cradle of the Inca, one of the more recent ancient civilizations to have left their mysterious and powerful footprint in the Andean Region of South America. Between warmhearted visits with our friends Julio and Yessica, former Ecology Action Interns (2007 and 2005, respectively), their partners, the Andean Alliance for Sus-

The Jeavons Center Mini-Farm Garden Report and Ecology Action Update

By John Jeavons

After being fallow for the last season, The Jeavons Center Mini-Farm (TJC MF) is once again being planted under the supervision of Misha Ziaed, our new Mini-Farm Manager, and with the help of new Assistant Mini-Farm Manager, Melvin Castrillo, and three 8-Month Interns who began April 1—Marcia Suarez and Anna Cantillano, both from Nicaragua, and Fredrick Onyango from Kenya.

Both managers are Farmer-Teacher-Trainers who will be Three-Year Apprentices at the same time during their first years, and who have made long-term commitments to this work. They will act as teachers during workshops and tours, as well as working with the international 8-Month Interns and training

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Photo: EA staff

Photos: Matt Drewno

A Reunion

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tainable Development, and community organizer Alain Dlugosz Salas, we squeezed in a few magnificent hikes to explore some of the terraces, temples, massive stone walls and impressive waterworks of the area. With a careful eye, you can find ruins around almost every river bend, over each ridge and nestled within the vast network of plains, valleys and peaks.



Photos: Matt Drevvno

Yessica washing vegetables for her local CSA at Eco-Huella.

Julio and Yessica's Mini-Farm, *Eco-Huella* (Green Footprint), <http://alianzaandina.org/agriculture-initiative/eco-huella/> in the small town of Calca, became our basecamp for the first half of the trip. They graciously hosted us and helped as we planned our travels. The evenings were full of laughter and delicious homegrown meals straight from the garden. Maize was served at every meal, toasted, steamed on the cob, or at other times roasted. The root vegetables were always delicious: sweet potatoes, potatoes and *ulluco*, a tuber similar to a potato but with a beet-like flavor. We spent hours talking about the challenges in the world that lie ahead and the work that needs to be done to bring the Biointensive method to more people.

Julio and Yessica work in partnership with the Andean Alliance <http://alianzaandina.org/> working with *campesinos* (Latin American farmers) to maintain their cultural heritage in challenging times of social and climate change. They help set up greenhouses and teach the Biointensive method with care and sensitivity. Their goal is to increase the sustainability of *campesino* villages by integrating the Biointensive method and economic mini-farming while promoting the exchange of traditional ideas and restoring dignity to the life of the *campesino*.

One of the great challenges for *campesinos* is mirrored in many other indigenous cultures around the world. Decades of policies favoring resource extraction over conservation and human rights have made the livelihood of the *campesino* more difficult. The youth migrate to the cities, leaving an aging population to work the land and carry on the culture. These cultures are as precious as any—rich in tradition, bright in color, and intimately tied to the land. We were humbled to spend time with several wonderful *campesinos* who willingly shared their seeds and stories. In addition, climate change is having a major effect in these sensitive mountain regions. Despite the challenges, you can see the strength and joy in their faces. They truly are a humble and resilient people with a precious culture.

After a few days of settling in at *Eco-Huella*, we visited the ruins of Moray, where terraces that follow the valley contours served as agricultural research stations for developing and adapting the many unique crops to this region. It is said that as the sun moves across the horizon these terraces store heat and cold, and the convection of air and moisture creates microclimates which mimic a broad array of the microclimates found throughout the region.



An ancient agricultural research station at Moray.

Staple crops such as maize and quinoa, luscious root crops like potatoes, *ulluco*, *yacon*, *oca*, *mashua* (edible nasturtium root) and *tarwi* (an edible lupine bean) were grown on the terraces and adapted to the conditions. As unique varieties became genetically stable and suited to the different microclimates within the terraces, they were then taken to specific growing regions throughout the Incan Empire. Sadly, the terraces are no longer used today. However, it isn't hard to imagine the people working the Earth, tending to the crops, and **Continued on page 4**

TJC Mini-Farm Garden Report

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them to become GROW BIOINTENSIVE Farmer-Teacher-Trainers when they return to their countries.



Photo: EA staff

Five ten-bed unit models will be planted with compost and food crops, collecting data for the Soil Sustainability Research Project (SSRP) as well as our on-going research on crops in the other growing beds.

Ecology Action Headquarters at The Jeavons Center continues to act as the global coordinating hub for International Partners and colleagues in Latin America, Kenya, Senegal, Malawi, Russia and Canada, plus the cutting-edge SSRP, which aims to determine once and for all the smallest possible garden size needed to grow enough food to feed one person a complete diet annually. The key is the growing of compost crops with the same well-chosen diet crops in order to simultaneously grow the compost materials needed to feed the garden with the resulting compost. To do this we are in communication with our International Partner, ECOPOL, which has designated eleven independent sites throughout Latin America, as well as gardens in Italy and Spain. Currently we are working on developing protocols for all to follow to ensure synchronization among all sites.

We will continue advising and funding our International Partners. We plan to continue to translate existing booklets into other languages. We are also developing for release this year a two-hour nine-part video workshop online. Five fifteen-minute segments are already complete; the remaining four are in production. Filmed at GROW BIOINTENSIVE workshops in the US, and on site in Latin America and Africa, the video demonstrates GB through its eight key elements.

In perhaps the most important development in terms of outreach and accessibility, Ecology Action has begun the process of digitally scanning all of our written educational booklets and information articles for download and purchase on our website. Beginning with an expanded version of our popular Farmer's Handbook, we are uploading our 40 self-teaching booklets. Many are available as a free download; others are available for a nominal donation. See www.growbiointensive.org/ePubs/index.html.

The website is continuously updated, and in addition to the written educational material there are also videos, including a GB skills video available for free viewing and download. The videos demonstrate all of the skills needed to become an effective GB gardener and mini-farmer. They are in English with French and Spanish subtitles, and are informative as well as fun to watch. They can be found at www.growbiointensive.org/Self_Teaching.html. Through this video series we now have the ability to reach anyone anywhere with an Internet connection. Before this, reach was limited by the need for one person to teach another person directly, through a workshop, internship or apprenticeship, but now the reach is practically global.

Ecology Action continues to translate our educational materials into new languages, as well as update existing translations. Our handbook, *How to Grow More Vegetables...*, is now available online in Spanish, Kiswahili, French, and Brazilian Portuguese. See the newly added links to Spanish and Kiswahili on page 14.

We offer two GB workshops a year and are both excited and encouraged by the number of younger faces we saw in November 2018 and March 2019. Half of the twenty-five participants in November were under thirty, including several young couples, and all listed food sovereignty as a personal interest. The workshop was a great success, featuring participants from across the US as well as Canada, all of whom not only learned the full GROW BIOINTENSIVE method but were able to eat meals made from Biointensively grown crops, including breads. Most had plans to take their newfound knowledge back home and start gardens or mini-farms.

A Reunion

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the great harvests that must have been celebrated in this special place.

Most of the Sacred Valley is well above sea level, starting at 5,000'–8,000' with peaks above 10,000'–15,000'. It took several days to acclimate to the altitude, and just walking the streets in town required some careful breathing. Next, we visited Machu Picchu, a sacred site for the Incas. It is a place so beautiful that you can hardly believe what you're looking at. The architecture and elaborate system of drains and aqueducts baffle the mind, and the way the ruins are so perfectly situated on this peak leaves you speechless. It is so impeccably positioned at the confluence of rivers, surrounded by rings of lush and dramatic steep mountains. The place radiates serene, awe-inspiring beauty.



Touring the in-ground swimming pool transformed into a Biointensive mini-farm at *Arariwakuna*.

After a night's rest in Calca, we hiked to the peak of a large mountain where we camped for the night. We met an old *campesino* who lived alongside a canal dug some 500 years ago by the Incans utilizing a spring located on the side of the mountain. He was quiet and had a wonderful sense of humor. His eyes, like those of so many other *campesinos* we met, were gentle and observant.

Our next stop was to visit a fellow Biointensive farmer and seed saver in Tippon named Alain Dlugosz Salas. Alain is a friend of Diego's and a leader in the Latin American seed-saving network *Red Semillas* (Seed Network). An hour bus ride from Calca, and we were greeted warmly by Alain and his family. We were served warm cacao and fresh baked bread, and a delicious soup of roots and vegetables from the farm. There were bright and beautiful flowers everywhere.



The seed collection at *Arariwakuna Casa de Semillas*.

Alain carries a visionary spirit. Several years back he was guided to the town of Tippon by a dream. In this dream he was growing ancient plants out to seed in a ruin nestled within the hillside of the Sacred Valley. The ruins sat beneath a large peak, and his seeds became the foundation of a new community. The dream was powerful for Alain, and five months ago he and his family found the spot, purchased the land and began his great work.

The name of Alain's project is *Arariwakuna* which is Quechuan for 'Watchmen'. In Quechuan culture the *Arariwakunas* guarded the *chakras* (small plots of land which are Biointensively farmed by the community) and the crops from animals and thieves. The *chakras* are still farmed today, though the tradition of the *Arariwakuna* has faded in the Sacred Valley. This tradition inspired Alain to name his project *Arariwakuna*. It was clear, as we walked through the community and greeted neighbors, that Alain takes his role seriously and with great love for his community.

The project consists of a Biointensive demonstration mini-farm, a seed bank that houses over 1,000 varieties of seeds, and a restaurant that serves traditional Incan food (including a breakfast fava bean soup-drink that is delicious!). The name of the seed bank is *Casa de Semillas* (House of Seeds). We were astonished to realize Alain and his family had accomplished so much in such a short time. They have converted an in-ground swimming pool into a greenhouse, established the restaurant with a veranda made of cob for serving, created a community soccer field and built a beautiful stone and cob house.

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Food Versus the Big City of Istanbul

By Sevgi Ortaç

Article excerpted from ILEIA, www.ileia.org/2017/04/18/food-versus-big-city-istanbul/.

The ILEIA Centre for learning about sustainable agriculture was established in 1984 as a response to the realization that Green Revolution technology was neither sustainable nor feasible for many small-scale farmers around the world. It is an independent organization based in the Netherlands that supports agro-ecological approaches and family farming.

Istanbul, like many other cities, is under heavy pressure from urban development projects. In the face of this threat, the DÜRTÜK collective supports small-scale farmers in and around Istanbul by organizing reliable demand for the produce from urban gardens, and by building a supportive community around them. This initiative not only provides urban residents with local and fairly priced vegetables, but is also a line of defense against the destruction of the city's historic vegetable gardens and a space of action in Istanbul's violent, paralyzing atmosphere.

DÜRTÜK is the acronym for Producers and Consumers in Resistance (*Direnen Üretici Tüketici Kolektifi* in Turkish). The DÜRTÜK collective was born in 2015 as common ground between the struggle for urban spaces and the emerging food sovereignty movement in Istanbul.



Photos: Uygur Bulut

The public looks on as the garden is walled off.

Every Monday our collective makes a list of vegetables available from local farmers, sets fair prices, and collects orders from our members. We also talk about the most urgent developments concerning the vegetable gardens, which are under constant threat from urban transformation projects. On Thursdays, we bring the produce to a central district of Istanbul where members can pick up their orders and socialize amongst themselves.

Finding common ground

In 2013, protests erupted all over Turkey in response to the violent dismantling of demonstrations against development plans that would destroy the Taksim Gezi Park, one of the few green places in the city. The protests brought together a rich multiplicity of people and groups opposing the enclosure of public spaces, destructive urban transformation projects, the ecological devastation, as well as ongoing state oppression and violence.

Bostans—an edible heritage

DÜRTÜK cooperates with the small-scale orchards and vegetable gardens situated in central Istanbul known as *bostans* that are run by professional farmers. They grow green, leafy vegetables and herbs that can be harvested various times a week. The farmers sell to (and at) open markets, restaurants and grocery stores, as well as through DÜRTÜK, and directly from the *bostan*. Their cultivation methods are a combination of those inherited from generations of gardeners before them and other techniques.

While today only a few remain active, historically the *bostans* of Istanbul helped feed the city. In fact, people depended on these gardens for survival during wars and famines. Today they are considered a nostalgic memory that is irrelevant to urban life. But nothing could be further from the truth. In recent years, *bostans* have convened people in defense of cultural heritage, the right to the city and urban food production.

The Land Walls: Defending and feeding the city

One of the producers we currently work with is Özkan Ökten. He works in a *bostan* in the moats of the ancient fort of Byzantium, called the Theodosian Land Walls of Constantinople, recognized as UNESCO World Heritage. Özkan, in his 40s, is also the head of a non-profit that aims to sustain the old and new *bostans* of Istanbul and supports the working conditions of its farmers.

Özkan and around 20 other families make a living by cultivating the moats of the Walls. They are the second or third generation of farmers who have migrated to Istanbul to earn a living. This history of agricultural activity around the Land Walls is deeply tied to the history of the Walls, which dates back to the fifth century. As such, the Walls and the *bostans* together represent great urban know-how about both defending and feeding

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Five Factors of GB Compost

By John Jeavons

Ecology Action has discovered five factors that enable GROW BIOINTENSIVE compost to have much more power quantitatively and qualitatively:

1. More uncured compost is created due to higher crop yields. The result can be up to 2 to 6 times the cured compost.
2. More compost may be created when using a cold composting process. You can try this by using:
 - a. slightly more carbonaceous material and/or less nitrogenous material,
 - b. more coarse materials and less fine ones,
 - c. slightly more soil when building the pile,
 - d. slightly more water when building the pile, and
 - e. a “no turn” approach.



Photo: ECOPOP staff

GB compost building in Ecuador.

The first time we did this, we got 38% more cured compost than when using the standard composting process.

3. Building a pile with a carbon/nitrogen ratio of 45:1, instead of 30:1 or 60:1. Over time the 45:1 cured compost consistently produces higher yields of grain and biomass. In one test comparing these three types of compost, the 45:1-derived cured compost produced double the grain and dry biomass yields.

4. Building a pile which uses more structural forms of carbon (cellulose and lignin—mature straw and stalks) and less metabolic forms of carbon (sugars and starches—immature leaves and stalks). The result is a more durable, lasting cured compost.

5. Maintaining the curing compost pile carefully. Accurately build the pile according to instructions given in *How to Grow More Vegetables*, 2018, 9th ed.

- In the location where you will build the compost pile, loosen the soil to 12” and water well.
- Water each successive layer as it is added: a 2” mature crop layer, a 2” immature crop layer and then a thin soil layer. Keep the pile’s sides square and the top level.
- Insure the pile is evenly moist daily.
- Keep the pile shaded with 30% shade netting when the weather is hot. Cover with a waterproof tarp when it rains.

A cured compost pile that has been properly maintained may contain up to 20% or more humus than the more usual 8% to 10%! All cured compost is not equal. One cubic foot of cured compost may have double or more nutrients than uncured compost.

As more agricultural lands become desertified, having sufficient compost is going to be the most important thing in food-raising. This is because it enables the soil to retain water and nutrients. The next time you build a compost pile, consider using the GB method and see if the results are better than average.

Enhancing Our Small-Scale Farms Sustainably with the Biointensive Method

By Matt Drewno

The following is an excerpt from the booklet *Achieving More with Less*, to be published later this year.

“Many countries have tried to promote large-scale farming, believing that smallholder farming is inefficient, backward, and resistant to change. The results were unimpressive and sometimes disastrous.”

World Development Report 2008, The World Bank

As many corporations and governments continue to push for more chemically intensive, large-scale GMO farms, the United Nations has declared that this is not the solution for feeding the world. In their 2013 publication titled “Trade and Environmental Review 2013: Wake Up Before It’s Too Late” the UN declares food sovereignty as well as food security key issues to the future, citing that industrialized farming methods and

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Enhancing Small-Scale Farms

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“quick-fix technological solutions” have done more to harm the situation than help. Food sovereignty incorporates the human rights of farmers.



GB crops at Victory Gardens for Peace.

The Biointensive method is a best-practices approach to small-scale farming. When the 8 principles of the GROW BIOINTENSIVE method are applied to small-scale farms and backyard gardens, the result is an increase in yields and soil health, a decrease in resource consumption, and a further micro-scaling of the human agricultural footprint. This methodology can help the small farmers of the world empower themselves to provide more for themselves and their communities, while requiring less fertilizer, energy and water.

In contrast, large-scale industrial GMO and chemical farming is destroying soil faster than it can be replenished, consumes far more energy and resources, and is far less efficient at producing food.

However, using the GB method comes with responsibility: an increase in yields can mean an increase in the rate at which you are extracting soil nutrients. The final of the 8 principles of the GROW BIOINTENSIVE method is A Whole-Systems Perspective. It is vitally important that these principles be used together, or we risk intensifying the loss of our soils as well as decreasing yields. We must also minimize exportation of crops—grow soil first, food second and money third.

The 8 Principles of the GB Method

- Deep Soil Preparation
- Composting
- Intensive Planting

Companion Planting

- Carbon Farming
- Calorie Farming
- Seed Saving
- A Whole-Systems Perspective

In a study conducted at Oregon State University (titled Trophic Issues, November 21, 2012) it is estimated that if the rest of the world ate as Americans do, half of the global population would die of starvation due to lack of land resources. *National Geographic* stated in 2015 that 38% of the Earth’s ice-free surface is dedicated to farming—the rest of it is un-farmable. Populations are growing, but we are losing soil at a frightening pace.

If you take the total arable land area and divide it by the total population, there is less than 9,000 sq ft per person available to grow each person’s complete diet. Half of this land must be preserved in ecosystems if we are to have adequate habitat for species other than ourselves, and for functioning climate, hydrological and carbon cycles. The average vegan diet requires 7,000 sq ft conventionally grown, which means a total of 14,000 sq ft would be required per person to also include the protection of our ecosystems. There is not enough available land to support this.

Understanding the escalating world situation, Ecology Action has worked for over 45 years to develop diets which can be grown in less than 4,500 sq ft, and require a fraction of the resources to grow. The diet design we are about to look at in this booklet is revolutionary. We are now experimenting with a complete diet design, with full sustainability considered in 1,000 sq ft or less, that can be accomplished in most backyard gardens. Reestablishing a strong gardening culture around the world will be vitally important in the future. This is the art of transforming a situation of scarcity into abundance.

Diet and Land Area Requirements	Land Area Requirements	Efficiency Index
Conventionally Grown American Diet	100,000 sq ft	1x
Conventionally Grown Diet (1/2 Animal Products Consumed)	70,000 sq ft	1.4x
Conventionally Grown Vegan Diet	7,000 sq ft	14x
Biointensively Grown 10-Bed Unit potentially	1,000 sq ft	100x

Ecology Action's Annual Report for 2018

Message from the Director

Dear Friends,

Our world continues to spin, at times with less control. The climate keeps changing, and as we experience the hottest summers, strongest storms, and most destructive flooding on record, it is becoming more apparent what many of us have known for years to be true: the world of stability in which we are living is changing. Increasingly unsustainable agricultural systems are contributing significantly to the current climate crisis. With the planet's population continuing to increase rapidly, as soil fertility around the globe is increasingly depleted, now more than ever we are in need of a clear, living path forward—a method for sequestering excess carbon out of the atmosphere where it is a problem, and back into the soil where it is useful. We need to increase plant populations per unit of area, and a method for feeding many people with little space and few water, nutrient and energy resources. We need a method for creating maximum nutrition for people and soil with minimal inputs. GROW BIOINTENSIVE is this method.

It feels like spring here in Northern California. As I look at the greening hills and buds leafing out on the oak trees, I am reminded that a fallow period is always followed by new growth. Ecology Action had a somewhat dormant year in 2018, with limited staffing and fallow fields at The Jeavons Center. Like a leafing tree, 2019 has seen a flurry of fresh growth, complete with new hires, new Farmer-Teachers, new international Interns and new alliances and plans for the future. These developments have been made possible through grant funding and financial help from friends such as you, and we are grateful.

The GROW BIOINTENSIVE word continues to spread around the globe, and our presence in Latin America and Africa, especially, is growing. The method is being used to effect real change in people's lives. A case in point: there are garden sites in Kenya in conjunction with AIDS orphanages feeding children nutrient-dense food grown on-site. Our partners throughout the African continent continue forging new alliances with like-minded groups, conducting workshops, and developing garden sites, fruit tree nurseries, and seed exchanges.

ECOPOL, our sister organization in Latin America, has showed no sign of slowing down and is in fact expanding more on that continent and even into Europe. Juan Manuel, our good friend and leader of ECOPOL, is more dedicated than ever

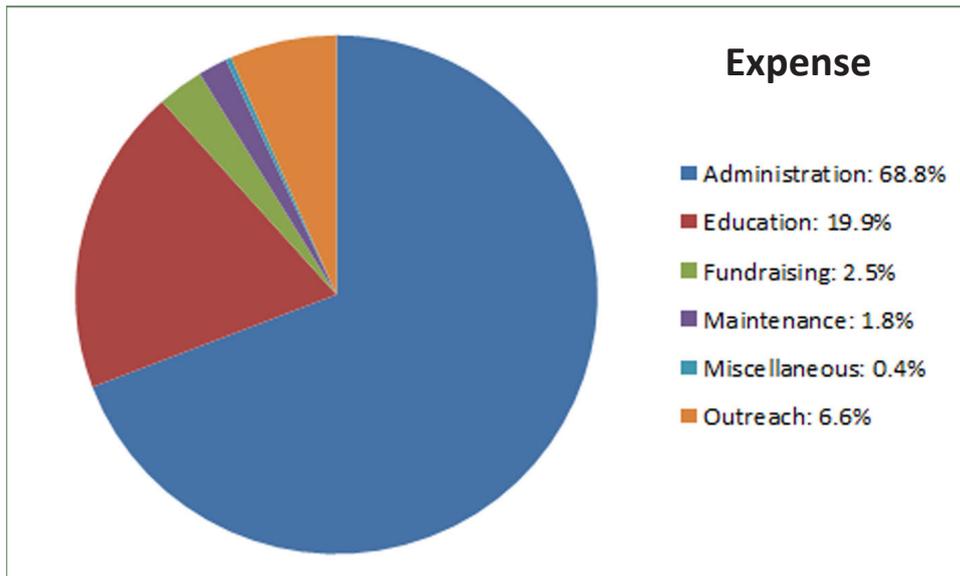
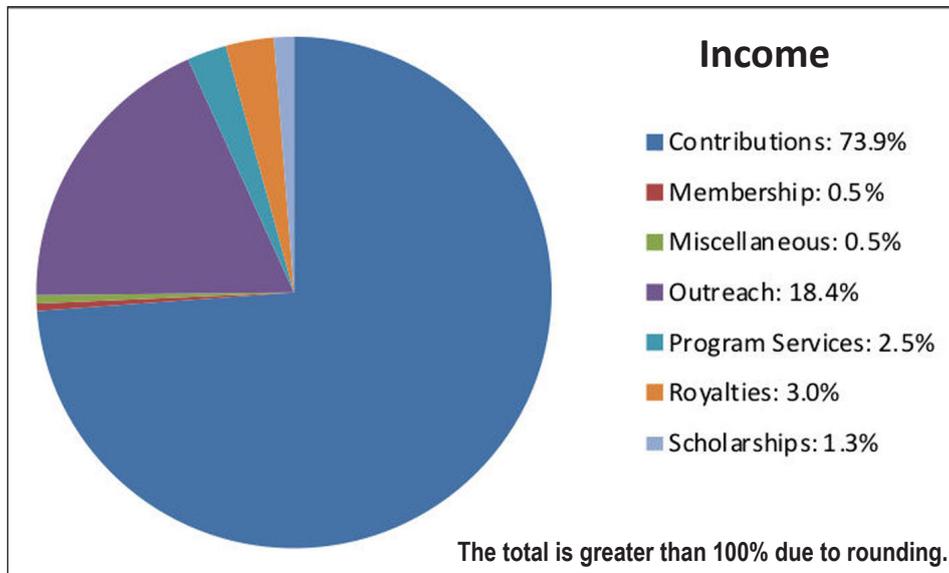
to his mission of reaching as many people as possible with the GROW BIOINTENSIVE life-giving perspective. Presenting at conferences in both Spain and Italy this year, Juan also travelled to Chile for the first time, spending over a month conducting workshops and making new connections, and continuing his work with the Mexican Seed Guardians Movement.

We are also excited about our expanded online presence, with all of our self-teaching mini-series booklets published during the decades now scanned and available for download at <http://growbiointensive.org/ePubs/index.html>. The entire website continues to be refined and now includes high-quality videos detailing every aspect of the GROW BIOINTENSIVE method, from double-digging to composting to harvesting. Now anyone with an Internet connection anywhere in the world can attend a virtual workshop and see for themselves how they can regenerate their soil and feed their families.

Spring has sprung on the mountain; the birds are singing, and leaves are emerging. We are grateful for the safety and stability enjoyed during our brief period of dormancy, and incredibly thankful for those of you who support us, financially and in many other forms. We look now to the future, ripe with sustainable growth, and hope for a year filled with the conditions needed to branch out further and thrive more vigorously. Just as our beautiful, strong oaks need sunshine, rain, microbes in the soil, and other energies to grow, so we too rely on the energy of each of you to gain the breadth and vitality needed to move forward and re-invigorate the planet. We're not trying to save our precious Earth; we each are doing it, one day at a time, and together. Thank you so much for joining us on this wonderful journey.

Best Wishes,
John Jeavons
Executive Director, Ecology Action

Finances for 2018



The Administration expense is higher than in previous years because The Jeavons Center Mini-Farm was inactive and there was correspondingly less staff. In 2019 funding has been fully enhanced, and TJC Mini-Farm program is active again.

Grateful Thanks to Our Major Donors:

Buddhist Global Relief ❖ Virginia & Clifford Mudd/Burke ❖ Ceres Trust ❖ Yvon Chouinard ❖ Conservation, Food and Health Foundation ❖ Jan Elizabeth ❖ Eddie Gelsman ❖ Ms Irma Giordano ❖ Kim Krull ❖ Sandra Mardigian & Doug Burck ❖ Marin Community Foundation ❖ Thomas Marino ❖ Wardlaw Foundation

And many thanks to all our partners who have supported us in many ways over the years.

A Reunion

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Later that afternoon we sat with Alain as he shared how the model of traditional Incan society has an important role to play in organizing and empowering *campesinos* who are struggling to maintain their traditional ways. According to Alain, in this ancient model, those who work the land are most prized and respected. He went on to explain how the Inca grew *mani* (the peanut plant) and how this crop symbolized the structure of Incan society.

The peanut is the seed of the *mani*. As the *mani* plant matures, peanuts are formed underground in a radius off the main roots of the plant. The nuts are seeds which will go on to form plants of their own. This outwardly branching growth pattern forms networks which perpetuate the ecosystem around the plant, in the same way the small Incan communities were connected to the larger centers of Incan culture and connections were maintained through networks of communication and trade. Many of the priest class of Incan society were found buried with gold and silver peanuts or jewelry containing peanut symbolism.

When I asked Alain how he sees *campesino* culture returning to this resilient form of community, he responded with a smile, stating, “This is the role of *Casa de Semillas*: the seeds and saving of seeds spread just like *mani*, and the basis of our culture is seeds, without which we do not have life, the sharing of food or the structure of community.”

The next day we visited the area of Tippon, the site of an ancient agricultural station similar in function to Moray. This is the place Alain had seen in his dreams. We hiked a network of ancient ruins linked by small aqueducts which strikingly reminded me of the *mani* conversation we had had the day before. These aqueducts ran in perfectly constructed channels from the ridges of the mountains to small communities perched on the cliffs. Often these channels then branched off into individual structures which seemed to be sites for communal use and ceremony. Again, the architecture was amazing—the stonework absolutely perfect.

After we came around a beautiful set of ruins, the view opened up to the valley of Tippon below. As we walked the ruins, Alain excitedly greeted each of the docents,

and they laughed together as Alain declared he was going to start growing food and seed here again. The docents were local community members who once farmed the terraces before the government expropriated the site and declared it no longer suitable for farming, only tourism. They gave the community members a choice—to work as docents to oversee the care of the ruins, or to leave with nothing. Most chose to stay and be docents. The terraces, seeded with perennial grass, are maintained by mowing, and the thousands of tourists each year are walking all over the ancient soils, compacting them and destroying the soil structure so carefully created and maintained over hundreds of years.



An ancient irrigation site.

After a long night of storytelling and music, the good-byes the following morning were bittersweet. Alain had so graciously offered his time, hospitality (and seeds!), and he had much work to get back to. We had to return to Cusco to catch our flights.

As I look back, I realize that throughout our travels in Peru the people we met and worked with shared a common vision—**the need to care** for soil and resources, save seeds, and return a sense of dignity to *campesino* culture which has for millennia subsisted on protecting the land. As changing times bring new generations to carry on these traditions, a great gap exists. There is a similar gap here in America, where the average age of our farmers is 58. As a human race we must ask the question, who will care for our soil, water, and seeds? **We have to—you and I.** After all, we are all dependent on our Mother Earth and we all share the responsibility of honoring the great work ahead, a work more ancient

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Biointensive Team Corner

Misha Zaied,
Manager at TJC Mini-Farm



I grew up in Willits, California, helping my grandfather in his Bio-intensive garden over the years. I moved to Santa Barbara to pursue a BS in Computer Science. At the same time, I started working at the Isla Vista Food Cooperative, learning about the distribution side

of the food industry. Two years after starting my degree, I left college behind to work full-time at the food co-op, where I found much more gratification working with the public, local farmers, and community-conscious food choices. John Jeavons found me content in that community, but eager to take the next step into the food-producing process. With my long-time dream of closed-loop sustainability, it was an easy decision for me to move back to Willits and join Ecology Action's team to support their mission of research, teaching, and practicing closed-loop, ecology-conscious agriculture. I'm now helping to facilitate the learning process of international interns and am incredibly grateful and fortunate to work with the intelligent, forward-thinking Farmer-Teacher-Leaders who will be the keystones of our future.

Fire Cider

Adapted from a recipe by Rosemary Gladstar. See book review on page 14. Fire cider is said to restore and invigorate, and many claim it has benefits that include boosting energy, warding off colds and flus, easing sinus congestion, lowering blood sugar, curbing cravings, and aiding digestion. If you'd like to try this home remedy for yourself, see the recipe below.

You will need:

- 1 onion, peeled and chopped (antibacterial properties)
- 2 garlic cloves, peeled and minced (antibacterial properties)
- 2" x 1 1/2" ginger root, chopped (powerful antioxidant, anti-inflammatory and aids digestion)
- 1 tsp powdered turmeric (anti-inflammatory properties

and digestion aid)

- 1 Tbsp dried rosemary (to boost immunity)
- 1 tsp burdock (powerful antioxidant)
- 1 lemon with peel, sliced with seeds removed (to boost immunity)
- 1/4–1/2 tsp cayenne pepper (to boost metabolism and immunity)
- 1/4–1/2 tsp dried horseradish (aids decongestion)
- 1 cinnamon stick (antioxidant, anti-inflammatory and reduces blood sugar)
- 6 whole cloves (antioxidant, maybe help reduce blood sugar)
- 2–4 Tbsp honey
- 3–4 cups apple cider vinegar (antibacterial and antioxidant properties)
- 1 quart jar with a plastic or other non-reactive lid

Put first eleven ingredients in glass jar and fill with apple cider vinegar to cover. Put lid on tightly and store in a cool, dark place for 4–6 weeks. Shake occasionally. Strain liquid into another container and discard all but the cinnamon stick. Place stick back in liquid, add honey and stir well. For best results, store in a cool place. Keeps for two months.

To use as a tonic: Take 1 tablespoon undiluted, 3 times daily to ward off a cold. This can temporarily clear congestion. It also supports the immune system.

As an after-workout pick-me-up: Add one tablespoon to water. Apple cider vinegar is high in potassium, a necessary electrolyte. Ginger warms the stomach, allowing it to absorb the water.

Use as a dressing: Drizzle a little or a lot on vegetables, greens or salad.



Photo: <http://picdeer.com/tag/firecider>

Food Versus Istanbul

Continued from page 5

the city.

Gardening continues to be the most consistent activity in the moats and around the walled zone. Although this is keeping the area lively and productive, it is neglected both as a means to conserve the area and as cultural heritage. In recent years some of the very old and active *bostans* in the same area, known as *Yedikule Bostanlari*, were destroyed by the municipality to make way for a park that will serve the surrounding gentrifying neighbourhoods.



The Mosque Garden *bostan* was saved and declared a national heritage landmark in 2015.

The Mosque Garden: Threats and resistance

One active but endangered *bostan* of Istanbul is Piyalepaşa Camii Bostanı (Piyalepaşa Mosque Garden), which was supposed to become a car park in 2013. Mehmet and Cemile, a couple in their 60s, struggle to keep the *bostan* going in the middle of the rapidly transforming center of Istanbul. The *bostan*'s history is closely related to that of the mosque, having been a source of income for the mosque since the 16th century. An unlikely alliance of activists, lawyers, archeologists and historians stood up for its protection, and succeeded. Not only was Piyalepaşa Camii Bostanı saved from becoming a car park, it was also registered as a historical heritage landmark in 2015.

This has been an exemplary case in Istanbul of how agricultural land can be recognized as cultural heritage. But the municipality and associated construction companies are continuing to put pressure on Mehmet and Cemile to move somewhere else. The latest rumor is

that the *bostan* will be turned into a hobby garden for the municipality so that they can make a profit from it. The near future of this *bostan* is uncertain for other reasons as well. Mehmet and Cemile are old and they do not have enough strength to cultivate all their land. Because of the low prices of agricultural produce, and the equally low social status of farming in Turkey, their children do not have an interest in keeping the business going.

No recognition, no security

Urban development speculators breathing down their necks is not the only worry for farmers like Mehmet and Cemile. Although the *bostans* are quite central in the city and are surrounded by residential areas, the farmers struggle to get fair prices for their produce. The problem is that they cannot compete with the prices of imported, industrialized food.

Moreover, despite the fact that the farmers have been cultivating their land for generations, their land tenure is insecure and they can be evicted at any moment. The land they cultivate is not considered agricultural land so they cannot formally register as farmers. This means that they are not recognized in agricultural policies and don't get access to public social security programs.

Cultivating hope

Taksim, where we have our base, has been the scene of many political demonstrations and marches. It is a historically significant place. Demonstrations are banned now, and a state of emergency has been in place since the attempted coup in 2016. Police are everywhere and constantly present. This has made many people afraid of coming to Taksim, which limits the growth of our orders. We haven't been able to hold big meetings in the past year, and we are also having difficulty finding volunteers to invest time in DÜRTÜK's operations and activities.

But even if there are not many weekly orders, we are continuing. We are trying to organize events and keep the discussion alive on how to continue and develop the organization. We discuss food sovereignty in an international context, and talk about themes such as Community Supported Agriculture models in different countries and alternative economies. We organize picnics and participate in solidarity markets to find new members. We come together with other organizations to discuss issues and to gather strength.

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Food Versus Istanbul

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The weekly routine of DÜRTÜK's meetings represents hopeful, common ground for gardeners, farmers, consumers, activists and other citizens to exchange experiences about how they cope in their precarious situations, and to support each other. At DÜRTÜK, the urgent need to save and to defend agricultural spaces meets the humble labor of cultivating and reproducing everyday life.

Sevgi Ortaç (durtukgirdibostana@gmail.com/ sevgiortac@gmail.com) is a member of DÜRTÜK, a visual artist and a researcher, born and living in Istanbul. <https://www.facebook.com/durtuk/>

“Don't it always seem to go,
that you don't know what
you've got till it's gone.
Paved paradise, put up a
parking lot.”

—Joni Mitchell, 1970

A Reunion

Continued from page 10

than the Inca, full of color and joy and the celebration of life.

It was an honor to travel with my friends whom I view as heroes in their own right. We have already decided to make a similar trip annually, and next year we are heading to Oaxaca to visit some of the Biointensive projects in that region, collect seeds and of course sample some of the locally distilled spirits. My traveling companions and I want to extend endless gratitude to those who took care of us on our trip—Julio, Yessica, Alain and all of the *campesinos* who took a moment from their work to share stories of life and work. May we all travel well!

Like Us on Facebook

Ecology Action's Facebook page continues to be a helpful source of GROW BIOINTENSIVE information for readers everywhere. Below is an example of the kind of question and answer found on our page. Like us on Facebook, www.facebook.com/EcologyActionoftheMidPenninsula/.

Question: I was directed to you by the agriculture faculty at Montana State University. I am attempting to determine the average yield in terms of calories per acre one could expect from a nutritionally complete, Biointensive, sustainable cropping system operating in the Bitterroot Valley of western Montana. Thanks!

Answer: Probably ~15+ to 30+ x 876,000 calories/acre with Closed-Loop GROW BIOINTENSIVE Sustainable Small-Scale Farming growing nutritionally complete diets. Best, John

Perspective: The answer is practical for all who want to grow part or all of a complete balanced diet Biointensively. One average person consumes 876,000 calories annually (2,400 calories per day x 365). There are 43,560 square feet in an acre. Based on Ecology Action research, a carefully designed vegan diet, as well as the needed compost materials, can be grown in 20 100-sq-ft Biointensive beds, assuming GB intermediate yields. With space for one-foot-wide paths added, the total area needed comes to 2,500 sq ft. If 15 of these 20-bed units are grown on one acre, the food-growing area amounts to 37,500 sq ft, which leaves 6,060 sq ft for a home, greenhouse and compost piles. Therefore, one acre produces 13,140,000 calories (15 x 876,000).

The Jeavons Center and Victory Gardens for Peace are developing a design that could grow all the food for a complete balanced diet for one person annually, as well as all the compost materials from the carefully chosen diet, in 10 beds. On that basis, one acre can allow the growing of 30 complete diets. Therefore, one acre produces 26,280,000 calories (30 x 876,000). The local production of food can be increasingly possible with closed-loop sustainable GROW BIOINTENSIVE.

Book Reviews

Rosemary Gladstar's Herbal Recipes for Vibrant Health: 175 Teas, Tonics, Oils, Salves, Tinctures, and Other Natural Remedies for the Entire Family

by Rosemary Gladstar (Storey, 2008)

Review by Amazon

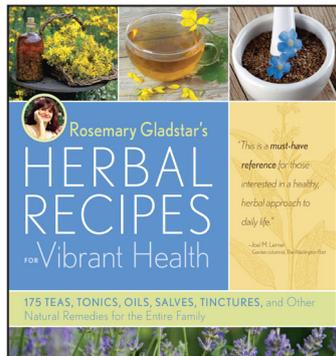


Photo: Amazon.com

Promote vibrant health and radiant beauty, soothe everyday ailments, and ease persistent stress with these simple, natural cures for everything from dry skin and infant colic to cold symptoms and insomnia. Renowned herbalist Rosemary Gladstar provides 175 proven therapies and herbal remedies that are easy to prepare and safe enough for children. Offering a potent and effective alternative to commercial pharmaceuticals, Gladstar will inspire you to nurture yourself and those you love with nature's healing herbs.

Offering a potent and effective alternative to commercial pharmaceuticals, Gladstar will inspire you to nurture yourself and those you love with nature's healing herbs.

Animal, Vegetable, Miracle: A Year of Food Life

by Barbara Kingsolver (Harper Perennial, 2017)

Review from www.animalvegetablemiracle.com/

Author Barbara Kingsolver and her family abandoned

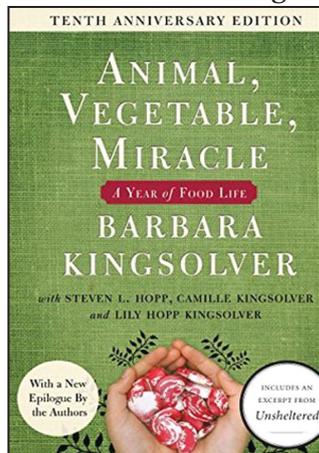


Photo: www.animalvegetablemiracle.com/

the industrial-food pipeline to live a rural life, vowing that, for one year, they'd only buy food raised in their own neighborhood, grow it themselves, or learn to live without it. Part memoir, part journalistic investigation, *Animal, Vegetable, Miracle* is a fascinating narrative that will open your eyes in a hundred new ways to an old truth: You are what you eat.

Now, in a beautiful deluxe trade paperback edition celebrating the 10th anniversary of this beloved work, Kingsolver, husband Steven Hopp and their daughters Camille and Lily contribute new chapters taking stock

of the last decade and how their decision to align their lives with the local food chain has continued to shape their destinies.

“Our highest shopping goal was to get our food from so close to home, we'd know the person who grew it. Often that turned out to be ourselves as we learned to produce what we needed, starting with dirt, seeds, and enough knowledge to muddle through.”

—Barbara Kingsolver

The Incas (Ancient Peoples and Places)

by Craig Morris and Adriana von Hagen (Thames & Hudson, 2012)

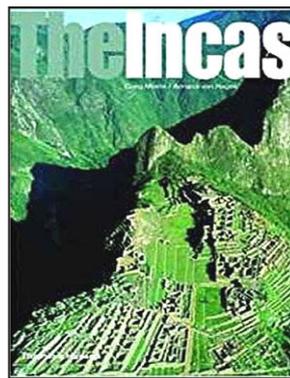


Photo: Amazon.com

Review adapted from Amazon.com

There are many books on the subject of the Incas, with mixed interpretations of their history and the destruction of their civilization, but *The Incas* reflects the dedication and sound knowledge Von Hagen, and her co-author, Craig Morris, bring to this volume on the development of the Inca, their culture and beliefs and how they impacted daily life. In addition, archaeology by geographical region, the importance of constructing roads, building expertise and communication and their interaction with other cultures are dealt with in an insightful manner. The end of the culture at the hand of the Spaniards is covered in the last chapter.

There are very clear maps throughout that are useful in understanding the extensive geography in the book. It is written in a manner that makes for an easy and at times exciting read.

New Translations of HTGMV!

The Spanish edition of HTGMV is available here <http://growbiointensive.org/HTGMVSpanish/index.html>.

The Kiswahili edition of HTGMV is available here <http://growbiointensive.org/HTGMVKiswahili/>.

ECOLOGY ACTION'S GARDEN COMPANION

~ Published three times a year ~

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Support Ecology Action's Work

Since 1972, EA has been researching and demonstrating the growing edge of sustainable food raising and making this knowledge available to people everywhere.

Your support dollars enable this growth of knowledge and global outreach.

In addition to your project-specific support, please consider increasing your general support so that we may continue to expand the availability of this fundamental knowledge to people everywhere—and grow a healthier, fairer, more hopeful tomorrow for us all.

◇ EA Events ◇

June 15

Applications due for the next Intern/Apprentice season, February–November, 2020.

July 27

9-Saturdays Course Part 2—Garden Planning Simplified registration deadline. www.growbiointensive.org/9WeekCourse/index.html.

August 2–4 (tentative)

3-Day GROW BIOINTENSIVESM “Closed-Loop” Sustainable Mini-Farming Teacher Certification Workshop, www.growbiointensive.org/events_main.html?tab=0#. Location to be decided, either The Jeavons Center, Willits, CA or The Victory Gardens for Peace in Mendocino, CA.

August 15

Apprentice and Intern decisions made for 2020.

August 17–October 12

Ecology Action GROW BIOINTENSIVESM Sustainable Mini-Farming 9-Saturdays Course Part 2—Garden Planning Simplified.

November 1–3

3-Day GROW BIOINTENSIVESM “Closed-Loop” Sustainable Mini-Farming Workshop, www.growbiointensive.org/events_main.html?tab=0#, Willits, CA. Pre-registration required.

YES, I would like to support Ecology Action's global outreach. Annual membership begins at the \$40 contribution level and includes Ecology Action's triannual Newsletter.

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<input type="checkbox"/> Region - \$5,000	<input type="checkbox"/> World of Difference - \$10,000	<input type="checkbox"/> Other - \$ _____

This is a membership renewal

For monthly and annual giving options or to contribute online, please visit: secure.growbiointensive.org.

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Bequests...Please contact Ecology Action's Director at 707-459-0150 for more information.
Ecology Action is a 501(c)(3) non-profit. All contributions are tax-deductible.



Ecology Action's next 3-Day GROW BIOINTENSIVE Closed-Loop Sustainable Mini-Farming Workshop

Photo: Quail Seeds

November 1-3, 2019

in Willits, CA. Visit www.growbiointensive.org/events_main.html?tab=0#.

Ecology Action Newsletters
are available online at
[growbiointensive.org/
Enewsletter/Archive.html](http://growbiointensive.org/Enewsletter/Archive.html).

To view a complete list
of GROW BIOINTENSIVE
classes and upcoming
activities visit [growbiointensive.
org/events_main.html](http://growbiointensive.org/events_main.html).

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