

ECOLOGY ACTION'S GARDEN COMPANION

News from the **GROW BIOINTENSIVE®** Global Family

*EA staff, apprentice, and interns participating in the
Level One 3-Day Teacher Certification Workshop,
August 2019 at Victory Gardens for Peace.*



FALL 2019

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The Jeavons Center Mini-Farm Report

By John Jeavons, Ecology Action Executive Director

Since the beginning of January, The Jeavons Center (TJC) Mini-Farm Manager Misha Zaid and I have been focused on re-growing TJC Mini-Farm, which had been in hibernation for over a year due to financial constraints. Now, with significant funding from the Ceres Trust for general program support and scholarships, plus generous financial support from the Warsh-Mott Legacy Foundation, Dr. Bronner's Soapmakers, the Edna Wardlaw Trust, the Carroll Petrie Foundation and of course our wonderful Ecology Action Members—plus knowing we had an excellent group of interns coming for the season—we were able to begin work with confidence. Although work was slowed by a cooler than usual May, June and July; less dynamic compost stored for some time, and deer defeating our over 35-year-old fence, we've made progress. As we persevere, beautiful potatoes, corn and other crops are thriving!

The process of reawakening the mini-farm will take two years as we rebuild optimal soil fertility and develop an experienced Farmer-Leader Trainer and Administrative Staff with organizational continuity to best serve the increasing number of countries and people who benefit from our work. GROW BIOINTENSIVE (GB) is successfully used in 153 of the world's 195 countries—in virtually all the soils and climates where food is grown. The GB Farmer-Leader Trainer Teams at TJC and VGFP and those using GB around the world are backed up by



The Jeavons Center, 2019

Photo: Cynthia Kaiser Jeavons

a great Administrative Team: Laurie Birch: Executive Assistant to the Director, Data Manager and Librarian; Lori Leudemann: Office Manager and Bookkeeper; Jennifer Bixler: Newsletter Tonal Editor; David Troxell: Communications Director; Carol Cox: Copy-Editor and Advisor; and Shannon Joyner: Newsletter Editor, Webmaster, Wordsmith and Graphic Designer.

Over the winter, Misha and I designed a 10-Bed Unit (10BU) with 1,000 square feet of planted surface that can grow a complete balanced diet for one person annually and, with the same crops, all the necessary compost materials to build and maintain soil fertility. I provided the approach and guidelines, and Misha did all the work of creating the 10BU adapted to our climate and soil and to his dietary preferences. Misha came up with a great design. (It helped that, in addition to having a good mind, perspective and sensitivities, he had a college focus in computer science!) With the design complete, we decided that Misha, the Assistant Mini-Farm Manager, and our three 8-month interns would each plant out this plan. The goal is to have several 10BUs growing at TJC Mini-Farm with the same design, but in different micro-climate areas and soils. (Unfortunately, in June, Misha became ill and decided that dedicating his full attention to healing was the best course of action. We were all sad to see him leave Ecology Action, but glad that he will be focused on healing and sustaining his well-being.)

Our 8-month interns started their season in April. From Nicaragua, we welcomed Ana Lucia Cantillano, a successful videographer and community leader; and Marcia Suarez, who established two successful GB sites in Nicaragua in connection with the international NGO Blue Energy Group; and from Kenya, Fredrick Onyango, Lead Teacher from Ecology Action's International Partner for Africa, G-BIACK. Each intern is responsible for establishing and tending a 10BU, plus four additional growing beds of their own design, for a total of 14 beds each, and for maintaining many of the other 110 TJC growing bed equivalents to build and maintain fertility, grow compost crops and create compost. Interns also arrived at Victory Gardens for Peace located at Stanford Inn Historic Farm and Eco-Resort (stanfordinn.com) in Mendocino, CA: Camila Guerrero from Chile, who plans to develop a GB site of her own; Ariel Pinto from Chile, who plans to establish an organic school garden, combining Mapuche and Biointensive cultivation techniques; and Elena Torres from Puerto Rico, who completed her studies with us in August to pursue an independent research project in sustainable agriculture through the Fulbright U.S. Student Program in Brazil.



Photo: Cynthia Kaiser-Jeavons

Marcia harvesting potatoes at The Jeavons Center, 2019

Thanks to our funders, we are able to provide funding up to \$6,000 per project to support selected GB demonstration and outreach initiatives created by some of Ecology Action's 2019 8-Month Interns.

- **Ana Cantillano** will create a documentary on GROW BIOINTENSIVE to motivate GB practitioners and small farmers in Latin America. She intends to submit the film in 2020 to the world-famous Sundance Film Festival. If accepted, the film could further interest in GB globally.
- **Marcia Suarez** proposes an upgrade of her existing GB project in terms of the teaching programs provided at her sites. Funding from Ecology Action will allow Marcia to perform her duties as program administrator and GB teacher, unhindered by having to work a second job.
- **Fredrick Onyango** is focused on establishing a GB Mini-Farm Demonstration/Research site to serve as one of G-BLACK's 40 satellite centers. G-BLACK's goal is to establish these centers in every province, and to have all Kenya's farmers aware of or using GB by 2030. Fredrick's project will further that goal, help ensure good quality control, and provide data points on the spread of GB in the region.

Ike Enahoro, from the US, joined us as a 3-Year Apprentice in June. Ike is the son of Agaja Enahoro, a Senior Apprentice at Alan Chadwick's last Virginia site; Ike met Alan when he was just five! Ike graduated from Cornell University with a degree in Asian studies. After college, his activities included time in the Army and recently a master's degree in theology to round out his education and life experiences. Ike is impressed by how energetically our interns work, while keeping up with

their reading and mini-farm design homework.

In April, our terrific team was joined by **Melvin Castillo**, first as Assistant Mini-Farm Manager, and following Misha's departure, as Mini-Farm Manager. Born in Nicaragua, now a US citizen, at 52 Melvin brings with him life experiences in two countries, an agricultural background, plus a talent for working well with people and finding practical solutions to challenges. He is bilingual, and frequently assists in translating at TJC.

We are living in a time of increasing global concern about the rapid depletion of farmable soil, limited water supplies, peak oil, and peak farming nutrient availability—not to mention global climate disruption. It can all be a bit much to contemplate, but don't despair!! Soil and Food-Growing, Closed-Loop, Sustainable GROW BIOINTENSIVE® Mini-Farming can build soil 60 times faster than in nature, while producing high yields, and requiring just 33% the water, 0-50% the purchased fertilizers and 6% the energy per pound of food produced, as compared with conventional farming.

Even more hopeful, GB has the potential, if all the farms in the world were put into Biointensive production, to reduce atmospheric CO2 levels by 50%, and very possibly much more, due to dramatic carbon sequestration in the soil and in the increased number of plants grown per unit of area and time. This may sound like a tall order when you think about huge factory farming operations, but remember: 70% of the world's food is grown on small farms of 2 acres or less—these are the farms that can help save the world by implementing GB and improving yields with less resource consumption! ●

Ecology Action Director John Jeavons presented *Food for the Future: Now* in September at the Soil Not Oil Conference in San Francisco, CA, and at the Heirloom Seed Expo in Santa Rosa, CA. Both lectures were well-attended, and good questions from the audience led to a better understanding of the importance of growing food, soil and oneself as the World's Most Important Resources! ●

ECOPOL Director Juan Manuel Martinez made his first trip to Chile at the end of 2018, completing his goal of establishing 5 core GB hubs throughout Latin America, north to south. The whirlwind, 4-week tour through Chile included 4 workshops, 3 conferences and a seminar, 6 talks, and visits to 13 garden sites. Juan reports that Chile is ripe with *Biointensivistas*; 17 people are participating in teacher certification workshops there this fall, and many communities and schools are setting up GB gardens! ●

Cultivating Hope

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

“When I go into the garden with a spade and dig a bed I feel such an exhilaration and health that I discover that I have been defrauding myself all this time in letting others do for me what I should have done with my own hands.”

– Ralph Waldo Emerson

If I had to sum up why I have hope, it’s because in learning to grow my own food sustainably I have discovered that I love *doing* the work. In discovering this love for *doing* I have witnessed my perception of the world around me transform. What once seemed like an impossibility now feels like a challenge. I used to look at “problems” as something to avoid. I now see them as a necessary part of the process of becoming whole, of negotiating the blockages which prevent us from moving forward. I believe this to be true not only personally, but on a much larger scale. It is no doubt that we are entering uncharted waters, but even though we see the iceberg in front of us, it seems that most of us are either scrambling around looking for a map, debating the size of the iceberg, or searching for someone else to steer our ship for us. Now, more than ever, we must come to terms with the challenges ahead, and proactively make changes in our own lives before it is too late.

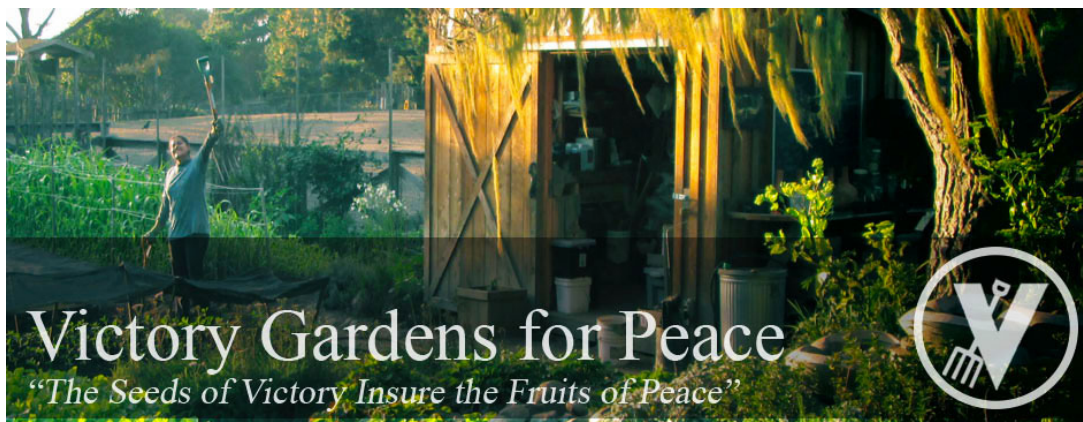
One of the things I struggle with is that people in my country think that to address our problems we must buy something: organic food, or electric cars, or carbon credits, or pay someone to do the work for us. In our heads, we have become trapped by our consumerism. It feels good to take the money we make and buy something that is less toxic or uses less fossil fuel. That is what we *want*. What we *need* is a transformation from

centralized, dependent, resource-guzzling consumerism to self-empowered, decentralized, resilient, localized and interconnected communities! We need to draw the connection of localization to sustainability.

A few years ago, I was in a brainstorming session with colleagues at Ecology Action and determined that *the act of Biointensive gardening is one of the most simple, revolutionary, elegant and sustainable options on the table*. We don’t have to buy much of anything; we can organize and heal our communities in doing it; we can grow life and food and fix carbon into soil while reaping all the benefits of healthy food, good exercise, the joy in sharing and in beautifying our neighborhoods. But there is another important aspect to this work. What isn’t often talked about is that *Biointensive sustainable gardening can reduce our impact on the world around us because we need less from the outside and find our power in our own selves and communities*. This is, as we are demonstrating at Victory Gardens for Peace, perhaps the greatest effect Biointensive sustainable gardening can have!

Carbon farming has become a hot topic in agriculture today. There is much debate on what carbon farming is, or isn’t, but as Biointensive gardeners we know that we can grow tall plants which take in carbon, compost those plants, and transform them into soil. It’s that simple and far more efficient than using animals to fix carbon. Did you know that if you burn a gallon of fuel, you release over 20 lb of carbon into the atmosphere? Or that the average American diet releases 2 to 6 tons of carbon into the atmosphere each year? All that is saved if we grow our own food using Biointensive techniques in our backyards and community gardens. In fact, in a recent study we did for the City of Fort Bragg, California, we showed that if we used all of the open space within city limits to grow food and soil Biointensively for Fort Bragg’s 7,000 inhabitants, each year over **14 million lb** of carbon could be prevented from entering the atmosphere; in addition, over **300,000 lb** of carbon would be sequestered from air, into plants and into soil!

When growing soil and food, one quickly realizes that we aren’t “growing plants”: we are creating a thriving, healthy soil and fostering the conditions which allow the plants to be healthy on their own. A healthy soil grows healthy plants.



In conventional agriculture as we know it today, huge amounts of fertilizers, pesticides and water are used to produce low-quality food while having a tremendous impact on the surrounding environment. Even conventional organics use a tremendous amount of plastic, sprays, and other inputs. Biointensive sustainable gardening reduces our reliance on resources. At the Victory Gardens for Peace research garden at the Stanford Inn Eco-Resort in Mendocino, CA, we are continuing experiments demonstrating how a person can grow all of their food and compost in 1,000-2,000 sq ft—that's 1-2% of the land area and 2-4% of the water it takes to grow a conventional American diet. This also means that rather than using all that land and resources for a conventionally grown diet, you can grow a healthy ecosystem which contributes an abundance of benefits from protecting freshwater aquifers, growing biodiversity, fixing carbon, and providing habitat. What more could you ask for!

The great work ahead is transforming our cities and neighborhoods into once again thriving and resilient environments through the creative efforts of *growing soil, food and community*. It is transforming the current paradigm from dependence on consumerism to becoming the vibrant producers of our own futures. This work is about a renaissance of culture, a rediscovery of our connection to nature and each other and the protection of our living biosphere. It is a rebirth of purpose and a celebration of life.

These solutions will become the foundation for a peaceful and sustainable future. It may just be the calling of our time, and what those of us who have inherited the situation are born to accomplish. We hope that you share in our excitement to meet the challenges we all face with creative solutions such as Biointensive sustainable gardening and mini-farming! ●



HELP WANTED

ECOLOGY ACTION NEEDS 2 FULL-TIME BIOINTENSIVE FARMERS!

Enjoy a sustainable lifestyle working at one of our two Biointensive Research and Demonstration Mini-Farms in Mendocino County, CA.

\$15/hour plus benefits. Onsite housing available.

Full details at growbiointensive.org/Opportunities.html

Reflections on CA Seed Library Gathering

By Sydney Grange, VGFP staff

The following is an excerpt of a longer article. You can read the full article online at growbiointensive.org/Enewsletter.

On March 23, the team from Victory Gardens for Peace headed from Mendocino to Sebastopol to participate in the *California Seed Library Gathering*, hosted by Community Seed Exchange. New to seed saving myself, I didn't know what to expect, but was immediately inspired and energized as we entered a welcoming group full of passion and knowledge. The gathering brought together seed stewards from all around the Bay Area: gardeners and seed savers responsible for establishing and maintaining gardens, seed libraries and seed banks in their communities.

The event had a very non-hierarchical, collective approach to discussion, something that felt reflective of seed saving itself, in its community-centered foundation and focus. Topics covered included building community through seed saving; the *One Seed One Community* project; accomplishing more with less; seed adaptation; seed saving resources; and what to grow.

I was excited to hear from Community Seed Exchange that after a decade of dedication to the project, their garden and seed saving program are thriving, with much community interest, engagement, and a strong core of committed volunteers to help carry the work forward. This generated hope in our gathering, demonstrating the potential of every one of our seed projects to thrive. Perhaps their project's success is reflective of the seed saving movement as a whole—that it is expanding through the growing interest and involvement of the public.

We launched into a dialogue on what led to successes in our projects. People spoke to making seed saving accessible and fun, and increasing community interest by hosting events and workshops around seed saving and gardening, such as seed swaps, seed cleaning workshops, seed packet decorating, educational classes, making seed bombs, community seed planting, cooking food from the garden, and food politics discussions. ●



Photo: USF Seed Library

GB Teacher Certification

in Latin America, Europe and the Caribbean

By Agustín Medina and Marisol Tenorio,
GB Farmer-Leader Trainers, ECOPOL-El Mezquite

We began our GROW BIOINTENSIVE (GB) journey in 2006, with Ecology Action internships at the Golden Rule Mini-Farm site in Willits, California, USA. That year, we participated in our first GROW BIOINTENSIVE Teacher Certification workshop and qualified as Basic-Level Teachers. Returning to Mexico, we started our GB garden on November 2, 2007, dug into the process of learning to practice organic sustainable agriculture, and decided our calling was to be GB teachers.

We kept our Basic-Level Certification until 2008. In 2009, we achieved Intermediate-Level Certification. In 2010, we began giving 5-day Basic-Level GB Teacher Certification workshops with Juan Manuel Martínez and ECOPOL; the first was in Patzcuaro, Michoacán State, in Mexico. We continued giving workshops into 2011 and 2012. People attended from Costa Rica, Cuba, Panama, Guatemala, Nicaragua, Japan, Spain, Colombia and Mexico, some working in different environmental activities, and others simply wanting to be GB farmers with the ability to teach, as we were when we began.

In 2013, we gave our first GB 5-day Workshop outside Mexico, in Ecuador. Most attendees were Ecuadorian

farmers, as well as some foresters from Nicaragua. At this point we began to experience an in-depth understanding of the meaning—transcendence?—of the certification process.

In 2014, we returned to Willits, to The Jeavons Center, where we participated in 2 months of training with John Jeavons to qualify for Advanced-Level Certification. We collaborated with John and Ecology Action, giving our first 5-day Certification Workshop for Basic-Level GB Teachers in the USA, adding another layer of our understanding of this important work. The same year, thanks to John's training, we received the Advanced-Level and Master-Level Teacher Certification in GROW BIOINTENSIVE Sustainable Mini-Farming. We began to see the present and the future through a different lens: our work and the work of those we teach is not only about giving or receiving a certificate; it is recognizing the *life process* working through GB farmers as they develop deep knowledge in growing soil and food in harmony with nature.

2015 found us in Peru and Nicaragua, certifying more teachers. This was a magical year: for the first time all the people attending the workshop were farmers, *campesinos*, local people wanting to grow soil and food and truly understanding what that means.

2016 was our first Intermediate-Level GB Teacher Certification workshop in Nicaragua, including diet design and more advanced topics. 2017 was our first European workshop, in Italy. In 2018, we gave our first Intermediate-Level certificates in Nicaragua, with John Jeavons.



5-Day Workshop in Pimampiro Ecuador in 2013. Agustín is on the left, upper row; Marisol is second from the left, lower row.

Photo: El Mezquite/ECOPOL

And in May of 2019, our most recent workshop was in Spain, with farmers and people who really understand this important method and work.

The result of our journey so far: 95 GB Teachers certified, including ourselves. 21 from Mexico (18 Basic, 1 Intermediate, 2 Master), 21 from Nicaragua (16 Basic, 5 Intermediate), 17 from Spain (2 Intermediate, 15 Basic), 9 from Peru (all Basic), 8 from Ecuador (all Basic), 7 from Italy (all Basic), 6 from Costa Rica (all Basic), 3 from France (all Basic), 2 Basic from Panama and 1 Basic from Portugal.

So...what do these numbers, years, and important work really mean? They mean that the people we certify, the GB Teachers around the world we have worked with, have an in-depth understanding of how to grow food, grow soil, and grow people (themselves and others), sustainably, in harmony with the Earth. If they were not farmers before, now they are GB farmers; if they were farmers before, now they are better farmers, empowered farmers, *GB Farmers who work for their communities, for the environment, for sustainability, for life.*

And most importantly, these teachers teach hundreds of farmers to use GROW BIOINTENSIVE every year, and those farmers teach others in turn. This is the process, farmer to farmer, *campesino a campesino*. Certification creates more farmers, who teach other farmers, for life.

GROW BIOINTENSIVE is life for more life, and we are proud to be a part of that process! ●

Book Review:

Farming for the Long Haul: Resilience and the Lost Art of Agricultural Inventiveness

by Michael Foley (Chelsea Green Publishing, 2019)

Review by David Troxell

At Ecology Action, we read a lot of books, especially books about plants, farming, alternative economic systems, power structures, self-reliance, self-governance, and self-improvement—essentially, we read a lot of radical books. And *Farming for the Long Haul* is the best book we've read in a long time.

Author Michael Foley lives and farms here in Willits, CA, a well-known local who operates Green Uprising Farm in the valley. Several reviews of this book make mention of Wendell Berry's *The Unsettling of America*, and in fact it is almost impossible not to. If that tome changed your life like it did for so many of us, *Farming for the Long Haul* will speak to you deeply. Indeed, Foley makes seemingly infinite references to Berry, and the

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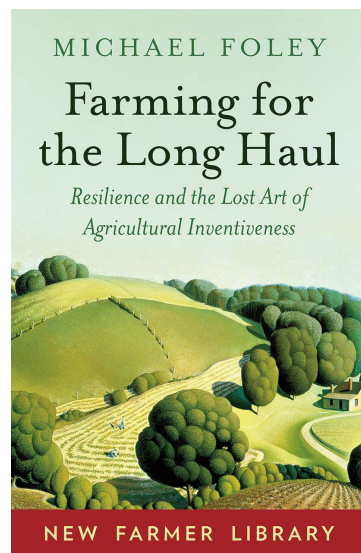
whole piece of ensuing writing feels like a companion to *Unsettling*. The sad fact is that since Berry's groundbreaking book was published in the 1970s, everything it spoke out about has gotten more perilous, and technology and social trends have created whole new issues then unseen.

In *Farming for the Long Haul*, Foley points out several times that farming is not a job, it is a vocation.

Farming is a calling, a spiritual quest and awakening, and a meditation on the soil, water, air, and all of life. At the same time, farming is an economic endeavor, and if a farmer is going to be successful in keeping his vocation and his family's home, then he is going to have to pay just as much attention to the financial side of things as the spiritual. Foley notes that farmers are price takers, not price makers, and that the best chance they have of increasing net income on a small farm is by maximizing production efficiency, especially by doing as much as they can themselves, with their own resources, or through cooperatives. Farmers, he illustrates again and again, are tough and inventive people, truly resilient stock. Without these traits a farmer won't survive—without these traits a farmer never has.

This is not a particularly uplifting book, but it is enormously factual and begins a lot of internal conversations about one's personal consumption habits and production practices. Foley's writing is the result of decades of observations of society and how we procure our food, as well as deep study of the land itself, and it bears the marks of both inquests. If there is a positive message to be found here, it's the idea that small-scale agriculture is not going away; as large-scale agribusiness fails and our current food system collapses, small producers will continue growing melons and corn, slaughtering hogs, and feeding their neighbors as they have through time.

Also, if you yourself happen to be a farmer, this book is an immense source of pride. Although it may have a distressing message behind it, it is impossible to come away without feeling extremely validated that what we are doing is the righteous thing to do. And that, in its own way, is an incredibly positive message. Highly recommended reading. ●

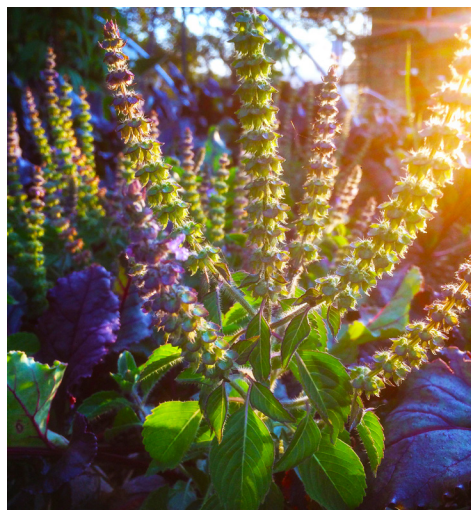


"The Queen of Herbs"

By David Troxell,
Ecology Action Communications Director

Our featured herb goes by several common names, "Holy Basil" and "Tulsi" being the most used. In Hindi, Tulsi means "the incomparable one"; its botanical name, *Ocimum sanctum*, translates to "Holy Basil." Ayurvedic practitioners refer to it as "The Queen of Herbs."

In the same genus as culinary basil, Tulsi has the same basic cultural requirements, but in contrast to the tender annuals we use for pesto, if kept frost free, Tulsi will live many years as a small woody shrub. Full sun, good drainage, and warm days are pretty much all that you need to grow your own Tulsi; the plants are tougher than their cousins in both drought and heat. Traditionally grown in front of almost every home in India (depending on the household deity) there are several major varieties of Tulsi. Two main varieties of *Ocimum sanctum*



are "Krishna," which is a purple-leaved plant, and "Rama," which is green. Both are used as a tonic, stress reliever, immune system booster, anti-inflammatory, digestive aid, and adaptogen. Both contain many beneficial antioxidants and

have the same lovely, anise-like aroma and flavor.

Make your own Tulsi Tea

Tulsi is a great herb because you don't need to have anything "wrong" with you to benefit from its use, as it is a fantastic adaptogen as well as an uplifting and delicious tea. It is also a great herb because it is so easy to use; all you need to do is gather leaves from a plant and dry them, keep them in a sealed jar in a cool and dark area, and brew them the way you would brew any loose-leaf tea as often as you wish. The tea tastes good sweetened or not, warm or cold, and is just lovely with turmeric or cinnamon added. During the summer, nothing beats an glass of iced Tulsi tea sweetened with some agave syrup,

if you ask me. Really gets a body motivated in the heat to get back out in the garden and sweat!

This time of year, the days are cooling, the nights are chilling, and frost is around the corner. It is time to harvest any seed we have saved from this year's Tulsi plants and set it aside; then we cut whole plants at the base and hang them to dry. The frosts come, snow blankets the beds, then in late spring we see the emerging Tulsi coming back from their root systems under the mulch and soil, ready to refresh and rejuvenate another hot summer. It's always a pleasant surprise to find Tulsi coming up in a bed we forgot it was planted in, chilling with the tomatoes or hanging out with the hot peppers.

If you are afflicted with any of the autoimmune and swelling disorders which for some reason are so prevalent in our society, then Tulsi may really help. People with arthritis are thought to benefit from a couple of cups of tea per day, psoriasis sufferers are finding a remedy with Tulsi-based soaps and salves, and on a personal note, this author gets noticeable relief from his Crohn's just by inhaling the delicious fragrance of the crushed leaves. And, since the tea is so delicious, it isn't just easy to drink; it's easy to get other people to drink it, including people with sensitive palates who have a hard time handling the taste of many herbal remedies, and children.

She truly is the Queen of Herbs!! ●

Note: The content in this article is meant to inform, not to diagnose or treat any ailment. Always use common sense, and consult with your healthcare provider before attempting to treat yourself or others.

ECOLOGY ACTION'S GARDEN COMPANION

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(Heartfelt thanks and best wishes
to former newsletter editor Leslie Roberts ♥)

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growbiointensive.org/Enewsletter/Archive.html

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New Additions to the Ecology Action Team

Sydney Grange

My love for the outdoors and exposure to gardening all began in the San Francisco Bay Area, in Northern California, where I grew up. As a kid, I helped my mom in her backyard vegetable garden, and in high school I started a small native plant and vegetable garden in some underutilized space on campus.



My passion for food justice, and my desire for all humans to have access to sustainable, healthy and equitably produced foods, led me to further explore gardening at Warren Wilson College in Asheville, NC. During college I worked as a Teacher's Assistant in a Horticulture Program at a nearby women's prison and was part of an initiative that started a community garden in a vacant lot in downtown Asheville. In 2017, I graduated from Warren Wilson College with a BA in Conservation Biology and Environmental Policy and a minor in Global Studies.

After seeing some of the inefficiencies and cruelties of animal agriculture, and after working on a 10-acre organic vegetable farm in New Haven, CT, I became interested in veganic agriculture and in sustainably growing complete diets. In March 2019, I joined the Ecology Action team and began working at Victory Gardens for Peace in Mendocino, CA. It has been amazing to see the GROW BIOINTENSIVE method in action and to be a part of a movement that not only empowers people to feed themselves, but one that is also building soil, giving back to the land, and reducing the scale and size of our agricultural footprint.

I'm grateful to be a part of the international community of Biointensive gardeners and farmers, who are bringing so much care, awareness and intention to their work, and who are helping to build a more just and sustainable world one garden at a time! ●

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Melvin R. Castrillo Cheng

I was born in Nicaragua, a country located in the center of the American continent, about the size of Massachusetts but with the highest number of certified GROW BIOINTENSIVE teachers in the world.

I came to the United States in the early 80s because of the civil war in Nicaragua, already knowing I wanted to pursue a degree in agriculture. My participation in the National Literacy Campaign during the early years of the Nicaraguan revolution taught me about the life in the countryside. While I taught *campesinos* how to read and write, I learned about their struggle with food-producing methods. Because of this, I romantically fell in love with agriculture—I wanted to study Agronomy in order to help our fellow farmers.

While I lived in San Francisco, I worked in the service industry, which in turn allowed me to learn about the food industry. I studied first at San Francisco State University and later transferred to Fresno State University where I obtained a bachelor's degree in Agriculture.

In 1995, I returned to Nicaragua, working different jobs which required me to travel to various regions in the country. I was already learning about the type of chemically dependent agriculture practiced there. I also visited organic farms because I wanted to experience first-hand the fragility in their food-producing methods.

About three years ago, I decided to move back to the United States to be closer to my aging parents. I applied to Ecology Action for the position of Assistant to the Mini-Farm Manager; because of Misha's illness the Mini-Farm Manager position was available, so I decided to give it a try!



I am very happy to be part of the EA team. John Jeavons' passion to feed the world using a closed-loop methodology resonates with me. I am infinitely grateful to be part of the GROW BIOINTENSIVE community which is empowering farmers all over the world to feed the soil and people in a sustainable way. ●

The Ollas Project

By David Troxell,
Ecology Action Communications Director

It's hard to imagine irrigation systems without plastics. Polyvinyl chloride (PVC) is the industry standard material for irrigation pipes, which carry pressurized water to the irrigation zone to be dispersed by sprinklers or a drip system. Drip systems are better for the environment in terms of water conservation, but what about all that plastic? Drip lines/tape wear out fast, but the plastics they are made from persist for thousands of years. It's painful to think that these systems are often replaced *annually*.

But let's back up a little bit here. Surely there was a time, before plastics, when people irrigated and grew crops effectively and efficiently, on a large scale, without creating all this waste? Surely there were people who figured this out?

There were, of course. The ancient Romans are still known for having built a massive aqueduct system which "piped" water all over their empire; they also used innovative techniques to water their field crops, including burying unglazed clay "pipes" which tapered at one end and could sleeve into each other, and then wicked water into the surrounding soil. Not long ago in the orange groves of southern California, similar irrigation systems were assembled using terracotta; examples of this can still be seen in some groves in Riverside County. Many modern farmers are taking a fresh look at these old techniques and realizing that they may work as well as, or even better than, our current systems.

Many parts of the world still use terracotta vessels, buried in the ground and filled with water, to irrigate their gardens. Called "ollas" (meaning "pots" in Spanish, pronounced "oy-yahs") in some regions, these low-fired, unglazed clay pots with large bulbous bases and tall skinny necks are popular in areas where water is scarce, surface evaporation due to intense sun is relentless, and simply "watering the garden" is viewed (accurately) as a waste of precious water. *Ollas* slowly leach water through their porous walls and into the surrounding soil, delivering moisture directly to the root zone where it is most needed, saving up to ten times the water compared with traditional surface watering, to grow the same yield.

Many people report healthier plants using the *olla* system; after just a few weeks of using *ollas* in a test garden at Ecology Action, we are already seeing positive results. Overhead watering, especially in excess, can leach nutrients from the soil, particularly minerals such as calcium and magnesium which easily attract to water molecules. The more you water from above and allow gravity to pull the water down, the more nutrition is dragged down out of the root zone. Yellowing plants soon result. With the *ollas*, not only is it impossible to overwater—as the soil itself decides when it is dry enough to allow water to pass through the pores of the vessel—but since the movement of the water is a slow wicking action moving laterally as well as down, there is no leaching of nutrition from the root zone. We think it possible that using *ollas* not only can save water, but may reduce the quantity of amendments we need to add to the soil, too.

(I would like to find a way to determine what portion of the mineral amendments we add to the soil each season [particularly calcium] is used by the crops, and what portion is lost as ionized particles, dragged to the depths by irrigation water, out of reach of the root zone.)

Developing crop-growing techniques for arid land is something we here at Ecology Action are fiercely committed to. With such a large part of the Earth's population already living in arid areas—along with the fact that desertification will only increase that number in the coming years—we are constantly seeking methods and tools to help people living in water-stressed areas to continue to grow food and living soil.

The *Ollas* Project is something that we have been excited about for some time. There is a lot information on *ollas* online, and several workshops around Mendocino have mentioned the technique and even showed pictures, but we are unaware of anyone locally who had



Photos: Ecology Action Staff

A beautiful locally made *olla*



An *olla*, at work in the garden

been using *ollas* regularly to grow crops. So, starting in 2019, Ecology Action teamed up with two local potters, Rain and Maya Youngstrom, as well as several local gardeners, to identify parameters to make the best *ollas* for our soil and climate. There are many variables: vessel wall thickness, temperature and duration of firing, the content of the clay itself, the shape of the vessel, as well as additives to the terracotta to make the pots wick water faster—sawdust, sand, straw—which will work best?

Beyond the vessels themselves, there are variables to consider in *olla* spacing, distance from plants, which crops work best with *ollas*, and which soil types accommodate *ollas* and which don't. Melons and fruit trees, which have a single base and root zone for a large yield area, may do well having one to four *ollas* planted at their base; crops like potatoes and carrots, which have a large, fragmented root zone supplying many plants, may need a different configuration. Which type of crop culture works best with this system?

We are excited to have our first *olla* prototypes completed by Rain and Maya Ceramics, measured for volume, wall thickness, etc., and in the ground watering squash plants. After we determine best practices, Rain and Maya intend to manufacture the *ollas* at scale and make them available for purchase; we will update the community when they are available. For now, Rain and Maya sell their beautiful pottery at events like the Kate Wolf Festival, as well as sales at Mendocino College and the Willits Art Center. Some of their finer porcelain can be found at Mariposa Market in Willits, CA. They are a lovely and talented couple, and we are pleased to be working with them on this project.

For the next few months, we will be collecting data and testing different *olla* types and cultivation techniques, to see what works best, with the goal of writing a pamphlet that can be used by people in arid areas to create and use their own irrigation pots. We are excited to share our progress with the GB community, and hope *ollas* may become a commonly used system in the future. Stay tuned! ●

• DO YOU SPEAK (AND WRITE) CREOLE? •

Ecology Action is seeking a volunteer to translate our *GROW BIOINTENSIVE Farmer's Mini-Handbook* to give Creole-speaking people a free, basic introduction to GB.

IF YOU'RE INTERESTED PLEASE WRITE TO US AT:
contact@growbiointensive.org

Feeding the Sick with Biointensive Farming

Excerpt from *Word of Mouth Magazine*
Read the full article online at bit.ly/BiointensiveRwanda

Rwandan hospitals lack resources to feed their patients; those without family to feed them, or who are very poor, often do not survive. Word of Mouth published an inspiring article by *Medie Jesena Parrott* about the Rwandan non-profit *Kuzamura Ubuzima "Growing Health" (KU)*, which works with a large referral hospital in the Southern Province of Rwanda, feeding patients and their families using *Biointensive farming methods adapted from an old copy of How to Grow More Vegetables.*

“The large referral hospital, where KU started in 2015 ... allotted over 10 acres of farmland, including more than one acre of banana plants and several avocado trees, for this project. Having adapted some biointensive methods to its climate and terrain, KU grows organic crops that are cooked by staff onsite with the help of able-bodied family members. They serve two highly nutritious meals per day to patients and their families; conduct teaching sessions about sustainable agriculture, healthy and hygienic food preparation, and balanced meals; and demonstrate stress management exercises, including yoga and qi gong. After four years, KU has not only expanded programming to include 125 patients at two hospitals, but has hired agriculture and health trainers, with the goal of having a more sustainable impact on the lives of the patients and families that we serve. The organization helps them survive the difficult period of hospitalization, but also wants them and their families to thrive after they return home, hopefully disrupting the self-perpetuating cycle of poverty and illness.” ●

Synthetic Nitrogen Destroys Soil Carbon

Article by Tom Philpot online at bit.ly/GristSoilNitrogen

Grist (grist.org) published an article on two recent papers by researchers at University of Illinois showing that synthetic nitrogen fertilizer use reduces soil organic matter (SOM) levels. They also show that as SOM dissipates, the soil's ability to store organic nitrogen declines, creating a treadmill effect where fertility declines with each application of fertilizer. (In contrast, GB can build SOM 60 times faster than in nature, without synthetic fertilizers.) ●

Seasonally Appropriate: Interplanting with Legumes

By John Jeavons (GROW THE EARTH, johnjeavons.org)

With summer drawing to a close, it's time to start thinking about your winter garden, and that means cover crops! Here are some things to consider when planting your cover crops this year:

Normally, a gardener or farmer planning a crop rotation (over time) would start in the late autumn/winter/early spring season by planting a *nitrogen-fixing legume*, such as a cold-hardy fava (perhaps using the Banner variety, which can fix up to 0.22 pounds of nitrogen/100 sq. ft.* and can withstand temperatures down to 10°F) or the even hardier Woolly Pod Vetch, which fixes up to 0.63 pounds of nitrogen/100 sq. ft.* and can withstand temperatures to 0°F., or the truly cold-loving Hairy Vetch, which can withstand temperatures down to -25°F. Then, in the *following* late spring/summer/early autumn, the farmer would plant a grain crop to take advantage of the nitrogen stored in the soil by the legumes the previous season.

A challenge with this rotation scheme is that *the amount of nitrogen fixed is estimated based on harvesting the legumes before they produce a significant amount of seed*. Once the crop flowers and begins to set seed, the nitrogen fixed in the root nodules is used by the plant for seed production. This means the nitrogen is used up by the time the next winter season approaches.

An alternative to this sequential rotation *in place* is to interplant the legumes *with* the grain. In late autumn/winter/early spring, interplant legumes with winter/spring grains (such as wheat, hull-less barley, hull-less oats, cereal rye, and triticale); in late spring/summer/early autumn, interplant legumes with grains such as flour/tortilla corn, sorghum, pearl millet, 45-day Japanese millet, grain amaranth and quinoa.

Example: In the *late autumn/winter/early spring*, prepare, fertilize and apply compost to the growing area and soak 5.5 ounces of vetch seed/100 sq. ft. in room temperature water overnight to encourage germination. The next day, drain seeds and mix them with a small amount of dry soil; this will allow the seed to be broadcast more easily. Scatter the soil and seed mixture evenly over the bed, and use a bow rake to very gently chop the seed shallowly into the soil. Using a transplanting board, transplant the winter/spring grain onto 5" offset centers. When the vetch reaches 50% flower (it looks

like full flower)—*before it begins to make a significant amount of seed*—carefully remove it from the growing area, cutting the plants at ground level and leaving the roots, with their nitrogen-rich nodules, in place. Then, let the grain continue growing to maturity.

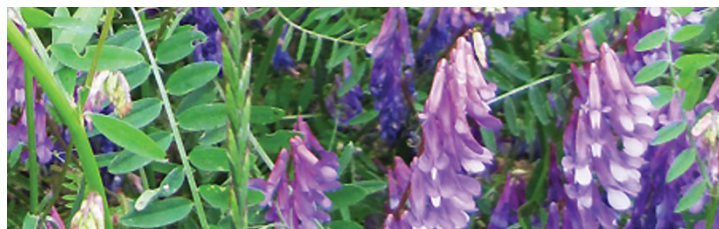
To use the inter-planting method for summer crops, in *late spring/summer/early autumn* prepare, fertilize and apply compost to the growing area and soak, prepare, broadcast and incorporate vetch seed into 100 sq. ft. of growing bed, as described above in winter crop method. Then, using a transplanting board, plant grains such as flour/tortilla corn, amaranth or quinoa on 12" offset centers; for other summer grains such as sorghum, pearl millet and 45-day Japanese millet, plant the grain seedlings on 7" centers. Then, when the vetch reaches 50% flower, but has not produced seeds, cut the plants at ground level, leaving the roots, and allow the grain to continue growing to maturity.

The reason I chose vetch for the example above is that vetch produces smaller plants than fava beans and makes more efficient use of the space when sharing a bed with grains. While favas *could* be used in an inter-planting design, they are large plants and require wider spacing; when interplanted, they would fix much less nitrogen (1/7th the amount they fix when planted by themselves) as compared with smaller legumes.

***Note:** For the best plant health and yield results, you need ~0.5 pound of nitrogen/100 sq. ft. of soil. As you can see from the examples above, approximately 0.25 pound of nitrogen, sometimes more, can come from the interplanted legumes. Up to 0.25 pound of additional nitrogen may be added by applying 2 cubic feet of cured GROW BIOINTENSIVE compost (including ~50% soil) per 100 sq. ft. of growing bed.

If you're interested in learning more about cover crops, nitrogen fixation, and crop rotations, the USDA Sustainable Agriculture Research and Education Program (SARE) has an excellent (free!) publication *Managing Cover Crops Profitably*, which you can download from sare.org/Learning-Center/Books/Managing-Cover-Crops-Profitably-3rd-Edition

A little bit of effort with cover crops now can mean better yields and richer soil in the spring! ●



GB Tours in B.C.

By James Christie-Fougere and Sharon Coombs,
Co-Directors, Kootenay Society for Sustainable Living

After our 8-month internship with Ecology Action in 2016, we established a GB R&D site in Kimberley, British Columbia (BC), Canada. A significant part of our approach to teaching GB has been to inspire people through tours. A picture paints a thousand words, but experiencing a living garden ecosystem reaches people on a whole deeper level!

This season we began offering a monthly tour, designed to appeal to as many people as possible. We chose a recurring date, the last Saturday of the month; it is easy to remember, allows us to use a single flyer to promote every tour for the season, and contributes to more word-of-mouth attendance! (Our 2020 tours are the 2nd Saturday of May, June, July, August and September—growsustainability.org.)

We advertise our tours as fun, educational, and open to all ages, with info about GB, some demonstration and skill building, Q&A, and more. Our community has a lot of young families, so to appeal to the family unit, we created a scavenger hunt for kids, a self-guided exercise for adolescents, and provide free tea, coffee and snacks.

The tours run 10am-2pm. We start by introducing ourselves, followed by a brief history of John Jeavons and GB, and then participants can share a bit about themselves. Opening with dialogue and conversation breaks the ice and helps people settle into the experience. Next, we begin the tour of our mini-farm, guided by the 8 Principles of GROW BIOINTENSIVE, with demonstrations of GB techniques and opportunity for questions.



Photos: Kootenay Society for Sustainable Living

Our son Lincoln. You're never too young (or old) to start double digging!

We start with the first three principles of GB: *Deep Soil Preparation*, *Intensive Planting* and *Composting*. We demonstrate double-digging, emphasizing the importance of soil structure; demonstrate flattening techniques, showing an example of hexagonal spacing in a nearby bed; and briefly outline the recipe we use to build compost, emphasizing the importance of composting for long-term sustainability and growing soil in our beds. We set these "stations" close together so we can build on each one without traveling to other areas of the garden.

Next, a short break to digest the sometimes-overwhelming quantity of "ah-ha!" moments and to offer refreshments. Then, we resume with *Carbon Farming* and *Calorie Farming*, taking the group further into the garden. We discuss qualities that define a carbon-and-calorie crop, and elaborate on why we grow 60% of our area in carbon crops, 30% in seven special root crops, and only 10% in vitamin and mineral crops. When designing our garden, we create areas that highlight certain tour subjects. For instance, we grew 15 varieties of barley this season in one area, which served as a great example of carbon farming and helped demonstrate research goals. We also planted garlic, leeks, potato and parsnip in one area, (4/7 special root crops) to demonstrate calorie farming and how these crops are calorie-efficient by area!

Next we visit our quinoa bed to demonstrate and discuss three ways we practice *Companion Planting*: side by side, interplanting, and successively planting. Following Matt Drewno's research, we interplanted quinoa with vetch, a nitrogen-fixing legume, to great success! We proceed to a cover-cropped bed to explain the benefits of planting legumes and grains before a main season crop, and discuss using companions as "trap" plants (e.g., growing mustard to attract flea beetles & aphids).

We travel to a seed-crop bed next, and discuss why we only use *Open-Pollinated Seeds*. This year we grew leeks, parsnips and lettuce to seed, offering a variety of flowering crops to explore. We emphasize the ability to locally acclimatize OP seeds, and how their genetic diversity provides an insurance policy to respond to climate change and increasing climate extremes.

Finally, we travel to our new circular flower bed to talk about why a *Whole-System Approach* is critical to long-term sustainability, and we touch on the principle of embodied energy in our tools and materials. We also speak about including ourselves as a part of the garden ecosystem, not as a dominating force, but instead opening up and developing a garden intuition that comes with relaxed observation and integration.

We encourage questions throughout the tour, and much to our delight the tour often takes more than 2 hours to complete due to the high number of questions, elaborations and interaction throughout! Following the tour, we offer time for further Q & A, reflections, and an opportunity for more demonstrations. We've offered John's HTGMV for sale during tours and we're delighted that several people have picked up a copy before they leave!



One of the GB tour "stations" at the Kootenay site

So why do we offer these tours? It's about inspiration! We truly feel that leading by example, and offering people an opportunity to see and feel how magical and productive a GB garden can be will inspire people to want to learn more, tell a friend or family member, and perhaps even start a GB garden at home! We also hope tours will increase interest in our skill-building workshops. We start by inspiring visitors, then strive to empower them by teaching the skills needed to practice GB at home and then build success through a variety of workshops.

Our goal is to inspire and empower as many people as possible; in our community, in British Columbia, and in Canada as a whole. We believe food localization and security are important considerations for the future, and that an achievable solution is to encourage as many people as possible to start backyard and community gardens using the easy to learn and truly sustainable GROW BIOINTENSIVE method, and to participate, as a community, in feeding each other from a place of abundance!

We have the space, the time, and the resources, we just need to spark that inspiration and empower our community to take action! ●

Variety Trials:

A Key to Higher Yields and Insurance against Climate Change

By James Christie-Fougere and Sharon Coombs

The following is an excerpt of a longer article. You can read the full article online at growbiointensive.org/Enewsletter.

Biodiversity is an important consideration for long-term ecosystem sustainability, and the garden ecosystem is no exception! Growing a diverse selection of crops helps to create a balanced ecosystem, above and below the soil, but what about diversity of varieties of a given crop? Placing all our tomatoes in one basket can increase the risk of complete crop failure, especially in this age of climate change and climate extremes. By growing several varieties of a crop, we increase our chances of success, as some varieties will cope better with unexpected drought, or hundred-year storms, extreme cold, or insect and disease pressures. Another fantastic advantage to growing several varieties is that we can observe which ones produce the highest yields, or mature the fastest, or grow the tallest! At the Kootenay Society for Sustainable Living (growsustainability.org) our goal is to discover a minimum of five varieties of major crops, cereal grains, and root vegetables (to name a few) that are fast-maturing, high-yielding, and highly cold-tolerant for our mountain climate. Achieving this goal will provide us with some insurance against climate extremes **and** help us to maximize the productivity of our mini-farm.

So how do we begin? By conducting comprehensive variety trials, collecting data, and comparing the results to help us decide which crop varieties are optimal and which are non-optimal for our specific growing environment. Following planting guides, planting zones, and weeks to maturity is a good place to start, but the only way to know for sure is to grow the crop yourself, and record as much data as is possible throughout the growing cycle.



This year we are conducting a variety trial with barley, with a total of 15 different varieties! You may recognize some of them: Tibetan, Sumire Mochi, Streaker, Karan, Schrene, Gujar, Arabian Blue, Belford, Gopal, Faust, Ethiopian, Karma, Himalayan, Sangatsuga, and Bere. ... ●

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Mar 30-Nov 28: 8-Month GB Internship

May 3: GB Farm Tour at VGFP, Mendocino, CA

May 23-Jul 25: 2-Month GB Internship

May 23 -Oct 10: 4-Month GB Internship

May 30-Jul 25: 9-Saturdays Course Part One, Mendocino, CA

Aug 15-Oct 10: 9-Saturdays Course Part Two, Mendocino, CA

Oct 30-Nov 1: 3-Day GROW BIOINTENSIVESM
Sustainable Mini-Farming Workshop, Willits, CA

Preregistration is required for workshops/tours
and there is an application process for internships.

Details at: growbiointensive.org/events_main.html
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