

ECOLOGY ACTION'S GARDEN COMPANION

GROW BIOINTENSIVE News from around the World



The Jeavons Center Mini-Farm Garden Report

Experiments: Rice Research & Plant Spacing
By Jes Pearce,
The Jeavons Center Mini-Farm Manager

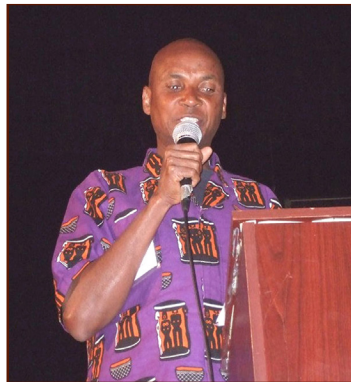
The interns are back! After taking a “growing season” in 2015 from the internship to expand and refine our curriculum, we now have the wonderful opportunity to enact all of our great revisions with our current interns. And what a great group of interns we have this year! There is a wide range of skills and experience among them that inspires creativity and curiosity within the garden. We function as a melting pot, able to explore and learn alongside one another’s skill sets through the context of GROW BIOINTENSIVE Sustainable Mini-Farming. All of this energy, experience and curiosity have led to questions. And when we have questions we love to experiment!

One of our interns at The Jeavons Center, Jean Apedoh, is an expert teacher of the System of Rice Intensification (SRI)

Continued on page 2

Soil Not Oil Conference 2016

By Rachel Laase, The Jeavons Center, Assistant Mini-Farm Manager



Milesh took part on a discussion panel at the conference.

PHOTO CREDIT: Rachel Laase

The Soil Not Oil conference (<http://soilnotoilcoalition.org/>) was held on August 5–6, 2016 at the Richmond Civic Center in California. This was the 2nd year this conference, which was inspired by Dr. Vandana Shiva’s book, “Soil Not Oil: Environmental Justice in an Age of Climate Crisis”, was held.

It brought together hundreds of farmers, academics, and activists to discuss the current reality that the world is facing concerning the effects of global climate change and potential solutions to this overwhelming predicament. Ecology Action’s Executive Director, John Jeavons, and Associate Executive Director and Vice President, Steve Moore, were selected to speak at the conference, as well as two of this year’s EA interns, Olawumi Benedict (Ghana) and Jonnes ‘Milesh’ Mlegwah (Kenya).

This was a wonderful and important opportunity for the interns to share their personal stories, as well as the struggles that their communities and countries are facing. They took part on a discussion panel with

a third farmer, who came from Mexico. Each of them shared their concerns and passions about the current agricultural practices being used and the urgent need to switch to small-scale organic methods, focusing on GROW BIOINTENSIVE as a solution to break free from fossil fuels and to better feed communities. The presentations inspired the crowd, and Milesh received a standing ovation for his final slide which shared his interpretation of the meaning, ‘Soil Not Oil’: S.O.I.L.–Saving Our Indigenous Lands, Not O.I.L.–Oppressive Illusions of Life.

We are so proud of all the hard work they both put into the conference and are grateful to have them here to inspire others to continue to work towards a better future.



Garden Report

Continued from page 1

in Togo. So when he arrived, he was ready to grow rice using the GB method. However, the Willits climate is non-optimal for growing rice. Rice is a heat lover and with our cold nights it is hard to get enough heat units to have it grow to maturity. But with Jean's drive and experience we decided to go for it! We researched together and found an upland rice variety called Duborskian, bred in Russia and hardy for cooler weather. We read in multiple books about best practices for starting rice in a greenhouse to gain extra heat units and let the plant get bigger before it



Jean observes amaranth growth.

PHOTO CREDITS: Jes Pearce

goes out into the cooler nights. We also soaked the rice in water for 72 hours to increase germination and flatted it on April 17th. We planted the rice on May 13th and covered it with a mini-greenhouse. And it grew! Jean then taught me the importance of cultivating the rice to add air to the soil. While rice is able to grow submerged in water, the SRI tests conducted around the world have shown significantly healthier root systems, and in turn plants, when exposed to air. He also taught me about strategic watering of rice during different phases of its life to maximize tillering and seed production. The rice has set its seed but not yet matured. I have been told that this variety of rice has a

very rich and nutty flavor. We look forward to a bountiful rice harvest soon!

Another intern Miles, from Kenya, is leading a spacing trial experiment with amaranth this year. He planted amaranth on 4-, 6-, 9-, and 12-inch centers. This experiment allows us to explore the most optimal spacing for amaranth to get the highest yield of both biomass and seed. Results to come!

As a group we decided to do an experiment with direct-sown beans versus transplanted beans. How much water can we save when we start beans in a flat versus directly in the bed?? We used 55 gallons of water over 7 days in the direct-sown beds versus only 3.5 gallons



Miles measures amaranth leaves in the spacing experiment.

over 7 days in the flats. It took 15 times more water in the bed, that's a lot!!

Though these experiments may seem small, it is through these continued efforts that we not only empower the interns to run their own experiments in the future but we do it using low-technology and low-cost techniques. We also inspire a deeper understanding of the success of the GB method. Seeing is believing and as each of our interns explores and experiments with GB, we are all able to develop a deeper understanding of its success.

So my friends, when you have a question or an idea, I encourage you to become a scientist right in your own backyard! Happy experimenting!

The Latest from Biointensive for Russia

By Carol Vesecky, Director, Biointensive for Russia

At last! The 3rd edition of *How to Grow More Vegetables* in Russian has been published (via print-on-demand, here in the US). It took four years of translation, computer typesetting, editing, correspondence with electronic and print publishers, and troubleshooting. But we finally have a book and are sending them to our Russian colleagues to share with other teachers!

Donations have helped us send three books each to our Russian colleagues in the Bryansk-Krasnodar area, St. Petersburg, and Kaliningrad. They'll share them with others who have taught GB or are interested in the method. Dmitry, our newest partner, wrote back: "THANKS!!! It's wonderful! Useful and interesting!!" As we hear from more of the 50 in our Eurasia network, we'll continue to send books.

Paper versions are available from Bountiful Gardens for \$20, or download the eBook for \$5 from grow-biointensive.org/HTGMVRussian/index.html. Please pass the word on!

New partners in Kaliningrad: Our former longtime partner in Bryansk, Dr. Ludmila Zhirina of the NGO VIOLA, wrote recently about meeting Dr. Dmitry Filippenko, of the NGO Green Baltic, at a conference in Kaliningrad, the "exclave" Russian city and region on the Baltic Sea. Dmitry expressed interest in learning GROW BIOINTENSIVE, so I sent him electronic copies of our translations. He promised to try out the method this summer, then work toward holding workshops to be taught by Ludmila in Kaliningrad in the fall.

We're thrilled to collaborate with activists in this region where air defense systems have been installed to counter

Continued on page 3

Biointensive for Russia

Continued from page 2

NATO's military buildup in its Baltic neighbor states. Having mastered the GB know-how we've shared with them the Russians can pass it on to their Polish and Latvian neighbors, offering an example of cooperation that our leaders would do well to emulate!

2016 Bryansk experiment: With BfR's support this summer Dr. Igor Prokofyev and his NGO Grassroots Alliance PERESVET are testing the capacity of zinc and selenium in Biointensive compost to reduce lead and cadmium in vegetables. Due to the use of leaded gasoline in the past, lead is found in Russia in soils along roadsides where people grow food for their families.

As described by Igor, "Research suggests that adding Zn and Se to soils can reduce the harmful Pb and Cd that accumulates in vegetables. Zn and Se in soils are also believed to increase magnesium, manganese and other healthful minerals in vegetables..." A win-win! Please write if you're interested in receiving a list of articles on this topic or in joining BfR's email list.

Continued support needed: You are invited to help with donations: \$25 provides a copy of HTG-R for a Russian teacher, \$20 or more goes toward the cost (\$1,000 or more)

Continued on page 11



The 3rd Russian edition of HTGMV is now available.

PHOTO CREDIT: Carol Vesecky

A Secret Weapon to Fight Climate Change: Dirt

By Debbie Barker and Michael Pollan

Debbie Barker is the international programs director at the Center for Food Safety. Michael Pollan is the John S. and James L. Knight professor of journalism at the University of California at Berkeley. This article was originally published in The Washington Post on December 4th, 2015, and has been edited for length. You can read the entire article here: www.washingtonpost.com/opinions/2015/12/04/fe22879e-990b-11e5-8917-653b65c809eb_story.html.



Mini-farms like G-BLACK's 40-bed unit in Kenya help pull down carbon from the atmosphere. PHOTO CREDIT: Eric Buteyn

When Will Allen is asked to name the most beautiful part of his Vermont Farm, he doesn't talk about the verdant, rolling hills or easy access to the Connecticut River. Though the space is a picturesque postcard of the agrarian idyll, Allen points down, to the dirt. "This precious resource not only grows food," he says, "but is one of the best methods we have for sequestering carbon." We think of climate change as a consequence of burning fossil fuels. But a third of the carbon in the atmosphere today used to be in the soil, and modern farming is largely the cause. Practices such as the overuse of chemicals, excessive tilling and the use of heavy machinery disturb the soil's organic matter, exposing carbon molecules to the air, where they combine with oxygen to create carbon dioxide. Put

another way: Human activity has turned the living and fertile carbon system in our dirt into a toxic atmospheric gas.

The industrialization of farming has allowed farmers to grow more crops more quickly. But modern techniques have also wreaked havoc on the earth, water and atmosphere. Intense plowing, for example, has introduced more oxygen into the soil, boosting the microbes that convert organic matter into carbon dioxide. The quest to wring every last dollar out of fields has put pressure on farmers to rely on chemical fertilizers. This often leaves fields barer between growing seasons, allowing carbon to escape into the air. Scientists estimate that cultivated soil has lost 50 to 70 percent of its carbon, speeding up climate change.

Continued on page 4

A Secret Weapon to Fight Climate Change: Dirt

Continued from page 3

That loss has significantly degraded soil health, reducing our ability to grow food. Median crop yields are likely to decline by about 2 percent per decade through 2100, according to the U.N. Intergovernmental Panel on Climate Change. At the same time, the world's population is projected to jump from 7 billion to 9 billion by 2050.

Water availability is also at risk. Currently, 1.6 billion people live in regions facing severe water scarcity; that number is expected to rise to 2.8 billion by 2025. Agriculture accounts for a whopping 70 percent of all water consumption. That's in large part because degraded soil doesn't absorb water efficiently. Instead, water sits on top of the ground and runs off (along with farm chemicals) into nearby waterways, creating toxic nitrogen "dead zones."

Remarkably, though, restoring carbon to the soil is not nearly as complicated as rethinking our transportation systems or replacing coal with renewable energy. Innovative farmers such as Allen already know the recipe.

He and his team place "cover crops"—also known as compost crops—in their fields, planting things like oats, rye and beans between rows of vegetables. This practice keeps carbon, nitrogen and other organic nutrients in the soil. "Keeping as much ground covered with plants as long as possible allows photosynthesis to draw down atmospheric carbon into soils," Allen says. A bare field, in contrast, represents a waste of photosynthetic potential. Allen also composts, limits plowing and avoids synthetic chemicals like nitrogen fertilizers. In combination, these efforts have increased soil organic matter by 3 to 4 percent in just three years. Allen also sells some of his cover crops, adding farm income.

Allen's results are not unusual. Studies have shown that cover cropping, crop rotation and no-till farming could restore global soil health while significantly decreasing farms' carbon footprint. Some scientists project that 75 to 100 parts per million of CO₂ could be drawn out of the atmosphere over the next century if existing farms, pastures and forestry systems were managed to maximize carbon sequestration. That's significant when you consider that CO₂ levels passed 400 ppm this spring.

Scientists agree that the safe level of carbon dioxide in the atmosphere is 350 ppm.

Regenerative farming would also increase the fertility of the land, making it more productive and better able to absorb and hold water, a critical function especially in times of climate-related floods and droughts. Carbon-rich fields require less synthetic nitrogen fertilizer and generate more productive crops, cutting farmer expenses.



"What if a Solution to Climate Problems was Right beneath Our Feet?"

Narrated by Michael Pollan

The Center for Food Safety created a video explaining how soil can help solve climate change.

www.youtube.com/watch?v=NxqBzrx9yIE

So why aren't we instituting policies to encourage this kind of "carbon farming"? For one thing, the science is new and not yet widely disseminated. Additionally, most of the incentives built into America's agricultural policies are based on maximizing yield, often at the expense of soil health.

Current federal policy, for example, limits the growing season for cover crops on the theory that they waste farmers' time and resources on products that can't be sold. Thus, farmers are denied full crop insurance, price supports and subsidies if they grow cover crops beyond a specified period of time. But viewing cover crops as a benefit instead of an impediment to cash crops would be the kind of

climate-smart policy we need. And, as farmers such as Allen have learned, some cover crops can also be commercialized.

Giving farmers incentives to switch from synthetic nitrogen fertilizers to organic fertilizers could also lead to healthier soil. Scientists at the University of California at Berkeley working with Marin County ranchers have found that applying a single layer of compost, less than an inch thick, to rangelands stimulates a burst of microbial and plant growth that sequesters dramatic amounts of carbon in the soil—more than 1.5 tons per acre. And research has shown that this happens not just once, but year after year. This is a win-win strategy, both for the climate and the food system, since the additional carbon in the soil means more grass for cattle and more profit for ranchers. If the practice were replicated on half the rangeland area of California, it would sequester enough carbon to offset 42 million metric tons of CO₂ emissions.

The possibilities are endless. What if our farmers received federal subsidies not just for bushels per acre, but for carbon sequestered or acres of cover crops planted? Many such changes could be made tomorrow at the agency level; they would not require congressional action. Incentives for carbon farming could also bridge the political chasm between ranchers, farmers and environmentalists. Even those farmers and ranchers who don't believe in climate change desire healthy soil, high productivity and lush grasslands. There is a rich opportunity here to completely realign the politics of agricultural and environmental policy.

America is not there quite yet, but other countries are pointing the way. This year, the French government launched the 4 Per 1000 initiative, the first international effort to restore carbon to the soil. Under the proposal, nations would commit to increasing the carbon in their cultivated lands by 0.4 percent per year. The French calculate that this would halt the annual increase in carbon dioxide emissions. Some emerging soil science estimates that we could store 50 to 75 percent of current global carbon emissions in the soil.

Continued on page 11

Herbal Spotlight: Elecampane

By Rachel Laase, Assistant Mini-Farm Manager at The Jeavons Center and Student Herbalist



Elecampane can be used to make a cough-soothing syrup.

PHOTO CREDIT: Rachel Laase

Autumn is here, causing the weather to start cooling down and the leaves to change colors. It is time to start getting ready to harvest the herbs and flowers that have been hard at work, growing throughout the heat of the summer. One of the questions most frequently asked of herbalists is, "When do you harvest the root of herbs for their medicines?" One of my favorite ways to remember the optimal times to harvest all medicinal roots is during their First Fall or Second Spring (FFSS) or during the months that end with the letter 'R' (R=Roots).

The herb that I am the most excited to harvest this fall is one of my favorite herbal companions, *Inula helenium*, more commonly known as Elecampane. This beautiful plant can grow up to 4 feet tall and produce large green leaves with little hairs that alternate up the stem. The flower it produces is bright yellow with thin petals that remind me of something that would be found in the daisy family. Elecampane was an important medicine used by the Greeks and Romans to aid digestion; it was used as an antiseptic to treat wounds or to help with lung health. My favorite way to prepare the root is to make it into a cough syrup because once the cooler weather starts coming



Biointensive Team Corner Introducing Emily Danko,

Program Manager and Educator at Common Ground Garden



I'm excited to be a part of the team at CCG. I recently returned to my hometown of Woodside after receiving my undergraduate degree in sustainable development from Washington University in St. Louis. While living in St. Louis, I spent a summer interning for the Missouri Coalition for the Environment, which jump-started my passion for environmental sustainability and combating climate change. Despite this great experience, Missouri winters weren't my favorite, so I decided to take a trip toward the tropics. In the spring of 2015, I traveled to Samoa, where I completed a month-long independent study project on traditional agricultural methods, along with learning to spearfish and dance the Samoan siva. After my return to St. Louis, I graduated a semester early and used that time to work at the Challenger Learning Center in Ferguson. At Challenger, I honed my skills as an informal science educator. Now, I'm thrilled to combine my interests

in education and the environment with the help of Common Ground Garden. I can't wait to learn more about sustainable agriculture and urban farming, and then share that knowledge with the community!



Emily Danko with students in the CCG.

PHOTO CREDIT: Paul Higgins

*It is time to harvest the herbs and flowers that
have been hard at work . . .*

around, so do colds. Elecampane acts as an expectorant, helping to break up and soothe wet, phlegmy coughs.

Even though the root is harvested for its medicine, Elecampane easily reseeds itself, so there's always more coming up the following spring. Happy harvesting and medicine-making!

Cough and Cold Recipe Ingredients

1 c Elecampane root, chopped
2 c distilled water
4 c honey (I prefer raw)
Juice of one lemon

Note: You can also add other herbs that help with colds, such as fresh ginger or horseradish, to spice it up a bit!

Directions



1. In a saucepan, combine herbs. Bring to a boil, then reduce heat and simmer for 20 minutes.

2. After 20 minutes, remove from heat and strain herbs with a mesh strainer or cheesecloth. Be sure to squeeze out the herbs to get all of the herbal liquid from them.

3. Combine herbal liquid with raw unfiltered honey and freshly squeezed lemon juice. Allow to cool on the counter top before putting a lid on and storing in the fridge. This will keep in the fridge for 4–6 weeks.

Ecology Action's 2016 Interns

This year, EA's interns are here for an expanded 8-month period in order to give them additional grounding in research, presenting GB concepts and developing diet designs.

Jean Apedoh



I am an Agronomic Engineer and have worked in a community development program in Togo for the past twenty years. I am also chairman of NGO GRAPHE, which is promoting the System of Rice Intensification (SRI) (<http://sri.ciifad.cornell.edu/countries/togo/index.html>), an ecological rice production technique, in partnership with the Peace Corps. I have trained farmers all across West Africa, in Togo, Benin, Burkina Faso and Ghana. I am attending Ecology Action's internship to further my understanding of agricultural practices as well as my teaching abilities, so I can help small farmers know how to use GROW BIO-INTENSIVE in all regions of Togo.

Olawumi Benedict



I am originally from Nigeria, but currently live in Ghana. In 2009, I took a post-graduate certificate course in Organic Agriculture, as part of an exchange program between the University of Agriculture, Abeokuta, Ogun State, Nigeria, and Coventry University, United Kingdom, which brought the concern of organic farming to my attention. Ever since then I have worked with projects in Nigeria. In 2013, I relocated to Ghana to join my husband, who is a missionary. Since October 2014, I have been a volunteer with the Ghana Institute of Organic Farming as the Head of Academics. This has fueled my passion and keen interest in organic, Permaculture and sustainable agriculture, so much so that after I complete the 8-month internship at Ecology Action, I will work to start a Center for Sustainable Development when I return to Ghana.

Sharon Coombs



My husband, James, and I are Canadians passionate about sustainable living, homesteading, and self-reliance. We've followed *How to Grow More Vegetables* for many years, and have had the goal to start our own sustainable and organic vegetable farming business and homesteading lifestyle. In 2014 we leased some land and started our own trials to gain hands-on experience using the Biointensive method. We double-dug eight 100'x5' beds and grew as many varieties as we could. We practiced companion planting, planted beneficial insect varieties, and learned a great deal about all the various vegetables, grains, and legumes we will grow as a sustainable vegetable farm. Ultimately, our goal is to produce all of our food, income and materials on our own land.

Continued on page 7

"I learned more during my three-month stay in Willits than during the four years I studied agronomy at EARTH University and what I learned is what I have used the most during more than a decade of professional development."

—Fabian Pacheco Rodriguez, Director del Centro Nacional especializado en Agricultura Orgánica in Costa Rica and an EA intern in 2002.

Ecology Action's 2016 Interns

Continued from page 6

James Fougere



The prime motivation my wife and I have for participating in this internship is to gain as much knowledge and experience, and complete as many experiments and techniques as possible, so as to further the research and development of the GROW BIOINTENSIVE method, and sustainable agriculture as a whole. We both see the great need for this research to be done, as quickly as possible, to help secure a future for our children, our grandchildren and beyond. We see food security as the utmost important focus, because of the dire condition our soils are currently experiencing.

Jonnes Milesh Mlegwah



I am a Kenyan citizen from the Taita tribe. After attending Manor House Agricultural Centre (MHAC) from 1996 to 1997, where I got my degree in Biointensive Agriculture, I attained a diploma in Management and Develop-

ment at Daystar University in 2001. In 2012 I returned to MHAC as a trainer. I also joined Mount Kenya University, Kitale campus, in the capacity of Farm Supervisor and established a GB garden there. In 2015 I pursued an undergraduate degree in Development studies in the School of Economics and Development at Mount Kenya University. Taita Taveta County is in the coastal region of Kenya, and I work as a trainee with a small community-based organization called Garden of Hope, which is in its inception.

Samuel Kangethe



I am a Kenyan citizen. In 1999 I attended the 2-year Biointensive Agriculture Program at Manor House Agricultural Centre in Kitale. After my graduation, I worked with several organizations that promote Biointensive and sustainable agriculture, like Community Sustainable Agriculture and Healthy Environment (CSHEP Kenya), SAC-DEP, G-BIACK, RODI, and Beacon of Hope-Africa. I have been able to train over 500 households how to grow their own food using GB and available resources. These families live in the slums of Nairobi and surrounding areas. The families that have embraced these techniques have significantly improved their livelihoods, and are now able to feed their families and market their surplus, becoming socially and economically empowered. I have also implemented Biointensive "Kitchen

Gardens" in schools, and created clubs where the members are trained in GB techniques so they could start gardens at their respective homes and schools. I believe GB can be a solution to the state of food insecurity in Kenya, and I envision being able to share my skills with small farmers to create a more resilient community.

Joseph Huber



I'm from Viroqua, Wisconsin. I discovered Ecology Action while at the MOSES conference in La Crosse, WI, in 2015, where John gave the keynote presentation. I had the same questions John had, one of them being—what is the smallest land that someone could grow food on? I was encouraged to read *How to Grow More Vegetables* and was immediately interested in an EA internship. I see the two most important aspects of a balanced life as the well-being of Nature and of our individual selves. When you look at the world you see the overuse of prescription drugs, diseases like malnutrition, starvation, and heart disease, and the contribution of the food industry to climate change. You see the common denominator among them all is food and that the food system needs to change. It needs to be a lot more sustainable. I believe GB is the key to solving many of these issues.

NOTE: Joseph is also in his second year as a three-year apprentice at the Green Belt Mini-Farm.

All intern photos by Cynthia Raiser-Jeavons



A Grateful Thanks to Our Major Donors

Biointensive for Russia



Brethren Foundation



Buddhist Global Relief



Ceres Trust



Conservation, Food
and Health Foundation



CS Fund



Kilili Self Help Project



Edna C. Wardlaw
Charitable Fund



Warsh Mott Legacy

The Estate of Del Anderson



Richard Andrus



Irma and Thomas
Giordano



Sandra Mardigian



Virginia Mudd
and Clifford Burke



Claire Russell

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

Ecology Action Annual Report for 2015

Message from the Director

Dear Friends,

This spring and summer we have experienced wide fluctuations in temperatures, as well as temperatures that have remained hotter, longer. Although we were fortunate to have some good spring rains, we are aware that much of California is experiencing its fourth year of drought. This, plus news of extreme flooding, drought and wildfires worldwide, brings home to us the realities of climate change—just one of the many challenges the Earth and all of us are facing.

Our part in meeting these challenges continues to be education and training in biologically intensive agriculture, providing the necessary skills that allow people worldwide to regain their food security and their hope. Although our work reaches out to the world, it is always grounded in our garden, which continues to teach us and create sustenance for our soul.

After forty-four years of this work, we are finding that profound results from our ongoing food- and soil-growing research are beginning to appear. In recent years, we have been able to accelerate people's learning curve of the GROW BIOINTENSIVE method, build compost with more quantitative and qualitative power, accelerate the accumulation of organic matter in the soil and miniaturize the amount of land required to grow a complete diet. In the world's current situation of increasing population, desertification, and a diminishing supply of available farmable nutrients, this range of results could speed up the number of GB farmers working worldwide, as well as lead to a faster expansion of fertile farming soil, while being able to feed a greater number of people on the soil available. Also, future GB practitioners everywhere will be able to build on these results to discover currently unknown methods of accelerating and improving farming globally.

We are extremely grateful that we now have long-term staff that care for our four mini-farms, take part in the research in their differing soil and climatic situations, teach interns, apprentices and others, and contribute their own unique skills, perspective and understanding to enrich and deepen the overall GB program. For example, in 2015, Matt Drewno, Manager of the Green Belt Mini-Farm on the Mendocino Coast, developed a seed bank for his area and is giving classes in seed production and saving.

As you know, we also have partners and colleagues worldwide who are researching, teaching and promoting GB in their own countries. Juan Manuel Martinez's current goal is to facilitate 100 certified teachers being trained in Latin America by the end of the next two years. He believes this number will help assure the quality of the GB system, as well as convince universities to teach GB as part of their regular curriculum. Samuel Nderitu is in charge of a 5-year research project on 4 GB-dedicated Kenyan farms, which found that minor fertilizer input, in the first year only, led to ongoing soil improvement over the project's 5 years, and resulted in steady increases of calorie and compost yields.

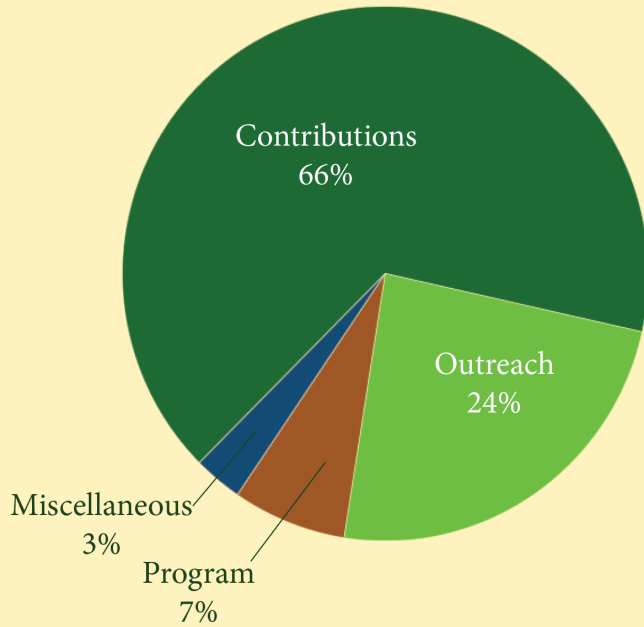
Change is alive all over the world. We believe this is a time when many more of the Earth's people are not only becoming aware of the serious challenges that are facing all of us but are putting their minds, hearts and bodies on the line to help meet these challenges. We see examples of this in the many activist sites online, ongoing protests worldwide, headlines and articles in printed media, and changes in our everyday lives. What can be harder is for each of us to accept that we have a part to play in making sure the changes are positive, that they will improve the Earth and our lives. What is needed today is that each of us be a participant, rather than just a spectator, to join our efforts with others to create what we want our future to look like.

Best Wishes,

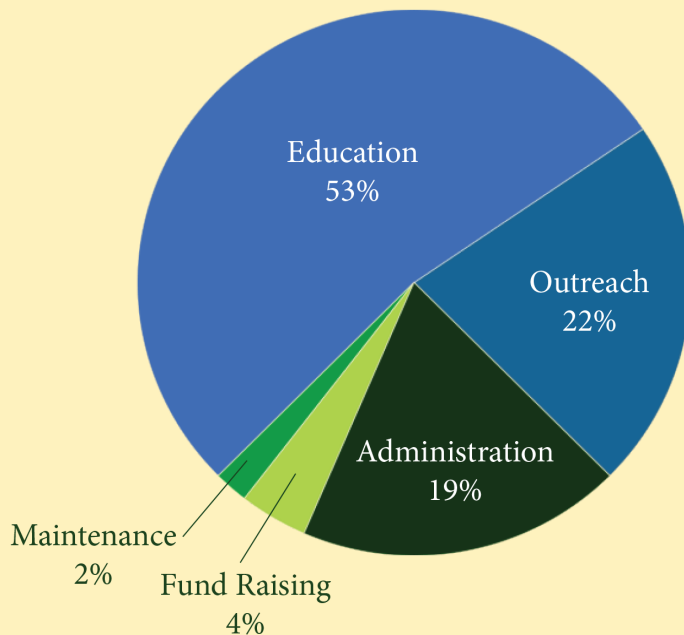
John Jeavons, *Executive Director, Ecology Action*

Ecology Action's Income and Expenses for 2015

Total Income: \$695,308



Total Expenses: \$697,265



The choice is ours:
 we can have a century of
 increasing desertification
 and increasing scarcity of
 per capita resources,
 farmable soil and food,
 or we can transform the
 current global challenge
 into a situation of
 abundance—
 of enough for everyone.

~John Jeavons,
 Director of Ecology Action

Personal Action in Corporate America

Reprinted from the Nov/Dec 1994 issue of Essential Living, this condensed version of an article by Robert Gotcher is even more relevant today. It was originally printed in Ecology Action's Newsletter more than ten years ago.

We live in a very complex world of high technology, multinational corporations, high finance, high pressure, and social isolation. We are enmeshed in a vast web of institutions and structures over which no one appears to have control but which control almost every aspect of our lives. The vast majority of people who are attached to the alternatives find themselves paralyzed when they try to put their program into effect. Part of the problem is isolation. An alternative economy cannot be embraced except in the context of a well-developed and comprehensive community. Many of us do not know where to turn to find such a community, nor do we possess the leadership gifts to create one ourselves.

We need to see that a slow, gradual transition is perfectly acceptable. We can begin right now to take small steps toward economic and cultural transformation. It may be impossible (and undesirable) for us to withdraw com-

pletely from society and commerce. It is possible, however, to reduce the controlling influence of a world economy on our lives and at the same time promote smaller, more human-scale practices. The key principle is that the more an action shows respect for an individual as a person, the more just it is. This requires scaling down. We have to create an economy based on the integrity of individuals and the intrinsic interaction of human communities. It also requires an emphasis on human participation in productivity and an essential connection between a person and the fruits of their labor.

Here are several principles that can be adopted:

- Buy locally instead of nationally or internationally, to reduce dependence on the vast transportation and communication infrastructure that drains our energy resources.
- Buy directly from the producer

instead of the distributor. This reduces costly advertising and environmentally costly packaging. When possible, buy from small businesses rather than large.

- Buy natural materials instead of artificial ones, hand-made instead of machine-made. Working and living with natural materials promotes a sense of symbiotic relationship with creation and reduces alienation. Handwork also reduces dependency on high technology and consumption of environmentally damaging energy sources.
- Buy raw materials instead of processed or prefabricated materials.

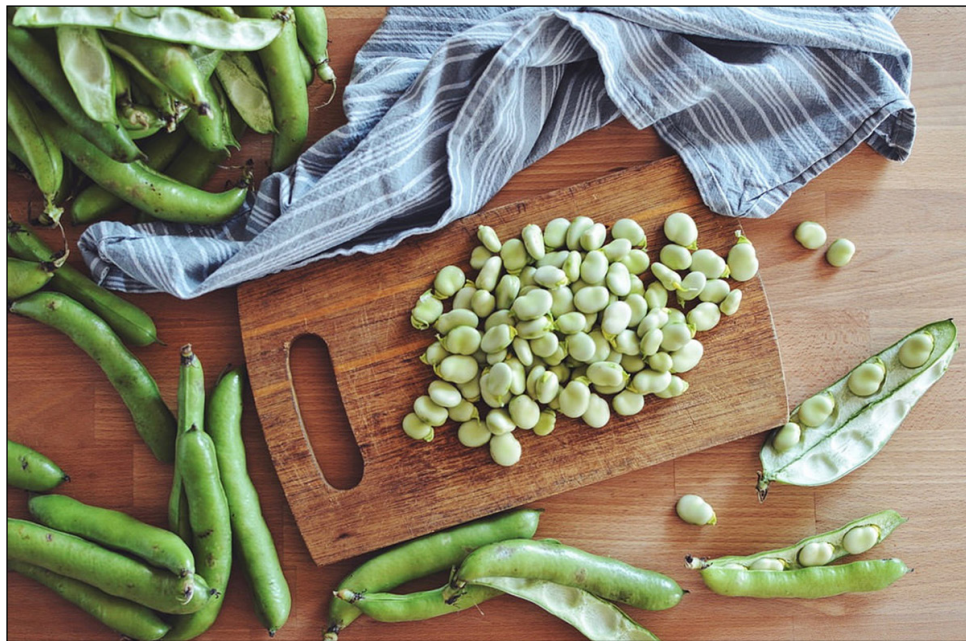
The solutions often come with an initially higher price tag and require more personal effort. The rewards, however, are great: a sense of community, unity with nature and possibly a sense of spiritual well-being as we return to a more natural and human rhythm of life.

*Imagine if trees
gave off
Wi-Fi signals.
We would be
planting
so many trees
and we would
probably save
the planet, too.*



*Too bad they
only produce
the oxygen
we breathe.*

– Author unknown



Fresh shelled fava beans.

PHOTO CREDIT: <http://hapaway.com/2016/07/05/fava-bean-broad-bean-hummus>

Fava Bean Hummus*

By Angel Cruz, EA intern 2011

Makes 48–1/2 cup servings

2 c well-cooked fresh fava beans

2 Tbsp tahini

2 Tbsp olive oil

1/2 c water

2 cloves garlic

Juice of 1 lime

1 tsp salt

1 1/2 tsp cumin

1/4 tsp black pepper

1/2 tsp cayenne pepper

Blend all till smooth. Store in the refrigerator.

Nutrition Facts (per 1/2 cup serving)

- Calories 11.4
- Total Fat 0.6 g
- Saturated Fat 0.1 g
- Polyunsaturated Fat 0.2 g
- Monounsaturated Fat 0.3 g
- Cholesterol 0.0 mg
- Sodium 50.6 mg
- Potassium 22.6 mg
- Total Carbohydrate 1.1 g
- Dietary Fiber 0.1 g
- Sugars 0.0 g
- Protein 0.5 g

* Fava beans are toxic to some people of white, Mediterranean descent. To learn more about the slight risk of a condition known as Favism, visit <http://patient.info/doctor/favism>.

New Look, Same Great Newsletter!

We're excited to now bring you *Ecology Action's Garden Companion* in **COLOR**.

With an expanded format of 16 pages, we hope to provide more GROW BIOINTENSIVE news and information from around the world. The newsletter is printed with soy ink on 40% post-consumer paper. Tell us what you think! Look for our survey online at

https://johnjeavons.formstack.com/forms/nl_readersurvey.

Biointensive for Russia

Continued from page 3

of an inexpensive edition printed in Russia, and/or \$20 or more toward the remaining cost of \$400 for Igor's experiment. Checks should be made out to Ecology Action (with BfR on the memo line) and mailed to BfR, Mulberry Haven, 913 Oso Rd., Ojai, CA 93023. For more information, visit <http://biointensiveforrussia.igc.org>.



Beets, carrots and marigolds in Natalya Koryagina's garden in Domashovo.

PHOTO CREDIT: Natalya Koryagina



A Secret Weapon to Fight Climate Change: Dirt

Continued from page 4

In the United States, when the Dust Bowl crisis of the 1930s literally blew soil across the country, our government responded by implementing agriculture policies to ameliorate the problem. With the stakes even higher today, our politicians can once again enact policies to reward practices that rebuild soil carbon.

Note: For more information, read Ecology Action's *Climate Change and GROW BIOINTENSIVE*®, growbiointensive.org/PDF/ClimateChangeandGROWBIOINTENSIVE_English.pdf.

Leafminers: What They Are and How to Control Them

Leafminers can affect beans, beets, cabbage, chard, lettuce, peppers, tomatoes, and many other vegetables. They also attack ornamentals, especially chrysanthemum and nasturtium.

The larvae of leafminers tunnel between the leaf surfaces, creating hollow, curved mines. While not always life-threatening to the plant, this gives the foliage an unattractive appearance. If mature plants experience extensive leaf mining, it may cause leaves to dry, resulting in sunburned fruit, lowering the yield and quality. Serious infestations may cause plants to die.

Adults are small black or black and yellow flies, which are not often seen. The eggs are white and cylindrical and hatch into larvae that are pale green. Due to their relatively short life cycle, several generations can occur each year.

Prevention

- To keep adult flies from laying eggs on your plants, you can erect a floating row cover, i.e. fine-meshed netting,

cheesecloth or a similar material that allows sunlight and rain in but keeps insects out. Install a floating row cover in areas that haven't had leafminer problems for at least one year because



Leafminers have damaged the leaves of this beet plant.

www.extension.umn.edu/garden/diagnose/plant/vegetable/beet/leavesspots.html

pupae can overwinter near plants prone to leafmining, producing adults under the row cover. If there are lots of pests, keep crops covered all season.

- Lamb's quarters and dock are natural hosts for beet leafminers. Remove any nearby plants that might breed leafminers.

Control

If leafminers have become established in your garden, they can be controlled as follows:

- Prune damaged leaves by hand-picking. Be sure to destroy any mined leaves. Do not put them in the compost pile. The insects may breed there and be reintroduced to the garden when the compost is applied.
- Remove any egg clusters as soon as they are visible.
- Consider spraying neem oil or other natural pesticide.
- Be sure not to plant a crop in the same family where the previous crop had leafminers.

Sources

www.weekendgardener.net/garden-pests/leafminers-090909.htm
www.extension.umn.edu/garden/insects/find/leafminers-in-home-vegetable-gardens/

Homemade Organic Pest Control Spray



From The Prairie Homestead
www.theprairiehomestead.com

Makes 1 gallon

Recipe

1 medium onion
 4 cloves garlic

2 c mint leaves or 20 drops
 peppermint essential oil
 2 Tbsp cayenne pepper
 2 Tbsp liquid castile soap
 (or biodegradable liquid dish soap)
 Water

Place the onion, garlic, peppermint, and cayenne in a food processor and blend.

Place in a large bowl and add one gallon of water.

Allow the mixture to soak for two hours, and then strain with a fine-meshed strainer, catching the liquid.

Put the onion/garlic liquid in a one-gallon container (a plastic milk bottle or vinegar jug works well). Add the soap. Add additional water if needed to make one gallon.

Pour into a spray bottle and spray on any plants being attacked by bugs.

Spray 1–2 times per week, and after a heavy rain.

Notes

Make sure you use a fine-meshed strainer, or maybe cheese cloth, to strain the mixture. Otherwise the sprayer will clog.

Try to avoid the parts of the plant you want to eat, so you don't end up with a little extra "flavoring".

It is best to spray in the evening when it's cooler; otherwise, there's a risk of the spray and sun combination burning the leaves of the plants a bit.

It isn't necessary to spray the entire garden, just the plants being eaten the most.

Winter Compost Crops

By EA and BG Staff



PHOTO CREDIT: Bountiful Gardens Staff

Other people call them “cover crops”. In the Biointensive method, we call them “compost crops” because we grow them to put on the compost pile. The resulting compost will “feed” the soil, replenishing the organic matter and nutrients lost when we grow the things we eat. Compost crops have the added benefit that, simply by growing them, we are adding root organic matter to the soil, holding on to nutrients and protecting the bare soil from the elements. If there is enough time and space to allow the grains to grow to maturity, they can provide food for the gardener, so the compost crop is a calorie diet crop as well!

The winter compost crop that we have developed and used over the years is a combination of wheat, cereal rye, fava beans and vetch. This compost crop mix will shield the ground from rain and wind erosion, capture nutrients from the soil that might leach away, sequester carbon from the atmosphere, add nitrogen to the soil, and

We call them “compost crops” in the Biointensive method, because we grow them to put on the compost pile. The resulting compost will “feed” the soil, replenishing the organic matter and nutrients lost when we grow the things we eat.

produce lots of organic matter.

Bountiful Gardens sells a two-packet mix that will cover 100 square feet, in the best proportions for carbon to nitrogen in the compost pile. The first packet contains wheat, vetch, and cereal rye that are cold-hardy in most sections of the country. Broadcast evenly onto clean loose soil in early to mid-fall. Chop in lightly with a rake to keep birds from eating the seed. The fava beans in the second packet are hand-planted separately. The seeds will sprout with the fall rains or when watered. Keep the soil moist until the seeds are established. If spring-sown, the wheat and rye will make compost material but not grain. To cultivate the most soil nitrogen, remove the fava and vetch plants (and compost them) when they have begun to flower, before the beans start to mature.

The Overwintering Compost Crop Mix is available through Bountiful Gardens online or call to place an order.

What's a Widger?

By Matt Drewno,
Green Belt Mini-Farm Manager

I love a good tool, and it seems they are getting harder to find! Many of the gadgets that claim to make my life easier actually seem to frustrate and complicate my life. Some of the greatest tools I've ever owned have been the simplest—heirloom tools I inherited from my grandmother and grandfather—like their pickax, mattock and wheelbarrow. They just don't make 'em like they used to!

A few of my favorite garden tools are my Clarrington Forge D-Handled Garden Spade, my Bulldog Garden Fork, and perhaps above all others—my widger! What's a widger, you ask? It's a little pounded-out piece of metal that looks like a miniature shoe horn, or a butter knife that was run over by a train. It's a piece of metal with the perfect kink in it, and it fits in your pocket. Its primary use is for pricking out and



Matt uses a widger to prick out seedlings from one flat to another. You can purchase the hard-to-find widger at BG. PHOTO CREDIT: Joe Huber

transplanting seedlings. I have found it's also great for getting under weeds and popping them out, it can function as a flat-head screwdriver or a wedge for prying things apart, and it's the perfect lever for opening a beer after a long day's work in the garden. For me, a good tool has many uses. The widger is my favorite.

“... the greatest tools ... have been the simplest ...”

Book Reviews

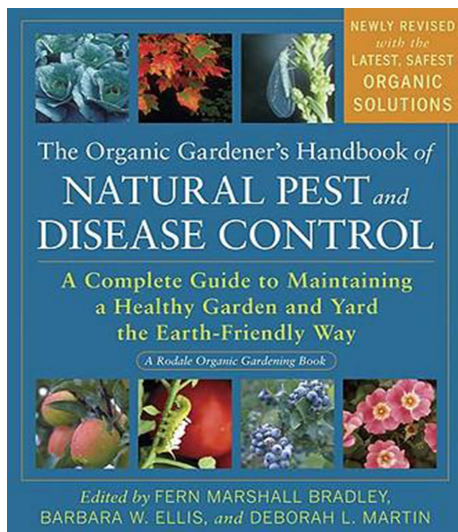


IMAGE CREDIT: www.amazon.com/

The Organic Gardener's Handbook of Natural Pest and Disease Control: A Complete Guide to Maintaining a Healthy Garden and Yard the Earth-Friendly Way

by Fern Marshall Bradley, Barbara W. Ellis and Deborah L. Martin (Rodale Books, 2010)

Review from Rodale Books.

The Organic Gardener's Handbook of Natural Pest and Disease Control is the most reliable and comprehensive guide on a wide range of methods for growing and maintaining an organic garden. This updated edition features the latest science-based recommendations for battling garden problems. With all-new photos of common and recently introduced pests and plant diseases, you can quickly identify whether you've discovered a garden friend or foe and what action to take. This book features a plant-by-plant guide to symptoms and solutions for 200 popular plants, flowers, vegetables, trees, shrubs, and fruits; an insect-and-disease encyclopedia that includes photo identification guides and detailed descriptions of damages; and an extensive coverage of the most up-to-date organic control techniques and products shown in order of lowest impact to most intensive intervention. Acid-free, recycled paper.

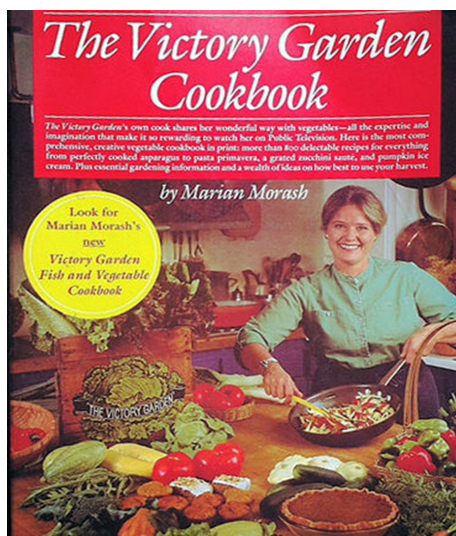


IMAGE CREDIT: www.amazon.com/

The Victory Garden Cookbook

by Marian Morash
(Alfred A. Knopf, 1982)
Review by Ecology Action staff.

There is a whole world of vegetable delights available and *The Victory Garden Cookbook* helps you discover it.

Whether you're an avid gardener, a gardener wannabe or someone who loves to cook with fresh, locally grown produce, *The Victory Garden Cookbook* is a great book to have. Written as a result of the popular public television series called *The Victory Garden*, this book is a wonderful cross between an encyclopedia of information and a cookbook—for both gardeners who cook and cooks who like to garden. Morash's first goal was to entice readers with the pleasures of eating home-grown vegetables so much that they would be inspired to become gardeners themselves—or at least shop for the freshest ingredients instead of cooking with frozen or canned foods.

Organized alphabetically, *The Victory Garden Cookbook* includes all the vegetables Morash grows in her own garden. Information about planting, growing, and harvesting from your garden is also included. Morash gives advice about storing vegetables, converts yields into measurements (i.e., a half-pound of small Brussels sprouts equals 28–30 sprouts, while a half-pound of medium sprouts

EA Events

❖ November 4–6
3-Day Ecology Action
GROW BIOINTENSIVESM
Sustainable
Mini-Farming Workshop,
Willits, CA

❖ November 21–26
6-Day Workshop in
Agroecology and the
Biointensive Method,
Veracruz State, Mexico
(in Spanish)

❖ December 1–3
3-Day Basic-Level
Biointensive Workshop,
Veracruz State,
Mexico (in Spanish)

For more information visit
[growbiointensive.org/
events_main.html](http://growbiointensive.org/events_main.html).



The Victory Garden Cookbook Continued from previous column

equals 12–14) and offers tips for finding the best produce for the cook without a garden. This cookbook is likely to become your go-to resource for gardening and cooking.

ECOLOGY ACTION'S GARDEN COMPANION

~ Published three times a year ~

Editor: Leslie Roberts

Editorial Assistance: Carol Cox and Mary Zellachild

Graphic Design and Layout: Ananda Johnson

Contributors:

Jes Pearce, Paul Higgins, Matt Drewno, Emily Danko, Rachel Laase, Carol Vesecky, Mary Zellachild, BG Staff, and GROW BIOINTENSIVE® friends from around the world.

Address: 5798 Ridgewood Road
Willits, CA 95490-9730

Phone: (707) 459-0150 • Fax: (707) 459-5409

growbiointensive.org

Printed with soy ink on 40% post-consumer content.

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. It is your support dollars that 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.

Common Ground Garden Upcoming Classes Palo Alto, California

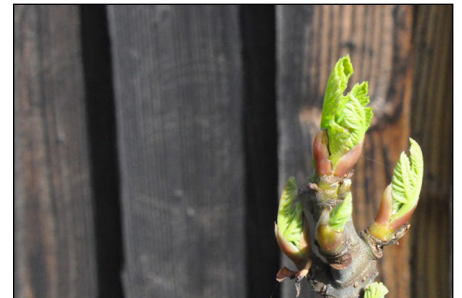
For more information or to register visit commongroundgarden.org/?p=1335.

Photos by CGG Staff

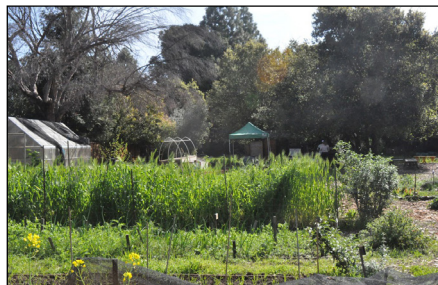
Fall Fruit Tree Pruning for Beauty and Bounty
Saturday, 10/22, 2:00 to 4:00 pm
Taught by Tom Cronin
Price: \$30



Scions: Selecting Fruit Tree Varietals for Successive Ripening
Saturday, 12/3, 2:00 to 3:30 pm
Taught by Jesse Imbach and James Lalikos
Price: \$30



Edible Landscaping with Exotic Fruits
Saturday, 11/5, 2:00 to 4:00 pm
Taught by Rosalind Creasy
Price: \$30



Bare-root Fruit Tree Planting
Saturday, 1/14, 2:00 to 4:00 pm
Taught by Tom Cronin
Price: \$30



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.

- | | | |
|--|---|--|
| <input type="checkbox"/> Seed - \$40 | <input type="checkbox"/> Garden - \$60 | <input type="checkbox"/> Farm - \$100 |
| <input type="checkbox"/> Community - \$250 | <input type="checkbox"/> Village - \$500 | <input type="checkbox"/> Town - \$1000 |
| <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.

Name: _____ Address: _____

City: _____ State: _____ Zip Code: _____

Email: _____ Payment Method: Check Credit Card

Visa MasterCard AmEx Discover # _____

Exp. Date: _____ Signature: _____

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.





BOUNTIFUL GARDENS

Heirloom, Untreated, Open-Pollinated Seeds for Sustainable Growing
A Project of Ecology Action

Mail-order seeds, tools, books, DVDs, and supplies.
All of our seeds are open-pollinated, non-GMO, seed-saver-friendly.

Vegetables	Perennial Vegetables
Grains	Herbs, Medicinal and Culinary
Compost Crops	Plants to Attract Bees and Beneficials
Fiber Plants	Oil Crops (and Oil Press)
Animal Food Crops	Edible Flowers and Nectar Flowers

To receive our 2016 catalog, phone 707-459-6410
We are in Willits, CA at the Evergreen Shopping Center M-F, 10-4
bountifulgardens.org

EQUIPPING GARDENERS FOR SELF-RELIANCE SINCE 1982

For a complete listing of all our
Events, Tours, Workshops, Teacher
Certification, Internships,
Apprenticeships, and Articles visit us
online at growbiointensive.org.

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

Interested in
joining the Ecology
Action or Bountiful
Gardens Staff?

Start Date: Immediately

Both Ecology Action and
Bountiful Gardens are seeking
qualified staff to join their team.

EA has full-time openings for
Office Manager,
Administrative Assistant, and
Executive Assistant.

BG has full-time openings for
Lead position/order fulfillment
and Receptionist/Customer Service.

For more information, please
check out our website at

[growbiointensive.org/
Opportunities.html](http://growbiointensive.org/Opportunities.html).

Ecology Action

5798 Ridgewood Road
Willits, CA 95490-9730



43 Years.

150 Countries.

Millions of people educated.
Millions of garden beds created.
Billions of pounds of
fertile soil grown . . .
and we're just getting started.

Grow Hope, Grow Abundance.
GROW BIOINTENSIVE!

**Your Donations
Keep Us Growing!**
growbiointensive.org

Non-Profit Org.
U.S. Postage
PAID
Willits, CA
Permit No. 2

Address Service Requested

Ecology Action teaches people worldwide to better feed themselves while building and preserving the soil and conserving resources.