Photo: EA staff

– FALL 2018 –

ECOLOGY ACTION'S GARDEN COMPANION

GROW BIOINTENSIVE News from around the World

Developing a 10-Bed-Unit Design

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

In 2014, John Jeavons approached me with a challenge. He said we needed to develop a diet design in less than 800 sq ft and that doing so would provide a significant source of food security and hope for people around the world. In addition to the area required for diet, I realized there needed to be space for a greenhouse, compost piles and seed crops. So I added an additional two beds to the original proposed 800 sq ft for this purpose. I should add that this diet design does not include area for paths; it is possible to grow this design without paths. However, I would recommend including them in your garden; it just makes life easier. 12–18" paths are comfortable to work. With paths included, the total garden space would be 1,200 sq ft.

When I began designing

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Meet Ecology Action's 2018 Interns

By Newsletter Staff

This year, in addition to EA's four interns, Stanford Inn sponsored two 2-Month Interns, Annika Kao and Ben Don, as part of their Sustainable Mindset program. The interns lived and worked along with EA's VGfP interns, providing a broader experience. Ben was unavailable for this article.

Marin Williams, North Carolina, USA

2-Month Intern at VGfP

I'm currently an Environmental Studies and Food Production major at Elon University, in North Carolina. In the past I've worked at the university's Loy Farm and been a member of the Garden Club there. These activities led me to want to know more about growing and farming.

I've always been interested in food systems and how food sovereignty affects different communities. I spent a lot of time as a soup kitchen volunteer during high school, but it wasn't until I went to an urban farm and rehabilitation center in St. Louis for a week that I realized how impactful food truly is. It can have a very positive, or equally negative, effect on people's lives. I heard about the internship program from my professor, Steve Moore.

While I was in Steve Moore's class, *Sustainable Food Systems*, we went through *How to Grow More Vegetables* (HTGMV) and the Biointensive method of food growing. I was captivated by the ideas. I wanted to intern with Ecology Action so I could learn how to start a Biointensive farm from the very beginning, farm without using machinery, understand the characteristics of individual crops and build healthy soil. I want to use this method in my future career in agriculture and teach others how to feed themselves as well.

Annika Kao, California, USA

Stanford Inn 2-Month Intern at VGfP

My mom has always loved to garden, and as a kid I would sometimes help her, but it wasn't the gardening that truly drew me in. I found the concept of the sustainable mindset very interesting. I am currently studying Environmental Studies at UC Santa Barbara, CA. I love the idea of learning sustainable methods in all fields of practice.

I learned about the 2-Month GROW BIOINTENSIVE (GB) Internship program through Joan Stanford at the Stanford Inn Eco-Resort. During high school, I met

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2018 Interns

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Joan while applying for an internship. Joan was part of the interview committee.

During this internship I learned so much valuable information, from everything about seed fertility to how our experiences shape us. The knowledge that I gained, not only through my mentors at the Stanford Inn, but from the VGfP interning women and other participants, is invaluable. I learned about different cultures, hardships in other places of the world, ways to help the planet thrive, and so much more. I think the most important thing I took away from this experience is that the large-scale solution is not always the best, but rather it is the small changes that each of us can make that in the end will help us and the planet most. We all get so caught up in being rigid in our way of doing and being, and assuming the same of others, when the most important change is our own change.

Now that the internship has ended, I will be returning to Santa Barbara to finish my degree. I hope that I can help spread awareness of Ecology Action, their teaching programs and the GROW BIOINTENSIVE gardening method. I want to focus my study and research on sustainable practices and hope to become a part of the university garden at UCSB. The internship opened my eyes to parts of Environmental Science that I was not aware of before, and even though my plans after graduation are unclear, I will take these teachings with me.

Gabriella Cobb,

Vermont, USA

6-Month Intern, choosing to stay another 12 months, at VGfP

I worked on a farm milking cows and became fed up with the political situation in agriculture. I saw that conventional farming practices use and manipulate nature, rather than work with the natural systems. Practices are often removed from the natural cycle. I wanted to find a way to function inside society but outside its sometimes misguided rules and constraints. I explored different agricultural practices such as biodynamics and organic agriculture. I was a shepherdess in Switzerland with free-range animals and began to see there were more-natural ways of doing the same thing.

While working on a tea farm in Switzerland, I was trying to grow my own garlic. I asked a friend and local seed-saver what to do to help the plants thrive. Judith had worked with Juan Manuel in Brazil, and she gave me a copy of HTGMV. Reading the book explained so many things to me; it gave me the 'why' of many gardening practices I'd been doing but not fully understood before.

While I was still living and working in Switzerland, I realized if I wanted to learn more about the GROW BIOINTENSIVE (GB) method, I needed more training. Then I'd be able to make a difference in agriculture in larger arenas, not just for myself. Judith told me about EA's internship, and I contacted Matt Drewno. I arrived in May 2018.

I've heard GB is effective in Russia; perhaps that research will help me when I return to Vermont.

I came to VGfP to learn about the growing techniques, but the area that has really caught my attention is seed-saving. It's so important and something I first discovered here. Growing plants, saving the seeds, planting again; it's like the circle of life. I never thought about it before. Also, the other farming I've done used tractors. At the Mini-Farm we're more involved with the plants, and that brings a sense of responsibility that isn't part of large-scale agriculture.

My Mom owns twenty acres in Vermont which will come to me. In that state there's a huge political movement around farming because large agriculture had pushed out small-scale farming in the past. I want to start a GB garden to help bring back the small farmer. Many of the long-time farmers in the area would benefit from a new approach, because to localize, you need to farm on a small scale. I'll have about an acre and hope to develop a food forest, as well as have a seed bank so the practices will come full circle.

Since my farm is in Vermont I'm really interested to apply what I've learned in a climate that has a three-month growing season, instead of the twelve months at VGfP. I've heard GB is effective in Russia; perhaps that research will help me when I return to Vermont.

Brooke Eichenlaub,

North Carolina, USA

1-Year Apprentice,

choosing to stay another 12 months, at VGfP

During college I wanted to be involved in community service so I did a 3-month internship with Ashevillage Sanctuary, which is a privately owned retreat with a demonstration garden. While I was there, I helped maintain their permaculture beds. A couple of years later I did a 12-month permaculture design internship at Asheville College. After college I wanted a way to use my Environmental Science degree and to work in the field of sustainable agriculture. I saw EA's internship on a sustainable agriculture job site and applied.

I arrived in May and will stay on until the summer of 2020. It's helpful to work in the same garden for more than a year so you can see a few seasonal cycles.

The thing I value about GB, over permaculture for example, is that the method helps streamline practices, which helps us micro-scale agriculture. I can see that these practices are going to be needed in the near future; it'll be good to know how to grow all my own food in as small a space as possible. When I go home I want to help others in my community be able to start a community garden or a garden of their own. Everyone should have a chance to grow their own food.

GB...helps streamline practices which helps us micro-scale agriculture...

Kimberley Fisher,

Bermuda

8-Month Intern and Assistant Manager in training at VGfP

I was born in Bermuda and partly raised in North Carolina. While growing up, my father started a garden to help supplement the family's diet. I remember helping weed, water and harvest from the garden.

I heard about GROW BIO-INTENSIVE via a series of connections with people using and teaching the GB method. Ms. Frances Eddy, an EA 5-Day Teachers Workshop participant in 2002, was teaching GB informally in Bermuda. Chris Faria, a mutual friend of Frances and me, attended the workshop, and she gave him a copy of HTGMV.

He became inspired and together with his wife, Alba, decided to start a garden of their own. I interned with Chris and learned some of the basics of the GB method.

When I was 22 I was working at a non-profit in Bermuda but found it wasn't a good fit. I decided to start a project of my own through an internship at EA. I discovered that physical work, and work which is directly involved in growing and sharing food, feels healthy and right.

In order to learn more about GB, I came to the Golden Rule Mini-Farm in October 2017 and worked with Rachel Britten, the GRMF Manager at the time. When an internship became available at VGfP in March 2018, I joined Matt Drewno on the coast.

I hope to collaborate with Chris and others from my home to create a GB learning center in Bermuda. We're both currently training for Basic-Level Teacher Certification.

What I value most about my time at VGfP is the connection with these people that's developed. I can't imagine ever not having them in my life. Not only the teachers and interns from EA, but also the communities I've experienced in Mendocino County; the forests, the people, the commitment to local food movements, it's all really inspiring. I was considering other training sites, but I feel it's providential that I was meant to be here. It's a privilege and an honor to be in this space.

I'm considering staying another year as an apprentice, which would give me a chance to become really grounded in the GB method. But when I finish, I want to return to Bermuda and teach the method to the people there. Our island imports 100% of our food. The GROW BIO-INTENSIVE method could change that.

Bermuda imports 100% of its food. The GB method could change that.

10-Bed-Unit Design

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the diet, I had participated in several Ecology Action workshops and programs and was a certified teacher in the GROW BIOINTENSIVE (GB) method. I had already been working with Booklet #31 and the GB method for several years. I had previously designed several diets using Booklet #31. I share this with you because I didn't arrive at the 10-Bed Design on my first attempt—in fact in the beginning my first diet design was 27 beds! Most often, beginning GB students create designs somewhere between 20 and 40 beds. Many of us find the diet design practice to be fun and exciting!

Crops at the VGfP Mini-Farm. Photo: Matt Drewno

Over the years of working with diet designs, John noticed a few significant things. First, growing a 65-day maturing potato variety followed by a 90-day flour corn variety will enable one to grow a significant amount of calories and biomass in a single bed during the main growing season. Next, leeks provide a certain quality and quantity of essential amino acids which make it a highly effective crop to grow in a GB system. These three crops formed the basis of the first 10-bed diet design.

Trying to actually grow this design in my cool, maritime climate proved challenging. Flour corn just doesn't do well on the coast; it is difficult to get it to mature before our winter rains arrive. Without forcing the potatoes, they take longer to grow here, the quickest varieties taking 80–90 days. For years we have been running experiments on a 2-bed crop rotation to maximize calories, biomass and nitrogen fixation. Results so far have highlighted quinoa, barley and oats as high potentials for our climate.

My current 10-Bed Design grows the following crops: potatoes, leeks, garlic, kale, onions, carrots, beets, quinoa, barley, fava beans, oats and sunflowers. More information on my crop selection will be available in a forthcoming booklet.

It is important to note that your soils, climate and experience level will influence your crop selection. We are fortunate to be able to learn from the wisdom developed at Ecology Action over 40+ years of research, but without our direct, personal experience designing the diets and cultivating the soil, the information is not fully useful. As we work to fine-tune the 10-bed unit we're discovering that each step along the path of learning the GROW BIOINTENSIVE method is helping us approach this next phase in maximizing yield while minimizing water and inputs.

Garden of Hope Makes a Difference in Kenya

Jonnes Elijah Mlegwah, known as Mlesh, was an 8-Month Intern at The Jeavons Center Mini-Farm in 2016. When he returned home, he started the Garden of Hope project that encompasses a variety of research and teaching activities. Here is an overview.

Mlesh's garden project is in the Central Province of Kenya. Biologically intensive gardening skills are particularly important for people in this region. Due to severe drought conditions in the region, water and food prices have increased dramatically, which has resulted in theft and burglary in some areas. The situation is a stressful one.

Mlesh manages Garden of Hope and is passionate about teaching the GROW BIOINTENSIVE method. Despite poor growing conditions and low rainfall, Garden of Hope grew the following crops in 2018: alfalfa, amaranth, beans, capsicum, carrots, cassava, cocoyam, cowpeas, garlic, ginger, green grams (mung), kale, lima beans, maize, millet, okra, onions, potatoes, sorghum, spring onions, butternut squash, pumpkins, sugar cane, sunflower, sweet potatoes, thorn melon and water melons. Imagine showing struggling farmers

Garden of Hope thrives during drought. Photos: Garden of Hope staff

that this kind of variety and abundance is possible in an area experiencing so much hardship!

Also in 2018, Garden of Hope trained 120 farmers using the GROW BIOINTENSIVE method, worked with volunteers, including hosting two from Italy, taught GB in the school and developed a garden there. They taught community members through the development of presentations called, "Another Way of Living" and created a garden site for this endeavor as well.

In addition, Mlesh organized two vine shares with local farmers as a way of encouraging them to plant indigenous sweet potatoes which are best suited to the local climate. A total of 160 farmer-gardeners attended, hearing how best to propagate plants during drought conditions. In addition, November's topic was Dryland Farming, and the organizations RARE (the Revue Africaine de Recherche en Éducation–African Journal of Education Research) and International Foundation of Organic Agriculture Movements supported a workshop designed to teach conservation methods.

Mlesh wrote recently, "...we've managed to transform [farmers' and their family's lives] and have moved from sadness to happiness, from

Young girls with indigenous sweet potato slips for planting at the Garden of Hope.

buying to selling, from single-handed eating to abundance, from borrowing to giving, from living-to-eat to eating-to-live, from impossible to possible, and from suffering to rejoicing."

Mlesh is already creating initiatives for 2019. He's motivated to share how GB techniques can help solve food and water issues in his region—but he needs our help. If you'd like to support Mlesh's work and the Garden of Hope project, please make a contribution via credit card at

www.gofundme.com/mleshs-biointensive-training-farm

or via PayPal on our dedicated donation page

https://donatenow.networkforgood.org/gardenofhope.

We're trying to raise $3500—an amount that will allow Mlesh to continue his wonderful work. Your help will go far in easing the challenges he faces in Kenya. Thank you.

EA and VGfP 9-Part Summer Course 2018

By Matt Drewno, Victory Gardens for Peace Manager and EA Board Member

Ancient Greek philosopher Epicurus founded a small college in a garden in Athens over 2,000 years ago. It was there that students dialogued on the subjects of health, science, philosophy and economy. In fact the word "economy" comes from the Greek root *oikonomia*—a combination of the words *oikos*, meaning "household" and *nemein* meaning "to manage". At the heart of this school of philosophy was the garden, where the world was experienced in its wholeness and from which grew the mind, body and soul towards health in society.

In our 9-part Summer Course we explore the connection of growing soil, food and income to grow our relationship to the greater web of life peacefully and sustainably. This 9-part Summer Course brings Ecology Action interns, apprentices and local community members together to share their experience and ideas on how to build a sustainable future together through the Biointensive method of agriculture.

This first of two 9-part courses runs each year from June through August at our training sites in Mendocino County. The focus of the first 9-part course is on the basic principles which serve as the foundation of the GROW BIOINTENSIVE method. In the morning of each class we discuss the global situation in relation to each principle, and then introduce the principle. In the afternoon we practice hands-on and proper techniques.

Before wrapping up, we frame the principle in relationship to the whole-system approach which makes Biointensive an appropriate and exciting solution for a sustainable future.

The second 9-part course runs from August through October and integrates the practical approach with a complete diet, compost and income design. At the end of these 18 classes students create and present a

9-Part Course Participants: Back row: Susan (CA), Brooke (NC), Jenna (CA), Danika (CA). Front row: Annika (CA), Marin (CA), Kimberley (Bermuda), Gabriella (VT) and Buckminster (VGfP dog). Photo: Matt Drewno

final project with a complete diet, income and compost design using the Biointensive technique.

For our interns and apprentices, these courses enhance the day-to-day experience of the Biointensive method. For local participants, these courses inspire greater action towards sustainability in our communities. When we are all together it is magic—and inspiration takes root! The Biointensive method helps people from all over the world take part in changing the current paradigm and celebrates the great work ahead. We welcome you to join us in this work, in whatever way you can!

Appreciation from Cameroon

CIGIF

Christ International Giving Foundation

Giving for the sake of Christ...

Christ International Giving Foundation (CIGIF) is a humanitarian non-profit NGO. CIGIF seeks to liberate the poor, widows, widowers, orphans, the physically challenged and those who are disadvantaged. They provide basic needs such as scholarships, education, health care, food, good pipeborne water and other forms of support to help individuals feel a part of their communities. Below is a letter to Ecology Action from CIGIF's president.

Our organization was one of those that were fortunate enough to attend both Biointensive workshops organized by the Education for Sustainable Development and Rural Foundation (ESARDEF), financially supported, with educational materials, by Ecology Action held in Cameroon June 2018. We are so pleased we had this opportunity to build a greater understanding of Biointensive farming and food production. It is our hope such an opportunity will be made available to us again, to better strengthen our services to Cameroon communities where we work. ESARDEF has already set up a Biointensive demonstration farm, training approximately 30 small farmers. We want to express our appreciation for your helping hand in getting us started in GROW BIOINTENSIVE farming. We will remain ever grateful and hope to organize our own demonstration farm as soon as we are able.

Sincerely,
Manyi Ayuk Mbeng,

CIGIF President

… ESARDEF has already set up a Biointensive demonstration farm, training approximately 30 small farmers…

Electronic Versions of EA's Booklets are Online!

Ecology Action's Self Teaching Mini-Series booklets are now available for purchase and download in electronic format as "eBooklets". They range in price from $1 to $6 and can be found at www.growbiointensive.org/ePubs or by clicking the ePublications link on the main menu, and then clicking the eBooklets tab. Payment can be made through PayPal, or credit/debit using the Guest option on PayPal's site. Almost all the 40 English-language booklets are online now; a few are still being formatted and will be added as they become available. After that, a selection of key information sheets and articles will be added, along with our Spanish-language booklets. We hope to complete the process of bringing them online by the end of the year.

To celebrate the introduction of our electronic publications, we've created an enhanced version of our popular GB Farmer's Handbook, in English. It comes with a beautiful set of full-color GB teaching posters, outlining the 8 Essential Elements of GB. You can download it from www.growbiointensive.org/ePubs for free.

Cindy Conner's New Ventures

Cindy Conner is an author and Certified GROW BIOINTENSIVE Intermediate-Level instructor. Here is a recent update from Cindy.

I still am strongly into growing food and cover crops in my garden and in the last few years have added cotton and flax. I have become deeply involved with all aspects of growing one's own cotton and linen for clothes. In 2011 I learned to spin the cotton I grew and completed my homegrown, handspun, naturally colored cotton vest in 2015. During that time I also wrote *Grow a Sustainable Diet* and *Seed Libraries*. Once the vest was done, and I was free of book writing, I wanted to encourage and teach others how to grow their own clothes and realized that not everyone lives in a climate conducive to growing cotton, so I learned what was involved in turning flax into linen. I now have all the flax-to-linen tools needed, and this is the third year I have grown flax and cotton.

Cindy's homegrown, handspun, naturally colored cotton vest

Photo: Homeplace Earth staff

After the cotton vest, I completed a cotton shirt in the fall of 2016. Mother Earth News published an article about that shirt in the April/May 2018 issue. I have written about the vest, shirt, and all that goes on from seed to garment with cotton and flax/linen at www.HomeplaceEarth.wordpress.com. Since then I have finished a shirt made with a cotton warp and linen weft. Besides learning to spin, I needed to learn to weave. Even though I knew how to grow the plants and I could sew, there is still much to learn about the spinning and weaving. I hear it is good for the brain to learn new things. I figure my brain is doing well with all that I am learning.

The green and brown varieties of cotton that I grew crossed in the garden, so I started the Cotton Project. With the help of a few friends and family, we grew out subsets of the seeds to see what we would get. We had some surprising finds and are continuing with it in 2018. The genetics of seeds is amazing! You can read about the Cotton Project here homeplaceearth.wordpress.com/2017/05/09/the-cotton-project/.

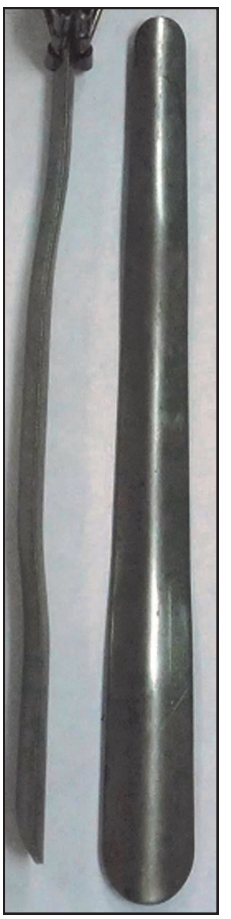
In 2018 I hope to weave a dress, with the cotton warp coming from all the colors from the Cotton Project, and the linen weft from my flax. I'd also like to make a vest with the warp and weft of all homegrown linen, maybe with some natural dyeing involved.

I was the keynote speaker at the Organic Oklahoma Conference in October, with presentations and workshops on Grow a Sustainable Diet, Transitioning from a Homestead Gardener to a Market Gardener, and Planning for Cover Crops in Your Garden Rotation.

So, that's what has been going on around here. This year I'm 67 and know very well that the more I know, the more I realize how much I don't know. There is always something new to learn and adventures to be had.

What's a Widger?

By EA Newsletter staff



Noun: widger (plural widgers) (horticulture) a small gardening tool used to loosen soil, consisting of a handle and long thin spatula, usually made of metal.– Wiktionary

This tool measures seven inches long and three-fourths of an inch wide, tapering to one half inch. It's great for pricking out delicate seedlings and transplanting small starts. It can also be used as a small scoop or to side-dress plants. Bountiful Gardens used to carry them but I recently discovered some other online sources for this handy little tool. If you've never used one, consider treating yourself.

www.groworganic.com/nitpicker.html.

www.harrisseeds.com/products/40833-stainless-steel-widger.

City Waste Reduction through Raising Chickens

Adapted from www.kvue.com/news/local/city-giving-free-classes-cash-to-austinites-who-plan-on-keeping-chickens/431009868.

Austin Resource Recovery, a City of Austin service, is working to reach Zero Waste by 2040, which means reducing the amount of trash sent to landfills by 90 percent. As part of this effort, the city developed The Chicken Keeping Rebate Program, which supports the Zero Waste goal by educating residents on ways to keep food scraps, yard trimmings and food-soiled paper out of the landfill.

As an incentive, the program pays participants a rebate to raise backyard chickens. Those interested in the Austin Resource Recovery's Home Composting program attend a free "chicken keeping class," buy a chicken coop, submit a rebate application online and receive a $75 check from the city for their efforts.

"Chickens recycle your food scraps while giving you fresh eggs and creating healthy soil," the city said. If chickens are allowed to free range, the soil can be improved by the tilling action of their scratching. Chickens allowed to forage in your yard or on your property also eat insects, reducing the number of 'bugs' in the area. It's best to keep your chickens out of the garden though, while crops are growing. as they love fresh vegetables. When the garden harvest has been taken in, let them scratch and forage and they'll help with clean up.

A few simple suggestions for raising chicken:

- Don't build the coop near your neighbor's house or near your home's windows.
- Protect your chickens from household pets, such as cats and dogs, which are natural predators.
- Provide a clean, dry hen house and run for your chickens.
- Supply plenty of quality feed and fresh water. If you want your chickens to lay, consider a layer feed.
- Chickens are social animals, so keep four or five in a coop at a time.

For information on chicken keeping classes in the Austin area, visit

www.eventbrite.com/o/city-of-austin-chicken-keeping-rebate-program-1915945389.

Matt Drewno—Advanced-Level Certified GB Teacher

We are pleased to announce the following advancement of Matt Drewno, Vice President of Ecology Action, in the GROW BIOINTENSIVE global network! In recognition of his excellent work, Matt has been awarded Master-Level Teacher Certification.

Matt is manager of The Victory Gardens for Peace Mini-Farm (VGfP), formerly known as the Green Belt Mini-Farm. In this work he has planned and coordinated the equivalent of 200, 100-sq-ft GB growing beds at VGfP and Stanford Inn. He has planned, coordinated and taught a program of 2-Month and 6-Month Internships, a 1-Year Apprenticeship, two types of 9-Day Courses and volunteers at VGfP. With a sincere interest in seed saving, he developed the VGfP Seed Bank for the coastal climate, and has authored a comprehensive booklet for approaching the design of a 10-bed (1,000-sq-ft) growing unit entitled, *Booklet 38: Achieving More With Less: Experiments in Growing a Complete Diet in 1,000 Square Feet,* that is a major contribution to GB. Publication is expected in 2019.

Matt Drewno

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VGfP Seed Bank Is in Its Third Year

By Matt Drewno, VGfP Mini-Farm and Seed Bank Manager

The Victory Gardens for Peace (VGfP) Seed Bank has continued to expand with donated seeds and those grown within a 15-mile radius of the Mendocino Coast. Over 60% of our seeds have been locally grown, and thanks to a generous donation by Bountiful Gardens earlier this year, our current inventory has tripled to over 450 varieties as of fall 2018.

The seed bank is about more than the seeds—it's also about celebrating and enhancing the culture of community seed-saving. Each spring and fall we host the annual Mendocino Seed Exchange held at our local farmers market. This winter we will be hosting our third and fourth Seed Cleaning Jamboree where local gardeners and farmers come together to clean, share and exchange seed. The VGfP Seed Bank has become a vehicle for bringing people together and sharing simple techniques and stories about growing seed, soil and food.

VGfP Seed Bank is focused on creating a more resilient community through the sharing of seeds. We are able to offer free seed because we're donation-based. We invite you to visit us and take some seed for your garden. Please visit the VGfP Seed Bank and Demonstration Mini-Farm at the Stanford Inn in Mendocino, CA, or call (847)404-2586.

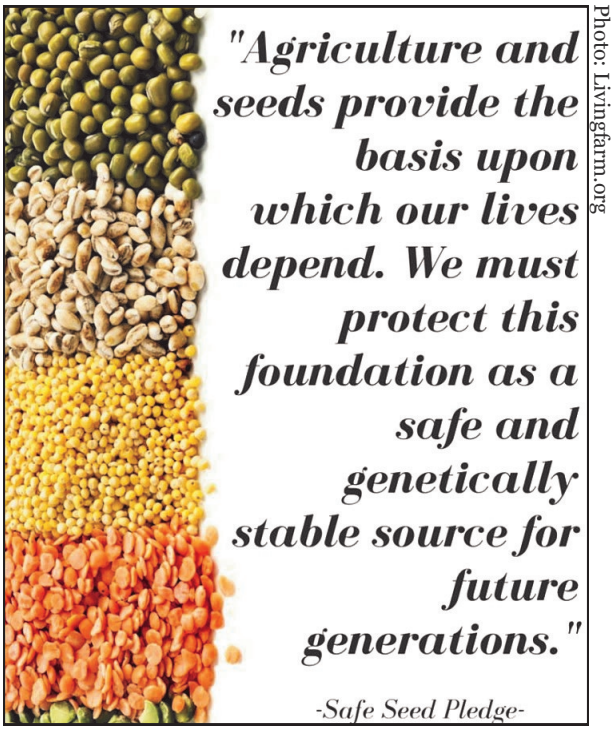

Photo: Livingfarm.org

Cabin in the Woods

By Jamie Chevalier

Jamie gardens in Northern California.
Photo: Quail Seeds staff

Quail Seeds, www.quailseeds.com/, operates out of our tiny cabin on the Eel River in Mendocino County. On a small piece of land, we grow food, herbs, flowers, and seeds.

Fifteen years ago, Bob, Jamie, and our son and his partner moved from Alaska to Northern California. Working together as a family, we were the seed-packing and quality-control crew at Bountiful Gardens for many years. I wrote the Bountiful Gardens catalog and helped customers with garden questions. We grew plants that were then offered in the catalog. In 2013, we bought land on the Eel River and started our own gardens.

We bring together seeds from farms and gardens all over the country to help others create homes and backyards that are inviting, inspiring and fun. Our goal is to offer plants that create a simple and effective local medicine kit, a varied and delicious local diet, and neighborhoods people like to live in, as well as homes for pollinators, birds, bees, and all of us.

Biointensive Team Corner

Leslie Roberts, Newsletter Editor, Graphic Designer and Website Assistant

Photo: Frank Roberts

Leslie learned about the closed system of our environment on "Spaceship Earth" in a college class in the late 1970s. She told family and friends about the finite-ness of our planet's resources at a time when the words 'sustainability' and 'tipping point' hadn't come into use yet. After raising two sons, she went back to college and developed her writing, communication and graphic art skills. She has been the newsletter editor and web designer for a few nonprofit organizations in the last fifteen years.

Five years ago she and her husband moved to Booktrails, in Northern California, and she became the newsletter editor for Ecology Action. It feels like the coalescing of years of training and the fulfillment of the desire to be able to share the message of living lightly on the land and being good stewards of all that God has given us. "I'm excited to be part of an organization sharing Mini-Farming and closed-loop sustainability through education in GROW BIOINTENSIVE concepts."

Herbal Spotlight: Elderberry

By Rachel Laase, staff at One Million Redwoods Project and student herbalist

Rachel is part of the For the Wild: One Million Redwoods Project. Their mission is to renew temperate rainforests with native species to push back against climate change. You can read more about the project here, http://forthewild.world/1-million-redwoods/. This will be the last Herbal Spotlight by Rachel. We thank her for her contributions to the newsletter.

The well-known *Sambucus*, more commonly recognized as Elderberry, has a long and rich history of medical use throughout the world. Hippocrates wrote about the useful medical properties of this tree! These nutritious berries are rich in flavonoids, and high in vitamin C, vitamin A, bioflavonoids, beta-carotene, iron, and potassium. Though the berry is the most popular way to receive the medicine of this tree, the flowers are fragrant, edible, and medicinal as well. Most commonly used as an immune booster and to help fight off colds, elderberries are also anti-inflammatory, anti-viral, can relax sore muscles, help with sinus issues and reduce nasal congestion. In addition, they aid detoxification, digestion, and strengthen the heart.

Elderberry trees prefer full sun and can grow 10–15 ft tall. Depending on the variety, there are more shrub-like elders if you have limited space. When planting elders, make sure to plant at least two trees to allow them to cross-pollinate.

Photos: Pinterest.com

They have a shallow root system so it is best to give them regular watering the first 2–3 years until they are established. Adding compost each year will also help the trees stay healthy and continue to grow and produce berries.

You can harvest elderberry flowers from May to mid-June and the berries from August to September. Let fruit ripen on the plant to a dark purple color. Prune off the entire cluster when ripe, and strip the berries

into a bowl. The fruit doesn't store well at room temperature, so keep it refrigerated after harvest, and use it as soon as possible. There are many ways to incorporate these delicious flowers and berries into your daily life and herbal routine from jams, scones, pie, teas, syrups, to fermented into wine. Here's a recipe for Elderberry Immune Boosting Syrup:

Ingredients
3/4 cup dried elderberries
A stick or two of cinnamon bark
Whole cloves—about 10
Fresh ginger—a few quarter-sized slices
4 cups of water

Directions
Place all ingredients in a 2-qt saucepan. Bring to a boil, cover the pan and turn off the heat.
Let it sit for 8 to 12 hours.

Return the pan to the heat, and bring to a boil again. Reduce heat, cover and simmer 30 minutes.

Strain contents and add 1–2 tablespoons honey and a dash of vanilla if desired. This is not a thick syrup. It keeps in the refrigerator for about a month. It can also be frozen in ice cube trays and the cubes stored in an air-tight container in the freezer for later use.

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.

Leek and Potato Soup

Adapted from www.foodnetwork.com/recipes/alton-brown/leek-potato-soup-recipe/.

Ingredients
1 pound leeks (approximately 4 to 5 medium) cleaned, and tough, dark green sections removed
3 tablespoons unsalted butter
Heavy pinch salt, plus additional for later seasoning
14 ounces Yukon Gold potatoes (approximately 3 small), peeled (if you prefer) and diced small
1 quart vegetable (or chicken) broth
1 1/2 cups whole milk
1/2 teaspoon white pepper
1 tablespoon snipped chives

Chop the leeks into small pieces.

Directions
In a 6-quart saucepan over medium heat, melt the butter. Add the leeks and a heavy pinch of salt, and sweat for 5 minutes. Decrease the heat to medium-low, and cook until the leeks are tender, approximately 25 minutes, stirring occasionally.

Add the potatoes and the broth, increase the heat to medium-high, and bring to a boil. Reduce the heat to low, cover, and gently simmer until the potatoes are soft, approximately 45 minutes.

Turn off the heat, and puree the mixture with an immersion blender until small chunks remain (or smoother or chunkier, depending on your preference). Stir in the milk and white pepper. Taste and adjust seasoning if desired. Sprinkle with chives and serve immediately or chill and serve cold.

Photo: www.lawyerloveslunch.com

Climate Change and GROW BIOINTENSIVE

If the GB method were used properly and throughout the world, this approach has the capacity to reduce climate change by 50%, and more.

Over the past 200 years, since the beginning of the industrial age, we have been burning fossil fuels, cutting down trees and producing livestock at unprecedented rates. As a result, the levels of greenhouse gases—such as carbon dioxide, methane and nitrous oxide—in the atmosphere have increased dramatically from preindustrial levels. These greenhouse gases trap solar radiation, just like the glass panes in a greenhouse, and warm the planet. This is good to some extent, since that warmth allows life as we know it to flourish. But as the level of greenhouse gases gets higher, more solar radiation is trapped, and the temperature of the planet increases to levels we have never experienced. The September global surface temperature has been increasing at an average rate of 0.06°C (0.11°F) per decade.[1]

As temperatures get hotter, crop yields generally decline, as crops are not designed to thrive under these conditions.

Rainfall patterns shift, causing more droughts, flooding and other catastrophic weather-related events, which will lead to regional food shortages and famine.

Finally, with increased temperature, polar ice caps begin melting, causing dramatic rises in sea levels, flooding of coastal cities, loss of land through erosion, salinization and contamination of drinking waters and soils.

Carbon dioxide, methane and nitrous oxide are greenhouse gases. Photo : CCO

What does this mean to human health? While it is challenging to precisely measure the health effects attributable to climate change, each of these effects has significant negative consequences. Combined they become catastrophic on an unprecedented global scale that threatens life as we know it.

It can feel overwhelming. But then we ask: what can we do? Some people respond by saying that this type of warming is just a natural cycle, that activities like burning fossil fuels, deforestation and livestock production have nothing to do with global warming and climate change, and there isn't much we can do about it anyway.

Photo: VGfP staff

Plants take in carbon dioxide and use it to form their stems, leaves, roots and flowers.

Many farmers and gardeners know there is something we can do. We know that plants take in carbon dioxide from the air and use the carbon to form their stems, leaves, roots and flowers. When the plant is harvested, we can put that carbon into the soil. So, if we farm in a way that maximizes the amount of carbon captured in our crops, and return as much of that carbon to the soil as possible, we can effectively remove carbon dioxide from the atmosphere and store it in the soil.

Our current food system is responsible for 19%–29% of global greenhouse gas (GHG) emissions attributable to humans.[2] Conventional intensive tillage and conventional fertilizer usage need to be minimized. Livestock production needs to be minimized. We must increase crop production on our currently available agricultural land, and reduce or halt deforestation. How can we do these things and still feed ourselves and our growing population? GROW BIOINTENSIVE® (GB) offers some real solutions.

- GB is a complete food-growing system that requires no fossil fuels, uses simple people-powered tools and open-pollinated seeds, making it a system

that anyone on the planet can use. It has been successfully used in over 140 countries for more than four decades, and much longer in some cases.

…When the plant is harvested, we can put that carbon into the soil….we can effectively remove carbon dioxide from the atmosphere and store it in the soil….

- GB food production uses close spacing, farm-produced compost, double-digging as needed for cultivation and minimal inputs of organic fertilizers to balance the soil's nutrients.
- With GB we can produce two to four times the yields in the same area because GB-managed soil can support four times as many plants per unit of area.

GB techniques have demonstrated energy production efficiency. Research in onion production indicated an energy efficiency ratio of 51.0, meaning for every calorie expended from direct and embodied energy, 51 calories were produced.[3] In US mechanized agriculture, onion production has an efficiency ratio of 0.9.[4] Similar work in flour corn showed GB to be 16 times more energy efficient than conventional production. Much of the energy used in GB is renewable. This combination of renewable energy, and dramatic energy-use reduction through efficiency, results in a significant reduction of greenhouse gases and the global warming they cause.

This is an excerpt from the Ecology Action Perspective Climate Change and GROW BIOINTENSIVE. *To read the complete article please visit*

www.growbiointensive.org/PDF/ClimateChangeandGROWBIOINTENSIVE_English.pdf.

1 Global Analysis – September 2015, ncdc.noaa.gov/sotc/global/201509, accessed 11/9/15.

2 Vermeulen, S.J. et al., Climate Change and Food Systems, Annu. Rev. Environ. Resource. 2012. 37:195–222.

3 Moore, S. 2010. Energy efficiency in small-scale Biointensive organic onion production in Pennsylvania, USA.

4 Cervinka, V., Chancellor, R.J., Curley, R.G. and Dobie, J.B. 1974. Energy requirements for agriculture in California. California Dept of Food and Agriculture, Sacramento, CA.

Book Reviews

Designing a GROW BIOINTENSIVE® Sustainable Mini-Farm—A Working Paper

Booklet 31
Ecology Action Staff, Revised 2013, 45 pp.

This booklet introduces in detail the concepts behind the design of a sustainable mini-farm that provides food for a balanced diet, compost material for soil fertility, and crops to market for a small income, all in the smallest possible area. It includes ten forms to be filled out with information about your garden site and nutritional needs, and takes you through the process to a sustainable design for your specific situation. The process is one used in our workshops that has evolved over many years. For those who want to implement the GROW BIOINTENSIVE method in their home garden, this is a great practical tool!

The e-version can be purchased for $4.50 using PayPal, from www.growbiointensive.org/ePubs. Click the eBooklets tab, scroll down to Booklet 31, click Buy Now or Add to Cart.

Cereal Crops

By Warren H. Leonard and John H. Martin
(Macmillan, 1963).
Review by John Jeavons

A more advanced and in-depth book than the first one by the same authors, *Principles of Field Crop Production*, this is a treasure trove of useful information about winter and summer grains!

The topics include general principles, including botany and storage, cultural practices, composition, diseases, insect pests and breeding, for:

- Barley
- Cereal Rye
- Grain Sorghum
- Maize
- Millets
- Oats
- Rice, and
- Wheat

This book provides you with information such as:

- How to harvest barley two weeks early without impairing the nutritional value of the grain.

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Book Reviews

Continued from page 13

- Sorghum porridge is really tasty!
- How to grow rice effectively.
- How to get more bed-growing time for all your crops by transplanting corn ten days after emergence in the seedling flat. The reason is the "temporary" initial root.

Photo: Open source

Ripening wheat.

- No matter how deep you plant a corn seed in the growing area, the final roots actually start growing at the same distance below the surface of the soil This principle enables the Navajo to plant seeds 18 inches deep in areas that only receive 3.5 inches of rainfall and still get a reasonable yield of seed for calories to eat and biomass for use in creating compost!
- Some Japanese millet can mature in much less time—45 to 60 days—and with much less water.

In the world of the future, growing more calories and biomass per unit of time, with less water, is going to be the best game in town.

The more you learn in a systematic, building-blocks-of-practical-information way, the more exciting the process becomes!

"One is nearer God's heart in a garden than anywhere else on earth."

—Dorothy Gurney

Opportunities at EA

Apprenticeship Leading to Farmer/Teacher/Trainer Positions for Qualifying Candidates:

Ecology Action is now accepting 2019 12-Month Apprenticeship applications for positions at The Jeavons Center (TJC) site in Willits, CA, and at the Victory Gardens for Peace (VGfP) near the town of Mendocino, CA. This Apprenticeship is for April 1, 2019, through March 31, 2020. Experience an exciting, complete annual cycle of closed-loop GROW BIOINTENSIVE® soil- and food-growing. For complete information see

http://growbiointensive.org/about_trainings.html#apprentice.
Application deadline is January 1, 2019.

8-Month Internship:
Ecology Action is now also accepting 2019 8-Month Internship applications for positions at TJC site in Willits, CA, and at VGfP near the town of Mendocino, CA. The Internships are for April 1 through November 30, 2019. Experience an exciting active growing season of closed-loop GROW BIOINTENSIVE® soil- and food-growing. For complete information see

www.growbiointensive.org/Internship/8Month.html.
Application deadline is January 15, 2019.

2-Month Internship:

Ecology Action is now also accepting 2019 2-Month Internship applications for positions at VGfP near the town of Mendocino, CA. The Internship is for June 1 through July 27, 2019. Experience an exciting short growing season of closed-loop GROW BIOINTENSIVE® soil- and food-growing. For complete information see

http://growbiointensive.org/SummerInternship/index.html.
To download the information booklet, click https://bit.ly/2ywoTYi.

Application deadline is May 1, 2019.

Farmer/Teacher/Trainer Staff Positions:

Ecology Action is now also accepting applications for long-term positions as Farmer/Teacher/Trainer Staff at TJC in Willits, CA, and at VGfP near the town of Mendocino, CA. The positions begin April 1, 2019. Experience many exciting, complete growing seasons of closed-loop GROW BIOINTENSIVE® soil- and food-growing and teach others in this skill. For complete

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ECOLOGY ACTION'S GARDEN COMPANION

~ Published three times a year ~

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Support Ecology Action's Work

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

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.

EA 2019/2020 Events

❖ March 1–3
3-Day Ecology Action
GROW BIOINTENSIVE℠ Sustainable Mini-Farming Introductory Workshop, Willits, CA
Application deadline: February 22.
See growbiointensive.org/workshop.html.

❖ April 1–November 30
Ecology Action's GROW BIOINTENSIVE® Sustainable Mini-Farming 8-Month Internship.
Application deadline: January 15; acceptance notice by February 1.
See www.growbiointensive.org/Internship/8Month.html.

❖ April 1, 2019–March 31, 2020
Ecology Action's GROW BIOINTENSIVE® Sustainable Mini-Farming 1-Year Apprenticeship. Application deadline: January 15; acceptance notice by March 1.
See http://growbiointensive.org/about_trainings.html#apprentice.

❖ June 1–July 27
Ecology Action's GROW BIOINTENSIVE® Sustainable Mini-Farming 2-Month Internship.
Application deadline: May 1; acceptance notice by May 15. See https://bit.ly/2ywoTYi.

❖ June 1–October 12
Ecology Action's GROW BIOINTENSIVE® Sustainable Mini-Farming 4-Month Internship. Application deadline: May 1; acceptance notice by May 15.
See http://growbiointensive.org/SummerInternship/index.html.

☐ **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.

☐ Seed - $40 ☐ Garden - $60 ☐ Farm - $100
☐ Community - $250 ☐ Village - $500 ☐ Town - $1000
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Bequests...Please contact Ecology Action's Director at 707-459-0150 for more information.

Ecology Action is a 501(c)(3) non-profit. All contributions are tax-deductible.

Matt Drewno

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It has been a long-term goal of Ecology Action to have an additional Master-Level GB Certified Teacher in addition to John, Agustin Medina and Marisol Tenorio. Congratulations, Matt!

Opportunities

Continued from page 14

information see

www.growbiointensive.org/Opportunities.html.

Applications accepted ongoing.

Those seriously interested in this work at one of these sites for at least 3 to 5 years will be given preference in evaluation. It is a commitment to oneself, others and the Earth. The Ecology Action staff are trained to be leaders in this high-yielding, resource-conserving, soil-building method of farming and gardening.

Ecology Action Newsletters are available online at growbiointensive.org/Enewsletter/archive.html.

To view a complete list of GROW BIOINTENSIVE classes and upcoming activities visit growbiointensive.org/events_main.html.

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