

# ECOLOGY ACTION'S GARDEN COMPANION

GROW BIOINTENSIVE® News from Around the World



**SUMMER/FALL 2020**

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# The Jeavons Center Mini-Farm Report

By John Jeavons, Ecology Action Executive Director

*“Great enchantment and productivity grow with each year of the garden. True vision, the necessary permit for this growth, expresses the enormous possibility of what can be achieved. Imagination is required right from the start. The era in which we live is a little frightening when you look at it very plainly and don’t endeavor to escape the truth of what we are doing to the world. The vision of which I am talking is one of the greatest things we can possibly conceive of. It is a recovery from all the destruction going on. It is possible.”*  
– Alan Chadwick, Villa Montalvo 1972

Our world is moving at a challenging pace, and individuals and organizations are coping as best they can with the unpredictable changes that 2020 has brought to all of us. Ecology Action is no exception: for an organization so focused on in-person training, the social distancing guidelines necessary to slow the spread of COVID-19 have been difficult to work around. But we are persevering!

Ecology Action’s 8-Month Internships are a unique experience, in which participants travel from abroad to stay, farm, learn and grow with us. The program grows people as much as it grows all kinds of crops, and at the close of the program each year everyone involved is better off for the process. The participants return to their home countries and teach their friends and neighbors the GROW BIOINTENSIVE skills that they have perfected here in Willits, and we keep communications open going forward on their gardens and activities. Many of these interns go on to start their own training programs at their home garden sites, or with the organization with which they have been working. In

March, when the pandemic really started to take hold in the United States and the State of California implemented the nation’s first shelter-in-place programs, we were preparing to welcome our new 2020 interns from around the globe.

As the arrival dates grew closer, it became clear that the visa program itself was in jeopardy; flight bans took effect, and the prospect of interns becoming sick en route stuck here with no way home for an extended time, or worse, getting infected here in the US—was a realistic one. We had no choice but to contact all our interns and inform them that we had decided to present the program online, rather than onsite.

So now, like so many other organizations around the country and the world, we are becoming proficient in using the video conferencing service, Zoom. And while we love having our onsite interns, there is a silver lining to this story: putting the internship online made it possible for 3 times the number of people to participate in the program! Rather than the 9 interns we were planning on hosting, over 25 people from countries in Central and South America, Africa, Nepal, and the U.S. are participating in all-day classes each Tuesday, virtual classroom talks and discussions, and keeping up on assignments, safe in their own spaces. (Shyam from Nepal sent this beautiful seed-saving photo and writes, *“COVID-19 taught the Nepali people an important lesson: agriculture is vital for human life, and so they are back to farming. We have a lot of demand for seed and fruit trees and are focusing on OP seed production and teaching seed-saving.”*)

Like everyone else, we are unsure how long this “new normal” will last, but it does seem like it may be quite a while. But a positive aspect of these changes is the fact that more people can attend (we are hoping for an online class of 100 people from around the world in 2021), and that there will be a lasting record of the classes, which will prove valuable in the future for generations to come. There is truly nothing like this GROW BIOINTENSIVE Online Internship—covering in such depth and breadth such a wide range of topics and questions on sustainable closed-loop Biointensive farming—available anywhere else in the world. We look forward to seeing you online: for those interested in applying to our 2021 online 8-Month Internship program, you can find all the information at: [growbiointensive.org/Internship](https://growbiointensive.org/Internship).

We are working to convert our other educational programs into potential online formats for 2021. Our November 6-8, 2020, workshop will not be held onsite due to COVID-19 restrictions; however, have created an



Seed-Saving in Nepal



online Zoom-based version which will take place over three consecutive Saturdays: Nov. 7, 14 and 21, 2020!

Through a connection forged via our sister organization MESA ([mesaprogram.org](http://mesaprogram.org)), Ecology Action's *GB Farmer's Mini-Handbook* was translated into Korean and published at [growbiointensive.org/Self\\_Teaching.html](http://growbiointensive.org/Self_Teaching.html), the first of hopefully many EA materials in Korean!

Matt Drewno's *Achieving More With Less: Experiments in Growing a Complete Diet in 1,000 Square Feet* (EA Self-Teaching Booklet #38) is close to completion, and should be available online by the end of the year. This timely and important work details growing a complete balanced diet for yourself and your soil on as little as 1,000 sq.ft. and hints that it may be possible to miniaturize a complete diet garden into a mere 850 sq.ft.

In other exciting news, some key projects have been initiated in spite of the chaotic events of 2020 by some of our 2019 8-Month Interns and supported by the *Kent Whealy Scholarship Fund for Ecology Action*:

- **Ana Lucia Cantillano** from **Nicaragua** is using her award to purchase equipment to carry out her project filming how GB is being used in her county. While the pandemic disrupted her filming schedule, making it impossible to travel and film as she had intended, Ana used her time sheltering at home to make simple videos to introduce others to GB (including showing how COVID-19 makes home gardens even more valuable), and began a crowdfunding campaign to complete the videography. She has been filming 2019 intern Marcia Suarez (see below) and also her primary subject Luis Quezada, who first introduced Marcia to GB. Despite the virus, she has many interviews lined up and is making progress on her film *Rule of Return*, named for the Alan Chadwick quote: "Give back to the soil as much as you have taken, and a little bit more, and Nature will provide for you abundantly."
- **Marcia Suarez** is contributing to the improvement of food security, sustainability, and nutrition by promoting GB to families on the Caribbean Coast of **Nicaragua**. She has been practicing GB at her site, guiding the local community on the philosophy and techniques of the method, coordinating and administrating all the project's numerous initiatives, and is working to qualify as a Basic-Level GB Certified Teacher. She encourages technicians of the NGO Blue Energy to become involved in certification and data collection, is catalyzing GB in the CETAA school in the nearby Wawashang community, is using soil testing and evaluation expertise from John Beeby to fully develop the fertility of her soils and is working to have her site cer-

tified as a Biointensive Agroecological Center (CAB) in her country. Open garden times have been set up for nearby community members. Her family is helping with her work. Marcia misses the brotherhood, love and tranquility of Ecology Action, and thanks the EA Team for all the support. "They changed my life," she says in a recent letter, "it was a blessing."

- **Fredrick Onyango**, from **Kenya**, held a 3-Day GB Workshop for his NGO (SADA) staff with over 40 men, women, and youth attending. SADA began receiving donations from community members; with these and the EA Award funds, the organization purchased garden tools and seeds for crops, paid staff, developed a well, and built a small house for visitors and volunteers. Frederick gave another 3-Day GB Workshop for representatives from the Kenya Crop and Marketing System, which works with the Kenya Agriculture Ministry. Since 2017, SADA has trained almost 3,000 farmers to use GB.
- **Camila Guerro's** goal, to teach GB in **Chilean** regions with large populations close to cities, was made more difficult by COVID-19. However, she persevered, teaching classes in a local park and transitioning her home garden into a GB teaching garden. She developed a 1-day-a-week GB teaching program including online classes and follow-up, and began the process of establishing an NGO with the focus of purchasing land to establish a 40-bed GB demonstration unit.
- **Ariel Pinto's** project (teaching GB agriculture in **Chilean** schools) was hampered by corona virus challenges, as schools were closed for much of the year. However, his GB demonstration garden is developing beautifully, and he has gathered materials, submitted proposals, and maintained contacts with the three schools involved so he will be ready to launch his GB School Garden Project as soon as it is safe to do so.

As you will read throughout this issue, we and our international partners are seeing a surge in requests for Biointensive solutions: training, information, farmer-leaders, seed-saving initiatives, garden-friendly community planning, and GB gardens. Now, more than ever, it is vital that people learn to grow their own food, and help heal the Earth and each other, right where they are. We are grateful and honored by the work our GROW BIOINTENSIVE Global Family is doing, are proud to be a part of that work, and look forward to growing strong with you through the rest of 2020 and beyond! ●



# Victory Gardens for Peace Garden Report Jan-Jul 2020

By Matt Drewno, VGFP Director

This has been an unpredictable year: each day we are waiting for the news to change, and yet here we are, still in the middle of the COVID-19 pandemic. We have been constantly adapting to meet the needs of the situation to both fulfill our mission and grow our work into the community. Despite the COVID setbacks, much progress has been made.

*“Only a crisis—actual or perceived—produces real change. When the crisis occurs, the actions that are taken depend on the ideas that are lying around. That, I believe, is our basic function: to develop alternatives to existing policies, to keep them alive and available until the politically impossible becomes politically inevitable.”* – Economist Milton Freidman

In 2017, we envisioned the VGFP Initiative knowing a time would soon come when home and community gardening would see a resurgence as the foundation for a sustainable and localized food system. By re-establishing this local food culture we also help the rest of the world by transforming our consumption paradigm, lowering our carbon footprints and divesting from the resource extraction and social injustice created through exploitation of people and their resources to feed consumptive habits.

This vision for a new Victory Gardens for Peace movement is centered on the concept that we can preempt war, suffering and struggle by creating abundance in our own backyards and community gardens. We can heal and beautify our communities and discover the joy in creating the future we know is possible, empowering our citizenry to take back their communities and determine for themselves what their future is. This work requires universal access to healthy, organic, and local food. It requires that we work from the bottom up and the top down. It is an inclusive process which is undeniably, inarguably, and positively appropriate. It is work that brings people together.

In 2017, we set the goal of establishing the following initiatives by 2020:

- Victory Gardens for Peace Local Course Series
- Victory Gardens for Peace Seed Bank
- Garden Friendly Communities Resolution
- GardenCorps Training Program



Photo: Matt Drewno

Matt and Jaime's daughter, Olivia Wren!

All of these programs are designed to integrate into existing Ecology Action programs, to strengthen them and provide an example of localization created out of this work for our interns and apprentices to learn from and apply upon returning to their communities. Each of these initiatives is designed to support one another. We chose the City of Fort Bragg as our test site to develop and implement these programs, bringing back what we learned and evolving concepts and approaches which can feed back into the organization and help bring this work to more communities as a package of initiatives to help rapidly re-establish resilient, local and sustainable food systems.

We are happy to announce that we have worked hard to reach our goal set in 2017 and look forward to reporting the progress we are making. The pace has increased significantly, and there is an overflow of excitement and opportunity being created in Fort Bragg. In fact, the support has been so hopeful and expressive that it affirms the power of this work to reach people and inspire the change we so need.

The following is a list of some of the activities we have engaged in since the start of 2020 through July:

- **Internships:** COVID-19 led to mass cancellation of in-person training. We have taken on two 6-month interns, Kaja Gawronska and Ambria Zenitar, both living in California and housed in Fort Bragg.
- **Matt and Jaime had a baby, Olivia Wren** April 14th 2020
- **The Stanford Inn** has gone through the wringer with COVID and had to lay off staff, however Matt is

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currently managing 150 beds with a full-time helper.

- **January:** VGFP Director Matt visited colleagues from ECOPOL Juan Manuel, Diego, Mateo and Freddy in Mexico, visiting their Biointensive projects and partners, to broaden our understanding of how this work evolves in Mexico City and Oaxaca.
- **February:** Taught a seed saving workshop at Seed and Scion Exchange; developed two community garden proposals for Fort Bragg; gave a presentation for Round Valley Library on Victory Gardens; gave a class on Biointensive at Montessori School in Fort Bragg; gave a presentation on Victory Gardens for Peace and Ecology Action at the Presbyterian Church in Fort Bragg.
- **April:** Published VGFP Growers Guide to help the coast with food security ([victorygardensforpeace.com/vgfp-growing-guide](http://victorygardensforpeace.com/vgfp-growing-guide)); published article in *Word of Mouth Magazine* on Victory Gardens (see page 14 of this issue).
- **May:** Published article in League of Women Voters Magazine on Victory Gardens; published article on local food systems titled “*Tag you are it!*” in Justice Rising Magazine; began coordinating weekly local food discussion with Caspar, CA, community; interviewed on Pivot Point Radio ([kzyx.org](http://kzyx.org)) regarding Garden Friendly Communities Resolution and Victory Gardens.
- **June:** Formalized Garden Networks for Garden Friendly Community, Fort Bragg; hosted Rose Hayden-Smith (author and historian) for a presentation on Victory Gardens; began internship course series for Kaja and occasionally Ambria.
- **July:** Victory Gardens for Peace joined the COVID Response Network to provide support for local food resilience conversations; gave a presentation to the Latino Coalition Fort Bragg on Victory Gardens, GardenCorps and Garden Friendly Community Resolution.

Our seed bank saw an 1800% increase in seed orders during this time period, and we have also been working closely from a distance with James Christie-Fougere and Sharon Coombs of the Kootenay Society for Sustainable Living ([growsustainability.org](http://growsustainability.org)) in British Columbia, Canada, coordinating resources and building a VGFP website ([victorygardensforpeace.com](http://victorygardensforpeace.com)). With the rest of the West Coast, we are weathering an unprecedented fire season with thick smoke everywhere. Keep healthy and safe, keep gardening, and stay tuned for more on these events, resources, and initiatives! ●

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## GB Spreading In Kenya

By Joshua Machinga, Director, CGA

**G**reetings from Common Ground for Africa (CGA), in Kitale, Kenya. I hope you are all doing well and staying safe!

With a global pandemic tightening its grip around the world and photos of empty supermarket shelves flooding social media, there's never been a better time to consider where our food comes from. As shelves continue to remain empty, mini-farms in many villages continue to flourish, thanks to the GROW BIOINTENSIVE (GB) Mini-Farming approach.

As the world faces an unprecedented global crisis, experts are linking the emergence of COVID-19 to global habitat and biodiversity loss. Researchers at University College London found that species in degraded habitats are likely to carry more viruses which can infect humans. Agricultural expansion is a major driver of this trend, but *agriculture need not mean ecological disruption*. It is, in fact, entirely possible to farm with, rather than against, nature, as demonstrated by Ecology Action. Our farmers' gardens here continue to produce as they require very little effort on a daily basis. This has prompted the County Government of Trans-Nzoia, Kenya, to rethink its approach. GB's performance as observed during this pandemic has convinced the County Director of Agriculture that the best strategy moving the county towards a sustainable food system is to focus on GB. He has requested that CGA increase the number of GB demonstration mini-farms across all five sub-counties in 2021, driving support for GB initiatives in the 2021/22 budget. As we battle COVID-19, we are committed to continuing our work towards a better future where people and nature thrive together while they feed themselves as they grow the soil! ●



Photo: Common Ground for Africa

## New GB Film Premieres: En Nuestras Manos/In Our Hands

Director's Statement By Matt Anderson, Filmmaker

*We are delighted to announce the release of a beautiful new film from Director Matt Anderson and Ecology Action about the Global GROW BIOINTENSIVE Family. "En Nuestras Manos/In Our Hands" is a project of Ecology Action and was made possible by our generous funders, including Patagonia Works, The Warsh Mott Foundation and Cynthia Raiser Jeavons. You can watch it for free at [www.earthlodgestudio.com/manos](http://www.earthlodgestudio.com/manos)*

While living at the Jeavons Center from 2014 to 2016 I had the tremendous opportunity to farm and film with many talented and courageous people from around the world. The incredible stories that these farmers shared inspired me to find a way to visit them after they had returned home. I became intent to discover for myself the amazing Biointensive projects happening all over the planet—and share the findings through a film project.



John Jeavons and I wrote to Yvon Chouinard's Patagonia Works Foundation for a production grant. At the end of 2015 we received a check, and I was on my way to several Latin American countries with a camera on my back. Speeding up dirt roads in the back of many pickup trucks, I ran through countless fields and chased after farmers who graciously shared their world with me. It was dizzying and electrifying; I was astounded to find out just how profoundly the Biointensive method was changing people's lives.

Everywhere I went I saw land devastated from decades of petrochemical fertilizers, pesticides and other unsustainable practices. Many communities were now in dire straits, but again and again I was seeing the same pattern: those who had begun adopting the GROW BIOINTENSIVE method were regenerating soil microbiology and growing abundant food. This information was passing swiftly from farmer to farmer, providing a desperately needed path forward for small-scale food growers. When I asked people the difference between the GROW BIOINTENSIVE method and that of their grandparents, I often got the same response: *"Not too much, but I use less space and get more food."* It became apparent that I was capturing the blossoming of an agricultural revolution, a rejection of destructive and resource-intensive practices and a return to ancestral and indigenous life-ways.

After traveling to Kenya, Mexico, Nicaragua, Ecuador, Peru and Brazil I returned to Northern California and began trying to distill these experiences into a film series called *"En Nuestras Manos / In Our Hands"*. Inspired by *A GB Farmer's Mini-Handbook* by Margo Royer-Miller ([growbiointensive.org/Self\\_Teaching.html](http://growbiointensive.org/Self_Teaching.html)), I decided to tell these stories while also conveying the central concepts behind each of the eight GROW BIOINTENSIVE principles. While there are many great technical resources for people to begin growing food Biointensively, I feel there is still a need to better understand why these principles are important and how they interconnect. I hope that through these stories and experiences, audiences can better comprehend how this profound method can improve both their garden and their lives.

Having spent nearly four years crafting nine episodes, I hope to honor the amazing, revolutionary work I captured. I am deeply grateful to the many selfless people who helped me along this journey; I can't wait to share it with you! And while I wish that this series had been ready sooner, I get a sense that this truly is the moment where we all must realize that the answers are under our feet and that the future really is in our hands. ●

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# Book Review:

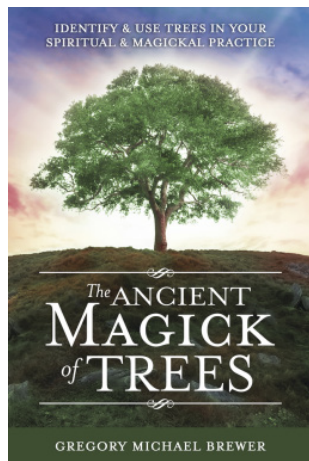
## *The Ancient Magick of Trees: Identify & Use Trees in Your Spiritual & Magickal Practice*

by Gregory Michael Brewer, Llewellyn Publications (2019)

Review by Owen Williams

**S**ynopsis: *This unique illustrated resource helps you identify more than one hundred common trees across North America and Europe and discover their medicinal and magickal properties. Gregory Michael Brewer provides detailed information about the mythology and symbolism of trees from around the world along with an abundance of exercises and meditations suitable for Pagans of all skill levels and traditions.*

*Featuring over two hundred illustrations, this book is the only one you'll need while studying trees. Whether you're seeking the scientific characteristics of a particular species or the folk traditions and remedies associated with it, this is a must-have guide for those who want to enhance their magickal practice and their understanding of our relationship with trees.*



I am not what you would call a “spiritual person”. However, even without a natural predisposition to feel a mystical connection with nature, I found *The Ancient Magick of Trees* to be an entertaining and eye-opening read. The book’s goal is to show how important trees have been across human existence, and to teach us how we can form a better relationship with trees today. It serves as a great guide for those who want to get back in touch with nature and wish to harness some of the “magick of the forest” in their own lives!

Though the book does not delve deeply into any one culture or religion, author Gregory Brewer clearly shows that seeing trees as divine beings is a common, nearly universal view shared across time and civilizations. From the ancient Egyptian culture in which Ra the Sun God rose between two Sycamore trees each morning, to two prominent modern religions—Christianity and Buddhism—whose origins are intertwined with the simple existence of trees, the pattern is clear. Brewer draws on and exposes the reader to many examples of the importance of trees in the foundational

stories of culture, myth, and religion throughout the book, though further reading would be needed for an in-depth understanding of these examples, as he does exclusively present abridged summaries of these stories.

I was pleasantly surprised to find a childhood favorite of mine included among the tales: *The Giving Tree* by Shel Silverstein. The story was something that always stuck with me, and Brewer does a great job of breaking down how it illustrates the give-and-take relationship we have with nature. As mentioned I am not a “spiritual” person, but it is nearly impossible to deny a spiritual element in the abusive way we treat trees, and how they seemingly give back to us so selflessly, almost in a forgiving way. We are the boy who takes everything from nature, and while thankful, we often fail to give back anything in return, while the tree is simply happy to just give. I found this to be such a beautiful reminder of how we can get so far apart from nature spiritually, although we may be near it physically.

This led into the later sections of the book, which are involved with practical tree identification as well as advice on how to get more in touch with the “magick” of trees. I for one am convinced: I plan on using this book to develop a better relationship with the trees around me at Ecology Action and, if they so allow, to channel some of the “magick” and wisdom they provide so generously. I would highly recommend this book to anyone who has experienced the undeniable mystique that an abundance of trees provides. If you have a deeper interest in trees than simply enjoying them from afar, and want to integrate a more balanced connection with them into your life, *The Ancient Magick of Trees* is a good place to start. ●

## HELP WANTED

**ECOLOGY ACTION NEEDS 2 FULL-TIME BIOINTENSIVE FARMERS!**

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

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

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



# Recipe: Spicy Summer Slaw

By Shannon Joyner  
Garden Companion Editor/Art Director

As summer draws to a close, the thought of cooking anything is unappealing. The thick smoke from forest fires hangs heavy in the air here in California (and, sadly, across the entire West Coast), and I long for fresh, crunchy, cool, flavorful food to soothe the senses and refresh the palate. This Asian-inspired slaw with a tangy, curry-kissed dressing (the same one we serve at the 3-Day Workshop networking dinner, in case you were wondering) does all of that: I've been making a batch from the garden every week for a month now, and I'm still not tired of it. It can be eaten on its own, as a side, or as an addition to sandwiches or tacos, or in Buddha bowls. Not only is it delicious, the ingredients are loaded with antioxidants, vitamins A and C, and cooling, anti-inflammatory phytonutrients, which are just what we need now. Enjoy!!

## Salad

- 1 medium head cabbage**, shredded (about 4-5 cups—I prefer Napa or Savoy cabbage, but regular green cabbage works well, too, or a mixture of green and purple is pretty)
- 1 cup fresh cilantro**, chopped
- 1/2 cup fresh basil**, chopped
- 1/4 cup fresh mint**, chopped
- 4 scallions**, sliced thin
- 1 red bell pepper**, sliced into thin strips
- 1/2 sweet red onion**, sliced thin
- 1 medium carrot**, shredded
- 1 medium Persian or English cucumber** (or one regular cucumber, seeds removed), sliced

## Dressing

- 3 T nut or seed butter** of choice (I prefer peanut, but tahini, sunflower, or almond work well, too)
- 1.5 T fish sauce or soy sauce**, to taste
- 1.5 T brown sugar or palm sugar**, to taste
- 2 T fresh lime juice**, to taste
- 1 T rice vinegar**, to taste
- 2 tsp Thai red curry paste** (I use Thai Kitchen, but you can use your favorite brand, and adjust the amount you add to suit your taste—some curry pastes are hotter than others!)
- 2 tsp toasted sesame oil** (optional, but delicious)
- 1 T olive oil**
- 1/4 tsp sea salt**

In a large bowl mix the cabbage, herbs, scallions, bell pepper, red onion, carrot, and cucumber. Toss gently to combine.

In a separate bowl, mix the nut or seed butter, soy or fish sauce, sugar, lime juice, vinegar, curry paste, toasted sesame oil, olive oil and salt, whisking until smooth. If it's too thick, whisk in a little water to make it pour-able. Taste and adjust seasoning to your liking—it should be pungent, tangy, salty, creamy, and just a little bit spicy.

You can prepare both the salad and dressing a day ahead. Cover tightly and store separately in the refrigerator. When ready to use, gently toss the salad to freshen it, and stir the dressing and serve it on the side—if you dress the whole salad, it will quickly make the veggies wilt, and it won't be as crispy. Makes a lovely meal with steamed rice and roasted butternut squash or sweet potatoes—the dressing tastes good on everything! •



Photo: Shannon Joyner



# Herbal Spotlight: Mullein

By Shannon Joyner  
Garden Companion Editor/Art Director



Photo: www.herbalremediesadvice.org

With an unprecedented climate-change-driven wildfire season, we at Ecology Action—along with the entire west coast of the United States—have been enduring smoke so thick it turned day into night, and gave us the dubious honor of having the worst air quality in the world. The fires will not stop until the rains arrive, so to help our lungs cope with the extra load, we turn to our herbal allies for assistance.

There are many herbs and spices that can help cleanse, soothe and heal the lungs: turmeric, ginger, tulsi, mallow, comfrey and many others are recommended by professional herbalists. But one stands out as the primary herb that seems to be recommended by *everyone* coping with wildfire smoke: Mullein.

Native to Europe, Africa and Asia, Mullein (*Verbascum Thapsus*) came to the Americas with immigrants and quickly naturalized here to the point that some consider it a weed. A dramatic plant, growing in a rosette of very large silvery gray fuzzy leaves, Mullein sprouts a towering stalk of yellow flowers the second year, providing a beautiful addition to any garden. It is drought-resistant and deer-resistant, and is easy to grow, taking to any well-drained soil, even dry and rocky areas. Note that it is a hyperaccumulator of heavy metals, so be careful to source your Mullein from a reputable grower, and don't plant or harvest it where you know the soil is polluted.

Greek physician, pharmacologist, botanist, and author Dioscorides first described Mullein being used to treat pulmonary diseases 2000 years ago, and the flowers, leaves, and root of Mullein have been used as folk healing remedies wherever it grows for centuries. Mullein leaf and flower were listed as an official medicine in the United States National Formulary from 1916 to 1936, and Mullein is approved by the German Commission E, an advisory panel for herbal medicine, for treatment of respiratory catarrh. Studies have confirmed the anti-inflammatory action of Mullein. Mullein tea, made from the flowers and leaf, is a beneficial remedy for bronchitis, sore throat, tonsillitis, dry coughs, and hoarseness.

Registered Herbalist Rosalee says of Mullein: “It is a mild relaxant to the lungs and also a mild demulcent. It soothes inflammation and dryness—often the causes of irritation for people with smoke exposure. In addition to the leaf, mullein flowers can have an added benefit to these dry irritated conditions. I often combine it with

another demulcent such as mallow (*Malva neglecta*) or marshmallow (*Althaea officinalis*). Mullein leaves are almost always in my smokey-sky tea blends.” She provides a lot more information about Mullein and other helpful herbs for mitigating the pollution and stress of wildfire at [www.herbalremediesadvice.org/herbs-for-wildfire-smoke.html](http://www.herbalremediesadvice.org/herbs-for-wildfire-smoke.html) including the following recipe for a lung-soothing tea (along with two additional recipes for teas to support the heart and nerves):



## Rosalee's Relax and Restore the Lungs Tea

1/2 cup (10 grams) finely crumbled dried mullein leaves  
1/8 cup (4 grams) finely crumbled dried plantain leaves  
1/8 cup (4 grams) finely crumbled dried mallow leaves  
1 T dried hibiscus  
2 tsp dried mint

1. Place all of the ingredients in a quart jar (or quart-sized tea press). Pour just-boiled water over the herbs, stir well, and then cover. Infuse for 30 minutes or as long as overnight.

2. Strain well through a coffee filter or a couple layers of cheesecloth to avoid the small irritating hairs on the Mullein leaves. Drink within 24 hours. ●

*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.*

# Limited Inputs: 4 Years of Success beyond Our Wildest Dreams

By John Beeby and Steve Moore

See [growbiointensive.org/Enewsletter](http://growbiointensive.org/Enewsletter) for more about the authors

**G**ROW BIOINTENSIVE Sustainable Mini-Farming (GB) is a systematized organic food production method comprised of eight well-documented and proven principles: deep soil quality, efficient and effective composting, carbon/compost crop farming, functional biodiversity, seed sovereignty, diet design, planting intensification and whole-farm sustainability (including water, energy and land use). Used together, these principles support increased yields per unit of area and sustainable production over time.

A four-year, four-farm study was undertaken in Kenya to test the idea that GB, combined with a single application of organic fertilizers, could improve soil quality and increase crop productivity without encouraging reliance on yearly fertilizer applications. Ecology Action Soil Test Expert John Beeby developed the concept, designed the research and acquired the needed funding. Samuel Nderitu, co-founder of G-BIACK, was the Kenyan in-country research leader and one of the four farmers. Each farmer double-dug ten new beds (100 sq. ft. each) and grew six crops chosen for cultural appropriateness to Sub-Saharan Africa as well as their ability to provide significant human nutrition and organic matter for compost production per GB requirements. All farm activities were performed by hand with simple tools and no irrigation (natural rainfall only).

Immediately after double-digging, the soil in each of the beds was tested for fourteen soil-quality parameters. Based on the soil test results, fertilizers were recommended and applied to each bed in the first year of the study, to provide missing nutrients and in some cases to adjust pH. The crops were sown using intensive planting on a rotational basis and planted in both annual growing seasons. Harvest weights were recorded for both edible and crop residue (compost material) yields. Crop residues were composted efficiently and returned to the original ten beds, with no additional inputs. Annual soil tests were taken thereafter to monitor changes in soil nutrient levels.

The data was analyzed by Dr. Laura Taylor of Elon University using a three-way fixed effects ANOVA (plants) and ANCOVA (soil) with SAS 9.4. The results were interpreted based on that analysis. Results showed that eight soil parameters increased significantly: boron, electric conductivity, magnesium, organic matter, phosphorous, potassium, sulfur and zinc. There were no significant changes in five parameters: calcium, copper,

iron, pH and sodium. Manganese was the single tested element that showed a statistically significant decline. Organic matter (OM) is probably the single best indicator of soil improvement. Figure 1 tracks OM over the course of the study. Data from the four sites was averaged in the solid black line, and the dotted black line indicates a linear trend line. The significant increase in OM indicates a positive feedback loop as efficiently composted crop residues increase OM, which in turn increases crop residues, further increasing OM over time.

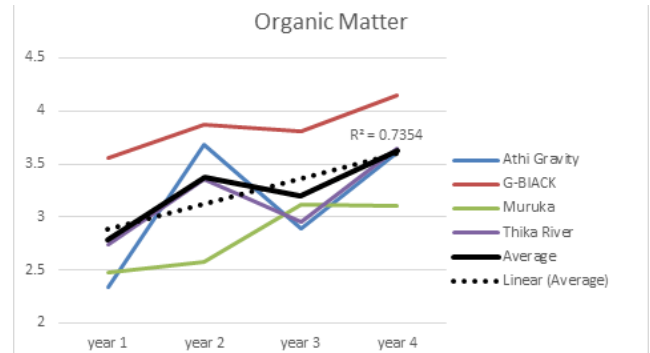
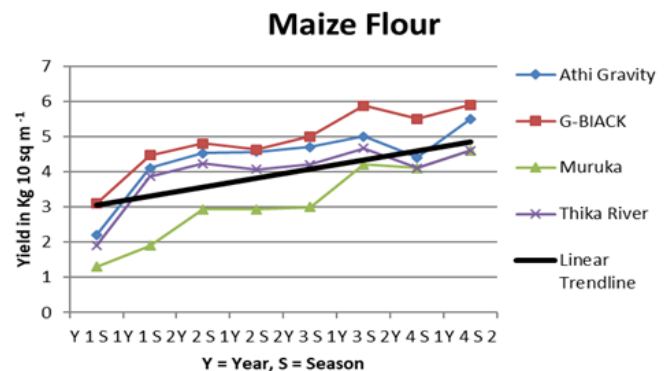


Figure 1 Site and year soil organic matter changes with site average (black) and linear trendline (dotted black). Colored lines indicate OM changes at individual sites.

Results for plant data are as follows.

- Crop edible yields increased overall for maize, sorghum and sweet potatoes. Amaranth and cowpea edible yields showed no significant change, and lablab edible yields were inconclusive.
- Crop residue yields increased for cowpeas, lablab and sweet potatoes. Sorghum residue yields increased marginally and amaranth and maize residue yields showed no significant change.



Maize is heavily relied on in Sub-Saharan Africa to provide calories for human nutrition so it is significant that maize yields showed a positive response. Figure 2 (above) shows maize edible (flour) yield increase over the four-year study. Total edible and crop residue yields were averaged for the four sites and are shown below in Figures 3 (left) and 4 (right) respectively.

Additionally, it is very interesting to compare the four-year yields of this experiment to the Kenyan average



## Por Eso! Peru: Growing GB and Feeding People During the COVID Crisis

Juan Manuel Martínez, Director of ECOPOL—our partner organization spreading GB across Latin America, the Caribbean, and Europe—recently sent us a message about the work being done in Peru by one of ECOPOL's partners, Dutch NGO "Por Eso!".

Por Eso! helps the people living high in the Peruvian Andes, where over 30% of all children under 5 years old suffer from chronic malnutrition. Because of the harsh environmental conditions there, it is difficult to grow sufficient food to maintain health using conventional farming methods. Founded in 2007, Por Eso! teaches people to use GROW BIOINTENSIVE, and helps build greenhouses to extend the growing season. They also distribute food to those who need it (a growing number as COVID-19 has hit Peru hard)—with a very important addition: each food package contains **seeds** to help people grow food security for the future.

Por Eso! is now working in 13 communities and at 25 schools high up in the Peruvian Andes. As a result of their work, over 1200 families and children of school age now enjoy healthy nutrition and will continue to do so. In 2020, in spite of the pandemic, they distributed 4,250 food baskets and over 2,262 bags of school supplies, and started 679 new families with GB vegetable gardens. They say they have never received so many requests for "Bio-huertos" (Biointensive gardens) and that established GB gardens are very valuable. A recent post on Facebook reads, "*We try 'to work from home' since the statistics of the coronavirus are still high. In every community our 'best green families and students' are helping and teaching the others or newbies [to use GB]. In total 70 people are part of our 'remote voluntary Por Eso! team'.*" Image: distribution of the harvest from the Por Eso! school garden in Pachamachay.



Photo: "School Garden Crops" Por Eso!

We are proud of and grateful for Por Eso!, ECOPOL, and the GB Family in Peru. Watch a beautiful video about their work at [vimeo.com/374918295](https://vimeo.com/374918295) and find them at [poreso.org](https://poreso.org) or [facebook.com/pg/Poresoperu](https://facebook.com/pg/Poresoperu) •

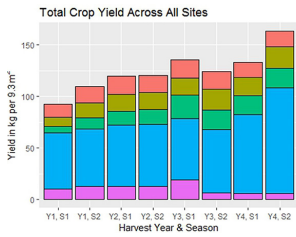


Figure 3

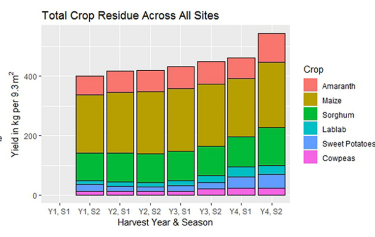


Figure 4

Full-size images online at [growbiointensive.org/Enewsletter](https://growbiointensive.org/Enewsletter)

yields for the same years. Individual years varied, but maize yields from the study averaged 83% higher than the country average, sorghum 261% higher, and sweet potatoes 7% lower. No country data (FAO) was available for the other three crops for comparison. Because GB also focusses on diet design and specifically on calorie production, a comparison of the calories indicates a 70% increase in calories per unit of area for the GB system compared to the Kenyan average for the respective four-year period.

It is well-known and documented that the presence of sufficient soil nutrients is essential for increased yields and for human nutrition. It is also known that overapplication of amendments/fertilizers has negative environmental effects. Even average applications of fertilizers are costly and difficult for many of the world's smallholder farms to acquire year after year. This study shows that a more affordable one-time application of organic fertilizers, combined with the use of GROW BIOINTENSIVE techniques, provides benefits to the farmer for at least four years, making soil improvement more affordable to smallholder farmers. According to the FAO (2012), 1.5 billion smallholder farmers provide food for 2.5 billion people.

Scientific literature supports the individual principles of GB as good organic practices, yet few have applied them in a comprehensive and sustainable system of production like GB does. The data support the ability of GB, combined with a single application of recommended organic fertilizers, to build soil quality and increase both edible and plant residue yields over time, with very few resources needed. Funding support is being actively sought now to expand this work beyond Kenya to include a greater diversity of soils, climates and diet designs.

Read the complete open-source peer-reviewed article *Effects of a One-Time Organic Fertilizer Application on Long-Term Crop and Residue Yields, and Soil Quality Measurements Using Biointensive Agriculture* (Front. Sustain. Food Syst., 19 June 2020 ) at [bit.ly/3hAQgIq](https://bit.ly/3hAQgIq).

Thanks to Ecology Action for financial support to make the article open-source and available to everyone everywhere. Also, thanks to Dr. John Doran and his non-profit REAP for encouragement and financial support. •

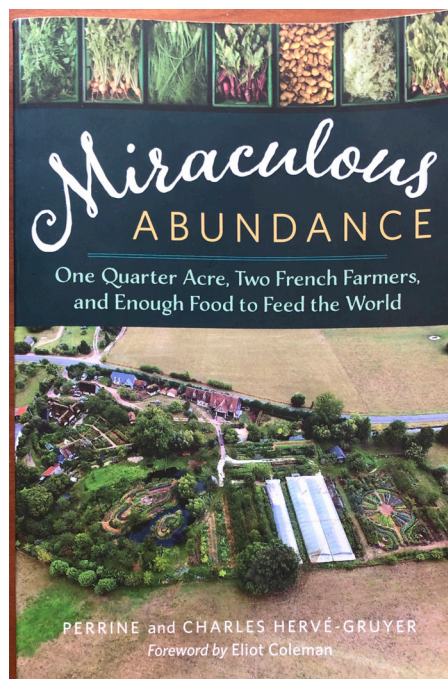
# Miraculous Abundance: 1/4 Acre, Two French Farmers, and Enough Food to Feed the World

From GROW THE EARTH ([johnjeavons.org](http://johnjeavons.org))

For years, scientists and practitioners of sustainable agriculture have been aware that our food chain is vulnerable. Soil depletion, resource scarcity, population growth, and the many and varied impacts of global climate disruption can and do impact our ability to grow and source food.

If we needed more evidence, 2020 has shown us how fragile our food chain really is: from shortages of key items in stores, to essential farm workers risking their lives harvesting in a pandemic, to crops lost due to lack of labor, to an inland hurricane or “derecho” that destroyed millions of acres of crops across the Midwest and felled hundreds of thousands of trees in an afternoon, to unemployment making it difficult or impossible for millions to buy food. It’s certainly a wake-up call that is being heard. From Peru to Kenya, from Canada to California, Ecology Action and our international partners are seeing an upsurge in the number of people wanting to learn to grow their own food, sustainably and affordably. And given that there is as little as 22.5 years of farmable soil remaining in the world, the miniaturization of farming and more truly sustainable practices are key to everyone being able to grow food right where they are.

While I’m a little biased towards *How to Grow More Vegetables, Fruits, Nuts, Berries, Grains and Other Crops Than You Ever Thought Possible With Less Water On Less Land Than You Can Imagine* as a guide to sustainable soil-building and mini-farming, I’m al-



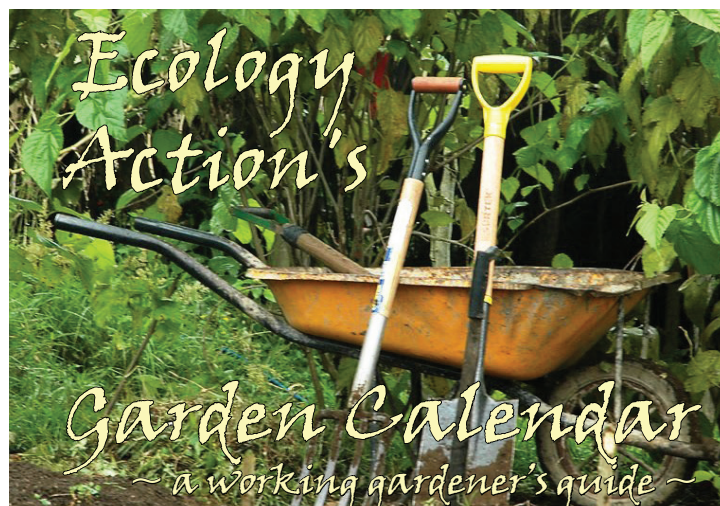
ways happy to read about other people’s successes and ideas, and 2020 in particular has led me to search out the hopeful and inspiring stories to help light the way. Sometimes the thought of starting to grow your own food can be daunting and intimidating. So, if you are looking for a delicious and positive story that will inspire you to get out in the garden and start small, then *Miraculous Abundance* by Perrine and Charles Hervé-Gruyer is the book for you.

The back cover notes, “*What began as a simple dream in an historic Normandy village has turned into one of the world’s most radical innovative experiments in small-scale farming...In this lovely, hopeful book, an unlikely couple creates an astonishingly productive edible landscape in Normandy, weaving together the insights, materials and techniques of dozens of acknowledged predecessors [while] restoring the biosphere.*”

Topics include:

- Permaculture
- Biointensive Microagriculture
- Eliot Coleman
- The Parisian Market Gardeners of the Nineteenth Century
- The Forest Garden
- Working by Hand
- To Be Small
- Microfarms
- Microagriculture, Society, Planet
- The Earth Is an Adventure
- Bio-Abundance

*Miraculous Abundance* is proof that we and our gardens can be a joyful part of the solution that grows a better tomorrow—for everyone. So, plant a garden and enjoy the adventure! Enjoy actualizing your dream! ●



Download the free EA Garden Calendar at [bit.ly/3kxXFdl](http://bit.ly/3kxXFdl)

**ECOLOGY ACTION’S GARDEN COMPANION**



# Soil Science Spotlight: Soil Organic Matter (SOM)

By John Beeby,  
Ecology Action Soil Fertility Advisor

*One of the primary functions of GB is to allow small-scale farmers to build and maintain soil fertility levels to grow a large amount of food and compost materials in a very small area, with greatly reduced resource use, for an indefinite period of time, sustainably. Soil testing and applying the correct type/quantity/timing of organic soil amendments is an important part of building and maintaining soil fertility levels. To introduce the topic to a wider audience, John Beeby and Ecology Action are creating a series on the subject called "Soil Science Spotlight", posted online at [growbiointensive.org](http://growbiointensive.org) in the "Protocols" section. This is an excerpt of the second post in that series. Read the full article at [growbiointensive.org/Enewsletter](http://growbiointensive.org/Enewsletter).*

Soil organic matter (SOM) is the remains of decomposed plant material. In a GB garden, SOM comes from growing carbon-rich plants which are returned to the soil, ideally as cured compost or, if necessary, as mulch. Compost is local, free, and one of the best fertilizers available to improve overall soil health. Soil organic matter is about 58% carbon. This carbon originally comes from the air in the form of carbon dioxide, which is absorbed through the stomata of plant leaves and then is transformed into sugars through photosynthesis, and later further transformed into various types of plant material. The carbon bonds in organic matter hold energy, which is released when soil organisms eat it, so it is the primary food source for soil bacteria, fungi and other soil life forms that support the entire soil food web. These soil organisms change the soil to support their own growth; luckily these changes cause a cascade of effects that are beneficial to agriculture: they help the soil capture and retain more water and more nutrients; make some soil nutrients more available to crops; make the soil more resistant to wind and water erosion; and allow roots easier access to deeper soil nutrients and water. Without organic matter, soils die. Most agricultural soils, which experience organic matter depletion over time unless properly maintained by the addition of compost, can only support crop growth adequately when they receive increased applications of energy-intensive fertilizers and irrigation. Successful farming requires soil

organic matter levels in the 4-6% range, where soils can reach optimal health and productivity with a minimum of additional inputs when managed well.

How much compost is needed to increase soil organic matter levels? An accurate answer depends on many factors affecting the metabolic activity of soil organisms: soil temperature, moisture level, and texture. But, in general, applying 2 to 3 cubic feet of compost per 100 square feet annually is necessary to maintain most agricultural soils' organic matter levels at a level that will support production. In situations where the SOM levels are extremely low, it may be necessary to apply as much as 4 to 6 cubic feet per 100 square feet annually, but applications levels above 6 cubic feet per 100 square feet are generally not sustainable. This is because 100 square feet of soil cannot produce enough crops to make more than 6 cubic feet of compost per year. Unsustainable levels of compost application require "robbing" one soil to feed another, creating a cycle of depleted soils.

As farmers, we have two different goals for organic matter. On one hand, we want our soil's organic matter to be available to soil microbes to feed the soil food web and maintain nutrient accessibility to our crops. On the other hand, we want our soil organic matter to persist in the soil so that we can increase our soil's organic matter level quickly and thus productivity and fertility. In addition, because soils can hold a lot of organic matter, and organic matter has a lot of carbon, improving soil organic matter levels can help reduce atmospheric carbon and thus mitigate climate change. Percentages of organic matter are in weight of organic matter per weight of soil, and generally represent the top 6 inches of soil. The average amount of organic matter currently in agricultural soils is about 1% (this average continues to decline over time, due to wind and water erosion, unsustainable farming practices, and other factors).

What if we want to estimate the amount of additional carbon an acre of soil could hold if we increased its organic matter level from 1% to 5%?

Let's first assume that the density of the soil (called its "bulk density") is 1.3 grams per cubic centimeter (cm<sup>3</sup>). That means that a cubic centimeter of this soil weighs 1.3 grams (which is pretty average). If that cubic centimeter of soil contains 1% organic matter by weight, that is 0.013 gram of organic matter; since organic matter is 58% carbon, that means there is approximately 0.0075 gram of pure carbon in a cubic centimeter of this soil. Using conversion factors, we know that there are a whopping 616,741,000 cubic centimeters in the top 6 inches of an acre of land. Multiplying this by 0.0075 grams of carbon gives us ... [continued online] ●

# Fort Bragg, CA, Pursues Food Security with Victory Gardens

By Matt Drewno, Mini-Farm Manager, VGFP

The following is an excerpt of an article about VGFP's "Garden-Friendly Community Initiative", published in Word of Mouth Magazine in 2020, online at: [bit.ly/WordofMouthVictoryGardens](http://bit.ly/WordofMouthVictoryGardens)

**T**wenty-six percent of the children in Mendocino County experienced food insecurity in 2019. In that same year, one out of every four people in Fort Bragg utilized the food bank, and the Ukiah food bank reported a 23% increase in usage. Mendocino County has around 88,000 mouths to feed three times each day—that's 264,000 meals daily! Locally, we struggle to make sure everyone has access to food, and the pandemic has only increased these challenges. You may be surprised to learn that only about 1-3% of the food grown in Mendocino County stays in Mendocino County. How will this pandemic and the economic hurdles to come impact our food security, and how can we, as individuals, become more resilient in these challenging times?

With COVID-19 shutting down the global and local economies—and with the beauty and vitality of spring in full bloom—what better time to start a garden! Gardens improve nutrition, ease depression, fortify immune systems, enhance education, reduce incidences of violence, and bring a sense of wholeness, peace, and beauty into

our lives. They remind us that we are all connected and that a beautiful and abundant future lies right in our backyards.

Throughout history, during times of peace and war, gardening has kept us strong and nourished. During World War I and World War II, the United States government enacted a series of policies aimed at reducing our resource consumption while increasing production to meet the demands of war. Many of our farmers were sent overseas to fight, and our citizens and troops needed to be fed. "Victory Gardens" were promoted as a way to meet the demands of war and increase food security during times of scarcity, because there is no form of agriculture more direct, efficient, and sustainable.

This mass mobilization for the war efforts engaged all industries and communities. Trains and buses previously used for transporting food were shipped abroad to move soldiers, and so Victory Gardens became an important component of localization. Public parks were opened to community gardens, and people began growing food everywhere—on rooftops, in window boxes and backyards. School gardens sprang up to provide food for lunch programs, government agencies printed recipe booklets, and food preservation pamphlets encouraged people to eat less meat. Victory Gardens not only increased our food security during these times, but they also gave citizens a sense of pride in acting as a part of the solution. Gardening made them realize they could do something to help. ... [continued online] •

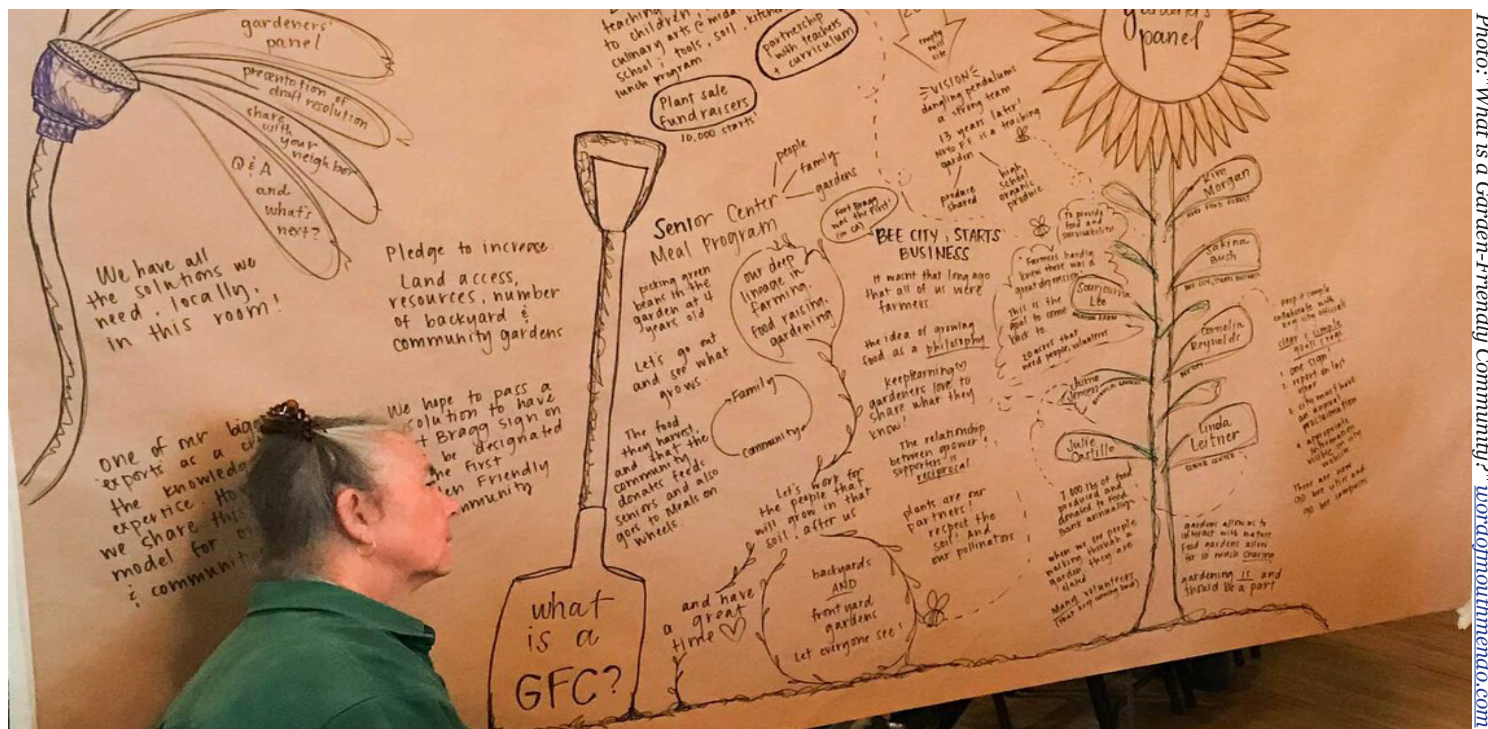


Photo: "What is a Garden-Friendly Community?" wordofmouthmendo.com



## The Alan Chadwick Archive: "Everything That Is Real Is Secret"

The Alan Chadwick Archive has released a series of recorded interviews with Bernard Taper and Chadwick, titled "Everything That Is Real Is Secret." The following is excerpted from material at [chadwickarchive.org](http://chadwickarchive.org).

In 1978 Alan Chadwick—Master gardener and mentor to EA Director John Jeavons—was nearly seventy years old and living unhappily in a small house in Napa, California. He was without a garden and was feeling stranded and enclosed by suburbia. At this time he was visited by Bernard Taper, biographer of Pablo Casals and George Balanchine, writer for *The New Yorker* magazine, and professor of journalism at UC Berkeley. Taper planned to write a two-part piece on Alan for *The New Yorker* and to follow up with a Chadwick biography. Those writing projects never materialized. The audio tapes made of the meetings, however, have survived. There are many, many hours of them, and they provide a rich source of information, both about Chadwick's life and biography, and about his philosophy and approach to nature. Throughout, Chadwick is characteristically difficult, cantankerous, unpredictable, rambling, tangential, but also warm, entertaining, funny, with passages of sublime visionary reverie. Amongst other things, the tapes are a testament to



Photo: "Alan Chadwick" Chris Tebbutt

Chadwick-as-visionary. Taper is at first caught unawares. Nothing he has heard about Alan quite prepares him for what he meets. Taper is warm, gentle, intelligent, cultured and above all diplomatic. Chadwick gradually lets down his guard. It is wonderfully entertaining stuff.

After Taper passed away, his son Mark generously allowed *The Alan Chadwick Living Library and Archive Project* to copy, digitize, and display these materials online, free to the public at [chadwickarchive.org/bernard-taper](http://chadwickarchive.org/bernard-taper). The hope is that in the future, Alan will continue to inspire others to pursue truth, beauty and goodness, both in the garden and in their lives ●

SUMMER/FALL 2020

## Fast-Growing Mini-Forests Spring Up in Europe to Aid Climate

The following is excerpted from an article published in *The Guardian* in 2020. Developed by Japanese botanist Akira Miyawaki in the 1970s, the Miyawaki Method has a lot of similarity with GB...imagine if everyone planted a micro-forest along with their mini-farm!

Tiny, dense forests are springing up around Europe as part of a movement aimed at restoring biodiversity and fighting the climate crisis.

Often sited in schoolyards or alongside roads, the forests can be as small as a tennis court. They are based on the work of the Japanese botanist Akira Miyawaki, who has planted more than 1,000 such forests in Japan, Malaysia and elsewhere. Advocates for the method say the miniature forests grow 10 times faster and become 30 times denser and 100 times more biodiverse than those planted by conventional methods. This result is achieved by planting saplings close together, three per square metre, using native varieties adapted to local conditions. A wide variety of species—ideally 30 or more—are planted to recreate the layers of a natural forest.

Scientists say such ecosystems are key to meeting climate goals, estimating that natural forests can store 40 times more carbon than single-species plantations. The Miyawaki forests are designed to regenerate land in far less time than the 70-plus years it takes a forest to recover on its own.

In 2017, researchers at Wageningen University in the Netherlands monitored newly planted mini-forests and concluded that they “increase the biodiversity compared to the nearby forest. Both the number of species groups and the number of individuals is generally higher than in the reference forests.”

In the Netherlands, conservation group IVN Nature Education has helped cities and households to plant 100 Miyawaki-style forests since 2015. It is on track to more than double that number by 2022 and is working on similar efforts in a dozen other countries. Assorted groups in Belgium and France have recently created at least 40 mini-forests. ●

You can read the entire article at [www.theguardian.com/environment/2020/jun/13/fast-growing-mini-forests-spring-up-in-europe-to-aid-climate](http://www.theguardian.com/environment/2020/jun/13/fast-growing-mini-forests-spring-up-in-europe-to-aid-climate).

An additional resource on the Miyawaki method can be found at: [www.architecturaldigest.in/content/how-to-use-miyawaki-method-grow-mini-forest-minimal-space-home-garden/](http://www.architecturaldigest.in/content/how-to-use-miyawaki-method-grow-mini-forest-minimal-space-home-garden/).

## ECOLOGY ACTION'S GARDEN COMPANION

EDITOR AND ART DIRECTOR: Shannon Joyner

EDITORIAL ASSISTANCE: Carol Cox

CONTRIBUTORS: John Jeavons, Matt Drewno, Joshua Machinga, Matt Anderson, Owen Williams, John Beeby, Steve Moore, Juan Manuel Martínez, The Alan Chadwick Archive, The Guardian, Word of Mouth Magazine and GROW BIOINTENSIVE® friends from around the world.

5798 Ridgewood Road Willits, CA 95490-9730

Phone: (707) 459-0150

Fax: (707) 459-5409

Ecology Action newsletters and full-length articles are available online at [growbiointensive.org/Enewsletter/Archive.html](http://growbiointensive.org/Enewsletter/Archive.html)

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## ECOLOGY ACTION EVENTS: 2020-2021

Dear GROW BIOINTENSIVE Family,

In response to COVID-19, our schedule of public events is as follows, subject to change, as the situation progresses.

We are accepting applications for the **8-Month Online Zoom Internship (April 6 - November 23, 2021)** at [growbiointensive.org/Internship](http://growbiointensive.org/Internship)

The onsite **Fall 3-Day Workshop** is canceled, but an online Zoom-based version will take place over three consecutive Saturdays: **Nov. 7, 14 and 21, 2020:** [growbiointensive.org/workshop.html](http://growbiointensive.org/workshop.html)

Our **2021 schedule of events** is in development: [growbiointensive.org/events\\_main.html](http://growbiointensive.org/events_main.html) or call 707-459-0150

**Wishing everyone good health and good gardening,  
Ecology Action**

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