

ECOLOGY ACTION'S GARDEN COMPANION

GROW BIOINTENSIVE® News from Around the World



SUMMER 2022

image: shannon joynes

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The Jeavons Center Mini-Farm Report

By John Jeavons, Ecology Action Executive Director

Happy Summer from The Jeavons Center! The Farmer/Teacher/Trainer Team, including Mini-Farm Manager Melvin Castrillo, Assistant Garden Manager Suraya David Sadira, Liv Dennen (our newest Farmer/Teacher Trainer and Intern for 5-Credits with the University of California-Santa Cruz for the summer) and short-term FTT Jessi Mikow are doing excellent work and accomplishing much as our busy season gets into full swing. With the much-needed late rains and snow our Northern California hills have gotten this year, everything is growing fast, and there is a lot in the Mini-Farm to catch up on.

Melvin and Suraya are participating in Ecology Action's 2022 8-Month Online Internship, which adds to their long-term skill base — and takes a full day away from farming each week from April through November. In addition to their overall work in the research mini-farm, each FTT has a focus on a specific project. For Melvin, it's Compost Monitoring and Water Availability; Suraya's focus is Bed 21: Four Compost-Type Long-Term Testing and Fertilizer Availability. Upcoming projects include Arid Section Crop Growing and the Ultra Accelerated Learning/Teaching Project. This Summer, Liv Dennen, a senior at University of California-Santa Cruz will be joining the team again for a credit-earning internship and some additional GB framework. She was a real help last year! Suraya and Liv have a small herbal business together creating good herbal products. As part of our ongoing 10-Bed Unit research project, Melvin, Suraya, and Jessi are designing and growing their own Complete Balanced Diet 10-Bed Growing Units to learn from.

This year The Jeavons Center will be harvesting the results of testing 5 different barley varieties provided by the KUSA Seed Society (ancientcereals.org, be sure to check out their wonderful and diverse Seed and Literature Catalog!) In the 2022-2023 growing season, we hope to test/grow out up to 50 additional barley varieties. Barley is especially important to TJC as it matures in months, while other winter grain and seed crops, such as wheat, triticale, oats, and cold weather fava beans Banner variety take up to 8 months to mature. With our short growing season and unpredictable rainy season (despite our recent, much-appreciated rain, we, like almost the entire western United States, are in a severe drought), Barley gives us more flexibility in planning and planting, plus produces more calories and biomass per unit of time.

Lorenz Schaller, the director of KUSA, has a three-volume comprehensive set of publications that contain everything you could possibly want to know about barley. Soon, a fourth volume on recipes will be published.

I'm still working on my next book, *The Next Steps*, a sequel to and companion to *How to Grow More Vegetables, Fruits, Nuts, Berries and Other Crops With Less Water On Less Land Than You Can Imagine*, 9th Edition. It is nearing completion and I hope it will be ready for publication by the end of the year. This is not a usual type of book; it is more like a library. Rather than reading the whole thing from start to finish, I intend readers to select the topics they are most interested in and read them, after reading *How to Grow More Vegetables...* You will find some repetition and duplication in *The Next Steps*; this is so each topic you chose to focus on will be complete in and of itself. In great part *The Next Steps* is written for people who have some significant training in and experience with GROW BIOINTENSIVE. It contains a lot of information that is covered in Ecology Action's Onsite 8-Month Internships and current 8-Online Zoom 8-Month Internships. In the Way, it is truly The Next Step for many. I think (and hope!) you will enjoy the process!

On July 30, we'll be hosting a tour of The Jeavons Center Mini-Farm, from 9 a.m. - 2 p.m. gives a good introduction to GROW BIOINTENSIVE® sustainable mini-farming, what our practical research site is accomplishing, and how our sustainable method relates to world agriculture. Included: a discussion of the overall world challenges that humankind faces in the areas of soil, food, and nutrition; a tour of the garden and discussion of several crops in particular; and several 30-minute mini-classes on double-digging, composting, seed propagation, sustainable home garden crops, and cooking with solar ovens, and an herbal perspective, given by staff, apprentices, and interns. See growbiointensive.org/tour for details and registration.

On August 5-7, TJC will present a Zoom 3-Day Basic-Level Certified GROW BIOINTENSIVE Closed-Loop Sustainable Teacher's Workshop which is an important step to becoming a Global GROW BIOINTENSIVE Mini-Farming Farmer Leader. Pre-requisites apply, see Ecology Action's Self-Teaching Mini-Series Booklet 30 on Certification, available free of charge at growbiointensive.org/ePubs.

On October 29 and November 5, 12, and 19, Ecology Action will present our 4-Saturdays Introductory GROW BIOINTENSIVE Workshop online. It's fun, interesting, and easy to participate in! See growbiointensive.org/workshop.html for details and registration. ●



ECOLOGY ACTION PRESENTS:

A TOUR OF THE JEAVONS CENTER SUSTAINABLE BIOINTENSIVE MINI-FARM!

Learn about the GROW BIOINTENSIVE® method, our practical research, and how our work relates to world agriculture. Included: a discussion of local/global soil, food, and nutrition issues; a tour of the garden and discussion of important food and compost crops; and several mini-classes on double-digging, composting, seed propagation, sustainable home garden crops, and cooking with solar ovens. Bring your own lunch to enjoy in the garden!

**\$25/
person**

**With GROW
BIOINTENSIVE it's
possible to grow
more food in less space,
using less water,
less purchased fertilizer,
and less energy, while
building soil fertility up to
60x faster than in nature.
Come see it in action!**



**Saturday July 30, 9AM-2PM
Information and registration:
growbiointensive.org/tour**

An Update from Victory Gardens for Peace

By Matt Drewno, VGFP Mini-Farm Manager

As the days grow longer and longer towards their peak this solstice, we are extending our gratitude to all the members of Ecology Action and to those who have contributed in so many ways over the years. As John reminds me every once in a while, *each day is a gift, that is why it's called the present!* Surrounded by blooming flowers, the wafting fragrances along the garden path and the abundance of life under every leaf and stone, I feel blessed. There are so many challenges confronting our planet and our people each day, but in the garden things are simple. They are beautiful. They are peaceful.

After several years of COVID, lock-downs, riots, election chaos, drought and massive fires brought on by climate change, I wonder where I would be if I didn't have my garden. I imagine that I would have less happiness, less health and less peace. John's daughter Rose once commented that in addition to peak oil, peak water and peak soil, we may be having peak peace. If I didn't have my garden, where would I be?

I am grateful for my garden. We call our program Victory Gardens for Peace because we know the peace we feel when our hands are in the dirt. And through our research, education and demonstration of the GB Method we see how peace grows in the minds of others and the world around us through this work. I am grateful for all those who took our courses during the COVID lockdowns. Somehow, we all figured out how to dance with the constantly shifting protocols and public health guidelines and we learned together.

Our GardenCorps program launched last year and we trained a team of individuals from Fort Bragg, California to lead the Garden Friendly Community Initiative (GFC) we passed there in 2019. The GFC Initiative is a resolution we developed that celebrates our gardens, garden programs and the importance gardens play in localization, climate resilience, peace and good health. Communities can use this tool to bring people together to increase access to the resources needed to garden, to start gardens,

build networks of support and protect those gardens. In GardenCorps, we teach teams how to use this tool and how to build a local food movement with GB principles at its core to ensure that as we localize our needs we do not destroy our ecosystem and resource base in the process. We helped the Fort Bragg GardenCorps team establish its first community garden and develop a board where they are now fiscally sponsored and filling garden plots. They are also teaching free summer classes on composting, soil preparation and fertility, seed saving, flat-making and more!

During COVID we made special effort to get the word out on the free Victory Gardens for Peace Seed Bank. A rapid increase in seed requests was met and with each packet we distributed information on seed saving techniques, garden courses and other key information on the GB Method. When you run a seed bank whose focus is to promote seed saving and access, and packages full of cleaned seed from local gardeners arrive in your post box, you feel it come full circle. We don't want to just give seed away, we want to inspire people to discover the joy of seed saving and be a place where people can make their seeds that they loved and nurtured accessible to everyone. Typically we only allow access to local community members, but I would like to extend thanks to you and offer you an opportunity to place an order! You can contact me at Matt@Victorygardensforpeace.com and I will send you our seed list for 2022.

We are excited for each day that comes. In 2023 we are hoping to return to hosting in person our international interns, who will learn on site and participate in the Ecology Action 8-Month Internship Program. We were contacted by community members in Point Arena, California who have expressed interest in our GardenCorps Program to support their community garden movement which would like to use these gardens and GB techniques to address issues of poverty, health, food access and more. In July of this year we will be teaching a free 1-day GB workshop to start the process of building on this vision.

The past two years have been difficult for everyone. And as sad as it feels to say, I do not believe that life will be any easier here on out. As the climate crisis continues to worsen and the complexities our of global situation is leading to an increase in violence worldwide, I realize there is no going back, but only forward. In the garden it's quiet. Yesterday I watched birds clear out the last of our remaining leaf

miners in the quinoa patch. The potatoes are bursting through the soil. The wind brushes along the maturing grains and our garlic is drying in the shade. And last night, as the giant, orange full moon rose on the horizon, I paused in closing the garden and took a deep breath. I felt the scent of the sweet peas flow through my body. I felt alive.

There are so many things in life to be grateful for. And it's often the simplest things that are the most powerful. I hope that in 2022 you are finding a renewed sense of life and intention. There is an old saying that the best time to plant a tree was yesterday, the second best time is today. I suggest that no matter what is going on in the world, no matter how challenging that things may get, that we find the time and space to garden. I would go further to suggest that the sooner we start, the better off we will be. It's one thing we all can do to relieve stress, build health, cut down on resource consumption and carbon footprints, enhance our local ecologies, beautify our neighborhoods and grow life. That vital force we connect to in the garden has limitless potential to transform our lives and the lives of those around us. That vital force is everything. Thank you to our supporters and friends, may you find your peace in your gardens! ●

8MI: What I Have Learned

By Mauricio Montalvo, 2022 8-Month EA Intern

Mauricio (along with his wife Claudia) is participating in Ecology Action's online 2022 8-Month Internship from Guatemala. Two months into the program, each intern is asked to write a summary of what they have learned in the course so far. We thought Mauricio's description was thoughtful and inspiring, so we're sharing with all of you.

What have I learned from the last two months and a half of my 8-Month Internship:

My mindset about farming has changed. It has been a paradigm-breaking experience.

- Since I was in high-school I was taught that to farm we needed to use fertilizers and to till the land as a way of taking care of it.
- It seems that technology has taken over and has abandoned the good ancient ways of farming.
- I was told that chemicals are a must for farming.

The allegory of double-digging the soil as "double-digging my mind" has impacted me profoundly because it is a good description of what I am learning. Going through the Biointensive course has ignited my relationship between the soil and myself. There is a correlation with the lack of knowledge of my mind and the hardness of the soil. When I am digging the soil I am digging inside of myself too.

Little by little I have been discovering the wonderful process of life by tending the soil.

I am learning an easier way of understanding, accessing a solution within the reach of my own garden.

I have learned the delicate balance of nature, and how I benefit from it.

I have learned the responsibility I have to give back to the soil.

It has been kind of shameful for me to find out how I have been consuming from the soil without returning that life back to it.

It has been fun to learn how to compost and grow food in the garden for the soil.

I wish I had had this opportunity when I was younger, but I feel honored to start now and to undo what I have not done for the soil.

I hope I have the opportunity to develop the necessary skills to work the land and to enjoy it to the fullest.

I am honored to be part of this effort with you all... ●

John Jeavons and Matt Drewno Present: A Four Saturdays" Zoom Workshop On Backyard Biointensive Gardening



Oct. 29, Nov. 5, 12 & 19, 2022

*Learn to grow healthy food and fertile soil from
the author of "How to Grow More Vegetables"*

growbiointensive.org/workshop.html

Soil Science Spotlight: Managing Calcareous Soils

By John Beeby (growyoursoil.org)
Ecology Action Soil Fertility Advisor

Understanding soil testing and the correct use of organic soil amendments is an important part of GB. John Beeby and Ecology Action created the “Soil Science Spotlight” to introduce the topic to the GB community. The whole series, with frequent additions, is online at growbiointensive.org in the “Protocols” section.

A calcareous soil is created from parental rock that is primarily calcium carbonate (lime), and is relatively common in the drier areas of the earth. The dominant nutrients or elements in these soils are *calcium* and *carbonate*, and an overabundance of either element can create challenges for the farmer.

Calcium (Ca²⁺) is an important nutrient for crops and is needed in relatively large amounts. However, in a calcareous soil there is so much calcium that the availability of other important nutrients like potassium and magnesium, as well as many trace elements (zinc, copper and manganese), is severely restricted. From a soil testing and fertility perspective, it is practically impossible to determine the soil’s cation exchange capacity as well as the ideal ranges for potassium and magnesium. From a practical perspective however, even if the ranges were determinable, it would not be economically viable to increase the potassium and magnesium levels to the point where they would be reasonably balanced with the extremely high calcium level. Even if it were not prohibitively expensive, when these nutrients are added to a calcareous soil through appropriate or-

ganic fertilizers, they are immediately bound in the soil and unavailable to crops.

In addition to the dominance of calcium, there is a large amount of carbonate (CO₃²⁻) in the soil. Carbonate in the soil reacts chemically with water to increase the soil pH. This can be a helpful process in soils that are acidic and is the reason why farmers add lime to acidic soils. However, when carbonate is present in such high amounts, the soil pH is increased to a level that causes important crop nutrients to become much less available in the soil. This is particularly true for trace elements (those listed above as well as boron). In addition, a high pH soil reduces the soil’s biological diversity, making it more challenging for organisms to decompose, fix nitrogen and carry out the vast array of beneficial activities that they provide soils and crops.

One of the only options for adding nutrients and trace elements to crops growing in calcareous soils is through *foliar feeding*, because it allows the crops to take up the nutrients by spraying them directly on their leaves. This can be a challenging method of fertilization for farmers due to the increased cost of foliar fertilizers (nutrients need to be in a chelated form), the need to regularly fertilize, the equipment required, and the challenges of foliar feeding in a rainy climate. ●



Soil Science Spotlight

*If we understand a soil,
we can improve it*



image: shannon joyner

Study: Small Gardens as Vital as Big Ones for Conserving Bees

The following is excerpted from an article published in The Guardian in January 2022. GB helps people urban gardeners to grow small gardens with plenty of variety for pollinators to enjoy, using open-pollinated seeds, and growing healthy food and soil too!

Small gardens are as important as big gardens for conserving bees and other pollinators in UK cities, a study has found.

Worldwide, bee populations are declining. Habitat destruction, pesticide use, and climate change have led to the disappearance of some pollinators, but researchers found that small urban gardens are some of the most pollinator-friendly places.

The study, published in the *Journal of Applied Ecology*, found that the size of gardens in Bristol had little relationship to the amount of nectar produced.

“Most of the nectar produced in gardens is by a shrub in the corner or a border around the edge of the garden,” said Nicholas Tew, a PhD student at the University of Bristol. *“There are some very flower-rich small gardens and some very flower-poor big gardens.”*

Previous studies have shown that gardens and allotments are important sources of nectar, the sugar-rich energy source pollinators need, but allotments cover only 1% of cities, and on average 85% of nectar in cities is produced in gardens.

Researchers at the University of Bristol measured the nectar supply of 59 gardens each month from March to October to track the differences between how much food gardens produce for pollinators, and when nectar production peaks.

The flowers identified as producing the most nectar were shrubs. These plants are dense with flowers, making them great nectar resources that can fit into smaller spaces, Tew said.

He added that the common daisy was another pollinator-friendly plant; because of their open shape, they are more accessible to pollinators with short tongues. ...

You can read the entire article at: theguardian.com/environment/2022/jan/19/small-gardens-vital-as-big-ones-conserving-bees-bristol-university-study And you can find a list (one of many) of pollinator friendly plants here: xerces.org/pollinator-conservation/pollinator-friendly-plant-lists. ●

*“The secret is not to chase the butterflies. It's taking care of the garden so that they come to you.”
— Mario Quintana*

Recipe: Spicy Rice Noodles

By Shannon Joyner, Garden Companion Editor

Summer's here—that means potlucks, picnics, and foods that fuel without slowing you down. One of my favorite hot weather dishes is my adaptation of *Cook's Illustrated* "Singapore Noodles" (which actually come from Hong Kong, apparently). The spicy, savory rice noodles get their flavor from curry powder, garlic, ginger, and soy sauce. The original recipe calls for shrimp, but I like it with crispy fried tofu and lots of herbs. While it's traditionally served warm, it's also delicious chilled; it travels well, is light, but filling, and the spice level can be adjusted to your taste. Happy Summer!

Ingredients (~4-6 servings)

4 oz extra firm tofu
salt and pepper
2 T cornstarch
3 T vegetable oil
6 oz thin rice noodles
4 T toasted sesame oil
3 T curry powder (hot or mild, your choice)
3 T soy sauce (I use gluten-free tamari)
2 tsp sugar
3 cloves garlic, minced
A thumb-sized chunk of ginger, minced
1 red bell pepper, seeded, sliced into thin strips
1/2 purple onion or 2 shallots, sliced thin
2 cups mung-bean sprouts (can sub pea shoots)
2 cups mixed chopped cilantro, basil, and mint
4 scallions, cut into 1/2 inch pieces
2/3 cup vegetable broth
2 tsp lime juice
Lime wedges for serving

If the tofu comes in water, press and dry it thoroughly, then cut it into 1/2 inch cubes, season with salt and pepper, and toss with cornstarch to coat. Heat 2 T of vegetable oil in a 12-inch skillet or a wok, and fry the tofu, turning occasionally, until golden and crispy. Drain and set aside.

Heat 3 T of sesame oil and the curry powder in the skillet or wok over medium-low heat, stirring occasionally, until fragrant, about 2-3 minutes. Be careful not to burn it. Remove from heat, add soy sauce and sugar, stirring to mix. Set aside.

Bring 1.5 quarts of water to a boil. Remove from heat, and place the noodles in the pan, stirring briefly. Soak until the noodles are flexible, but not soft, about 2.5 minutes, stirring halfway through. Drain, and place in a bowl. Add the curry/soy mixture, and toss to coat.

Wipe pan to clean, heat remaining sesame oil until shimmering, add ginger and garlic, and cook stirring constantly until fragrant, about 15 seconds. Add bell pepper, purple onion, and white part of scallions, stirring frequently, until crisp-tender, about 2 minutes. Transfer to bowl with tofu.

Return pan to medium-high heat, add broth and bring to a simmer. Add the noodles and cook, stirring frequently, until the liquid is absorbed, about 2 minutes. Add tofu and vegetable mixture, and toss to combine. Add bean sprouts, chopped herbs, green part of scallions, and lime juice. Toss to combine, transfer to a warmed platter, and serve immediately. Or, chill for several hours if serving cold.

Garnish with lime wedges, serve with extra soy sauce, and enjoy! ●



Herbal Spotlight: Sida

By Bill Bruneau, Author

A User's Guide to *Sida acuta*, *Sida cordifolia*, and *Sida rhombifolia*:

How to Grow, Harvest, and Make Medicinals
From the World's Best Herbal Antibiotics,
Used by Millions of People Every Day,
Top Ayurvedic Herbs, Protein-Rich
Survival Plants, Superior Fiber,
Grow Them with Your Tomatoes



Growing a major medicinal. Eight *Sida acuta* plants growing in one five-gallon pot. Sida acuta flower. Good pollen, nectar

William Bruneau

My book, *A User's Guide to Sida acuta, Sida cordifolia, and Sida rhombifolia...* is written to be an easy read that tells you how to grow *Sida spp.*, how to harvest them, and how to make simple medicinals from them. This book lists 160 ways that *Sida* can benefit you! My growing experience is with *Sida acuta*, but the growing condi-

tions and requirements for *Sida cordifolia* and *Sida rhombifolia* are quite similar. Here's how simple it can be: even apartment dwellers with a porch, or any space at all, can grow a bunch of *Sidas* in a planter, harvest the plant, drown it for a few months in some vodka, and have some potent medicine for when they really need it.

Sidas are not the only solution to our health problems, but they are absolutely the best (and easiest) first step you can make for home-based health. *Sidas* can protect you against many (if not most) disabling conditions and diseases. Hundreds of millions of people over thousands of years can't be all that wrong. If you already use herbs medicinally, this will go right to the front of your herb cabinet.

This small book is based on a larger reference book I wrote on the genus *Sida*: *Sida acuta, Sida cordifolia, Sida rhombifolia, Etc.: Everything Science and Tradition Knows About the World's Best Herbal Antibiotics, Used by Millions of People Every Day, Top Ayurvedic Herbs, Protein-Rich Survival Plants, Superior Fiber, Grow Them with Your Tomatoes*. The "big book" comprises all of the peer-review research on *Sidas* from around the world, as well as traditional uses for a wide array of health benefits, including Ayurvedic medicine. It is fully referenced, and is intended for physicians and naturopaths.

Sida Is A Powerful Herbal Antibiotic, Antifungal, etc.

- Used for thousands of years, consumed daily for health by millions of people globally.
- Shown to control or kill 27 pathogenic bacteria, including many resistant strains, such as MRSA.
- Show excellent effect against malaria and other parasites.
- Test well against 16 different pathogenic fungi, including 15 strains of *candida*.
- Protect liver, kidney & brain (and more); blood cleansing and help balance fats/lipids; adaptogenic, tonic, aphrodisiac, beneficial to digestion, and much more.
- At least 10 *Sidas* are top ayurvedic herbs, including the famous *Bala*. Several *Sidas* are Rasayana rejuvenating tonics as well.
- *Sidas* are outstanding fiber crops: they compare to jute. Great brooms and compost material!
- *Sida acuta* can be grown in temperate climates as an annual. I grow it in Zone 8 outdoors. If you can grow tomatoes, you can probably grow *Sida*.

Why have you never heard of *Sida* before? That is a good question. The genus *Sida* is not in any Western herbals, but is well-known and esteemed in all tropical countries, especially India. Everyone assumed that since it was a tropical plant it was confined to greenhouses.

My "great discoveries" are that *Sida spp.* can be grown in most temperate climates as an annual, and *Sidas* are fully medicinal when grown as an annual. This puts the world's most powerful herbal anti-pathogen (antibiotic, anti-fungal, anti-cancer, anti-malarial, etc.) right in your backyard!

Sidas are weeds, and as such are very easy to grow. It is easy to make *Sida* plants into potent medicine, and this book tells you how. *Sidas* are non-toxic, are not known to interfere with pharmaceuticals, and have no known significant side-effects.

For naturally grown *Sida* seed, further information on *Sida* and my books on the topic, go to my website, bbruneau.com. •

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.

Dahlia Dividing Observations

By Suraya David-Sadira

FTT and Assistant Mini-Farm Manager, TJC

In 2021, we established an experimental 10-Bed Unit (10BU) at TJC complementing the ongoing research on this topic at VGFP and other 10-BU locations globally. The diet design for this experimental bed included dahlias as a versatile carbon/calorie/income crop. cultivariable.com/instructions/root-crops/how-to-grow-edible-dahlias/ gives a good intro to edible dahlias.

Welcome to part two in my five-part series where I share my experiences in Ecology Action's Dahlia Research Project. The information I collect in this project will eventually be compiled and published in a booklet, but for now, you get to learn about my findings with me!

The varieties we selected this year are *Thomas Edison*, *Café Au Lait*, *Mikayla Miranda*, *My Hero*, *Maki*, *Who Me?*, *Chick A Dee*, *Hometown Hero*, *Citron Du Cap*, *Giggles*, and *Patches*. We were selecting for biomass, tuber size, and boom beauty: *Thomas Edison*, *Café Au Lait*, *Mikayla Miranda*, and *Patches* are likely to have larger tubers; *Café Au Lait*, *My Hero*, *Who Me?*, *Hometown Hero*, and *Citron Du Cap* are all high biomass producers; and the others produce extremely beautiful blooms we are all very excited to see.

This quarter, I learned that dahlia tubers can be very delicate. The best time to start them indoors is one month before the last frost. When starting dahlias indoors, it is important to plant them the correct way and to not over-water them. This year, I started our dahlia tubers on April 15, in 6" seedling flats, on 3" centers, and about 4" deep. I learned about the delicacy of dahlias because I made the mistakes, learned the lessons, and now have the information to share with you! When planting the tubers, it is important to plant them so they lay *horizontally* in the flat, rather than upright/vertically, as tubers planted in the vertical orientation tend to rot. The next important thing is to not over-water them: once you plant them, give them one good water, then don't water them again until they sprout or the flat completely dries out.

Once the dahlias have reached 3"-6" and you have passed the date of your last frost then you can plant the dahlia in the ground. The dahlias are most happy when planted in the evening, so they have time to adjust before spending a whole day in the sun. If you plant the tubes in the morning, they will likely be

wilted for a few days before bouncing back. They are best planted 4"-6" deep, on 12"-18" centers. While you are planting them, stake them with a 5'-6' pole. This is best done when your hole is dug, but before you put your tuber in—so you get the stake close but don't accidentally stab your tuber. Make sure you are labeling each variety if you have a bed with a log of mixed varieties. Finally water your bed and watch your babies grow!! ●



image: "mikayla miranda" dahlias.com



image: "hometown hero" dahlias.com



image: "giggles" dahlias.com

40-Bed Unit: A Story of a Young Woman during COVID

By Simon Nyaga

Simon Nyaga is the Director of Bold Impact Africa (boldimpact.africa) promoting sustainable and climate-smart agriculture by training small-scale farmers to use GROW BIOINTENSIVE, as well as environmental conservation, childhood and youth development, advocacy and community development, policy development and promoting entrepreneurship and income-generating activities for women and youth groups. He holds degree in Community Resource Management and Extension (BSc. CRM) from Kenyatta University, and learned GB at the GROW BIOINTENSIVE Agriculture Centre of Kenya (G-BLACK) in 2016. Simon worked as Policy, Lobby and Advocacy officer at National Potato Council of Kenya where he represented the NPCK in lobby and advocates for poor farmers to access inputs and markets.

I was employed as a policy and lobby officer in one of the national NGOs in Kenya. When COVID-19 hit our country early in January 2020, I was laid off, together with my colleagues. I stayed home for 5 months wondering what to do as the effects of this new pandemic escalated. One day in May, 2020, I received a call from a friend who had seen me practice GROW BIOINTENSIVE (GB) in a small rented space. He wanted to learn more about this new form of sustainable agriculture and practice on his farm. He was not in the country but wanted me to train his sister, Njoki, on how to establish a GB unit in his farm. Njoki, to my amusement, was very committed and eager to learn, so I began by teaching her how to do deep soil preparation. Together, we marked out a one 10m² bed. We double-dug 60cm deep together and to her it was all fun. She kept stepping inside



image: njoki

the bed and I was happy to remind her, with deep patience that she shouldn't step inside a double-dug bed.

On the second day, we sourced compost from outside the farm. I told Njoki that it's important to grow her own carbon crops to avoid depleting other soils and I saw her writing that in her notebook. Next, we transplanted vegetable seeds from a local nursery using the diagonal method and I could see she was always tempted to plant using the conventional straight line. Njoki was impressed how we managed to transplant 99 kale seedlings in the bed using this close spacing method. She told me if it was her, she would have transplanted only 50 seedlings in the same bed. In the following week, we double-dug, added compost, transplanted, and watered 5 more beds.

By the end of the week, we sat and evaluated what we had done, and we were both impressed (the image below is the farm at the end of the first week - Njoki is in blue at the top). Before leaving the farm, I ask her how many beds she was willing to double-dig, based on what she had learned and experienced. She said ten. I told her that's fine if she is willing to continue learning and practicing. After a month, I called her and asked her how many beds she had double-dug and to my shock, she reported that she had made a complete 40 bed unit!

Once you fall in love with GROW BIOINTENSIVE, there is nothing that can stop you. It was a good story in the middle of a biting pandemic. ●



image: Simon Nyaga

Container Gardening: What to Plant, Where to Find Seeds

From Ecology Action Staff

Crop	Variety	Seed Source	Crop	Variety	Seed Source
Beans			Lettuce		
Bush Green	<i>Tendergreen Improved</i>	<ul style="list-style-type: none"> Peaceful Valley; Ferry Morse; Everwilde; True Leaf; David's Garden 	Head	<i>Great Lakes</i>	<ul style="list-style-type: none"> San Diego Seed Co Burpee; Peaceful Valley; Urban Farmer
Bush Wax	<i>Brittle Wax</i>	<ul style="list-style-type: none"> Victory Seeds 	Butterhead	<i>Iceberg</i> <i>Butter King</i> <i>Buttercrunch</i>	<ul style="list-style-type: none"> Urban Farmer Botanical Interests; Johnny's Selected Seeds
Bush Purple	<i>Royalty Purple Pod</i>	<ul style="list-style-type: none"> Peaceful Valley 	Loose-Leaf	<i>White Boston</i> <i>Oak Leaf</i> <i>Salad Bowl</i>	<ul style="list-style-type: none"> Urban Farmer Johnny's Seeds; Seed Saver's Exchange
Pole Snap	<i>Kentucky Wonder Pole</i>	<ul style="list-style-type: none"> Seed Saver's Exchange 			
Bush Lima	<i>Fordhook 242</i>	<ul style="list-style-type: none"> Burpee Seeds; Gurney's Seed 			
Pole Lima	<i>King of the Garden</i>	<ul style="list-style-type: none"> Gurney's; Urban Farmer Seeds 			
Beets			Melons		
Red Round	<i>Detroit Dark Red</i>	<ul style="list-style-type: none"> Baker Creek; Burpee Seeds 		<i>Hearts of Grow</i> <i>Honey Rock</i>	<ul style="list-style-type: none"> Urban Farmer; Peaceful Valley Urban Farmer; Peaceful Valley
Cylindrical	<i>Early Wonder</i> <i>Cylindra</i>	<ul style="list-style-type: none"> Botanical Interests Baker Creek; Burpee; Johnny's Selected Seeds 	Mustard Greens	<i>Florida Broad Leaf</i> <i>Southern Giant Curled</i> <i>Tendergreen</i>	<ul style="list-style-type: none"> Burpee; Everwilde Farms Peaceful Valley; Baker Creek; Everwilde Farms Burpee; Eden Brothers
Broccoli					
	<i>Green Comet Hybrid</i>	<ul style="list-style-type: none"> Urban Farmer 		<i>Red River</i>	<ul style="list-style-type: none"> Sand Hill Preservation Center
	<i>Premium Crop Hybrid</i>	<ul style="list-style-type: none"> Gurney's; Golden Valley 			
Brussels Sprouts	<i>Jade Cross Hybrid</i>	<ul style="list-style-type: none"> Nanas Bloomers; Gurney's; Pinetree Garden 	Okra		
				<i>White Sweet Spanish</i>	<ul style="list-style-type: none"> Urban Farmer; Everwilde Farms
Cabbage			Onions		
Early	<i>Early Jersey Wakefield</i> <i>Copenhagen Market</i>	<ul style="list-style-type: none"> Baker Creek Seed Saver's Exchange; Urban Farmer Seeds 	Tall	<i>Alderman</i>	<ul style="list-style-type: none"> Territorial Seed Co; Victory Seeds
Late	<i>Danish Ball-Head</i>	<ul style="list-style-type: none"> Urban Farmer; Hudson Valley; Everwilde Farms 	Medium	<i>Wando</i> <i>Alaska</i>	<ul style="list-style-type: none"> Burpee; Urban Farmer Urban Farmer; West Coast Seeds
Red	<i>Mammoth Red Rock</i> <i>Red Acre</i>	<ul style="list-style-type: none"> Fedco Seeds Urban Farmer; Botanical Interests 	Edible Pods	<i>Dwarf Gray Sugar</i> <i>Little Marvel</i>	<ul style="list-style-type: none"> Johnny's Seeds; Urban Farmer Urban Farmer
Savoy	<i>Ruby Ball Hybrid</i> <i>Savoy King Hybrid</i> <i>Perfection Drumhead</i>	<ul style="list-style-type: none"> Territorial Seed Co; Harris Seeds Stokes Seed 	Small	<i>Green Arrow</i>	<ul style="list-style-type: none"> Seed Saver's; Territorial Seeds; Kitazawa Seeds
Chinese	<i>Chieftain Hybrid</i>	<ul style="list-style-type: none"> Seeds for Generations 	Peppers		
Mini Pak Choy	<i>Hilton</i> <i>Toy Choy</i>	<ul style="list-style-type: none"> Adaptive Seeds Baker Creek Park Seed 	Sweet	<i>Bell Boy Hybrid</i> <i>California Wonder</i> <i>Golden Calwonder</i> <i>New Ace Hybrid</i> <i>World Beater</i> <i>Yolo Wonder</i> <i>Anaheim M</i> <i>Long Red Cayenne</i>	<ul style="list-style-type: none"> BFG Supply Company Burpee Seeds; Urban Farmer Southern Exposure Seeds Harris Seeds Southern Exposure Seeds Eden Brothers Peaceful Valley; Baker Creek Heirloom Seeds Peaceful Valley; Urban Farmer
Cantaloupe	<i>Minnesota Midjet</i>	<ul style="list-style-type: none"> Baker Creek; Botanical Interests 	Hot		
Cardoon	<i>Gobbo di Nizza</i> <i>Porto Spineless</i>	<ul style="list-style-type: none"> Baker Creek Johnny's Selected Seeds 	Potatoes	<i>Kennebec</i> <i>Norland</i>	<ul style="list-style-type: none"> Urban Farmer; Gurney's Urban Farmer; Wood Prairie
Carrots					
Very Short	<i>Ox Heart</i>	<ul style="list-style-type: none"> Baker Creek; Urban Farmer Seeds 			
Short	<i>Little Finger</i>	<ul style="list-style-type: none"> Baker Creek; Peaceful Valley 	Radishes	<i>Cherry Belle</i> <i>French Breakfast</i> <i>Sparkler</i> <i>Burpee White</i> <i>White Chinese</i> <i>China Rose</i>	<ul style="list-style-type: none"> Botanical Interest Seeds Botanical Interest; Seed Saver's Exchange Peaceful Valley; Urban Farmer Burpee Willwhite Seed Inc. Hudson Valley Seed Company
Medium Short	<i>Royal Chantenay</i>	<ul style="list-style-type: none"> West Coast Seeds 	Spring/Summer		
Long Slender	<i>Imperator</i>	<ul style="list-style-type: none"> Pinetree Garden Seeds 	Winter		
Cauliflower	<i>Early Snowball</i> <i>Snow Crown Hybrid</i>	<ul style="list-style-type: none"> Seed Saver's Exchange Gurney's Seed; Territorial Seed 			
Celeriac	<i>Giant Prague</i>	<ul style="list-style-type: none"> Baker Creek 			
Collards	<i>Various</i>	<ul style="list-style-type: none"> Southern Exposure Seed 			

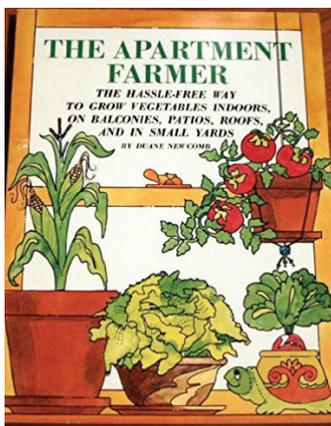
Corn Yellow Bicolor Midget	Early Sunglow Honey and Cream Sweet Corn	<ul style="list-style-type: none"> Burpee Seeds; Reimer Seeds Gurneys Henry Field; Gurneys (Note: only plant one variety at a time)	Salsify	Mammoth Sandwich Island	Baker Creek Heirloom Seed Company
Cucumbers Salad	Improved Long Green Marketer Markmore 70 Spartan Dawn Pioneer Mini	<ul style="list-style-type: none"> Peaceful Valley; Ferry Morse; Everwilde; True Leaf; David's Garden Victory Seeds Peaceful Valley Seed Saver's Exchange Burpee Seeds; Gurney's Seed 	Spinach	Long Standing Bloomsdale Winter Bloomsdale Hybrid No. 7	<ul style="list-style-type: none"> Burpee; Baker Creek Southern Exposure Seeds Reimer Seeds; Victory Seeds
Pickling			Squash	Golden Zucchini Golden Summer Crookneck	<ul style="list-style-type: none"> Baker Creek Heirloom Seeds Baker Creek Heirloom Seeds
Small Sized			Strawberries	Red Wonder Wild	Baker Creek Heirloom Seeds
Endive	Frisee	Baker Creek Heirloom Seed Co	Swiss Chard	Fordhoop Giant Rhubarb Chard	<ul style="list-style-type: none"> Baker Creek Heirloom Seeds Johnny's Seed
Eggplant	Black Beauty	Burpee; Victory Seeds	Tomatoes	Big Early Big Boy Tiny Tim Small Fry Patio Hybrid Red Cherry	<ul style="list-style-type: none"> Burpee; Park Seed Burpee; Urban Farm San Diego Seed Co Reimer Seeds Totally Tomatoes; Urban Farmer Urban Farmer
Fennel	Florence	Baker Creek Heirloom Seed Co	Turnips	Purple Top Milan Tokyo Cross Purple Top White Globe	<ul style="list-style-type: none"> Renee's Garden Seeds Zitazawa Seed Co; West Coast Seeds Urban Farmer; Johnny's Seeds
Garlic	Various	Filaree Garlic Farm			
Kale	Dwarf Blue Curled Vates Dwarf Siberian	<ul style="list-style-type: none"> Burpee; Seed Saver's Exchange Baker Creek; Urban Farmer 			
Kohlrabi	Blauer Speck	Baker Creek Heirloom Seed Co			
Leeks	Autumn Giant Leek	Baker Creek Heirloom Seed Co			

Indoor and Container Gardening Inspiration

From GROW THE EARTH (johnjeavons.org)

Wishing you could grow something but you don't have the space? Don't despair!! Indoor/container/balcony gardening is a great way to enjoy spring and summer in an apartment, with very young children, if you experience mobility challenges, or if you just enjoy having a garden as a roommate! There are a lot of resources out there, but I have found the following books fun for their indoor/micro-scale gardening possibilities. They are both available on Amazon, but you can also probably find them on your favorite online bookstore, or you can order them from your favorite brick and mortar store! I hope you enjoy them, too.

The Apartment Farmer by Duane Newcomb – both editions. The first edition is out of print, but your local library's Inter-Library Loan Service should be able to access it for you for a small charge. The first edition has lots of tips for balcony-type applications and even lists a variety of small sweet corn that can be grown well in just 8"-deep growing boxes. The second edition – which is available online in paperback – focuses on mainly indoor applications.



Growing Tasty Tropical Plants... by Laurelynn G. Martin and Byron E. Martin, owners of of Logee's Tropical Plants (logees.com). The size of your home will define how many of a surprisingly long list of delicious and exotic plants you can grow, but the possibilities are exciting. This book is available online, and comes with beautiful color photos and detailed instructions.

Growing tasty tropical plants*

(like lemons, limes, citrons, grapefruit, kumquats, sunquats, tahitian oranges, barbados cherries, figs, guavas, dragon fruit, miracle berries, olives, passion fruit, coffee, chocolate, tea, black pepper, cinnamon, vanilla, and more...)



*in any home, anywhere.

Laurelynn G. Martin and Byron E. Martin,

Good luck and happy gardening! ●

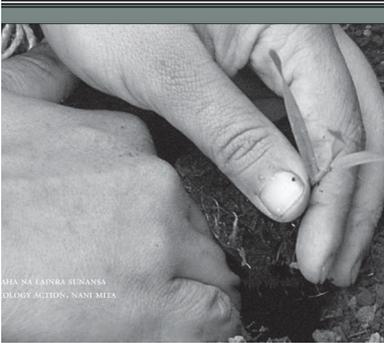
Farmer's Handbook in Miskitu

By Shannon Joyner, Garden Companion Editor

LANTAKAIA BUK KA SIRPI KUMSA DIARA
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RAYAKA YARI BRIHWAI A NATKA NANI
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FOR MARGO ROYER-MILLER
TRADUCIDO EN MISKITU POR LIC. NOÉ SAÚL CASTILLO SIMÓN



Ecology Action is happy to announce that our popular *GB Farmer's Handbook* by Margo Royer-Miller has been translated into Miskitu by Lic. Noé Saúl Castillo Simón! It is now available at growbiointensive.org/ePubs under the GB Farmer's Handbook Translations tab.

The Miskitu are indigenous people from the historic Moskitia/Mosquito (Miskitu) terri-

tory of Central America, which ranges from present-day Cape Camarón, Honduras, to Rio Grande, Nicaragua. The Miskitu nation formed part of the Eastern Atlantic Caribbean Zone, and was long dominated by British interests. The Miskito Kingdom was already an independent state when England officially recognized it in 1689, and in 1710, an official treaty established a British protectorate over the kingdom. While many groups in the area now speak English, Spanish, and other languages, the Miskito/Miskitu creole originated in the native Northern Nahuatl language and came about through frequent contact with the British. Slave ships wrecked along the coast in the seventeenth century led to intermarriage with the indigenous people, and many Miskito are of mixed Native American, African, and British ancestry.

According to samepassage.org/miskito *"The Miskito kingdom aided Britain during the American Revolutionary War by attacking Spanish colonies and gained several victories alongside the British. However, at the conclusion of the peace in 1783, Britain had to relinquish control over the coast. The British withdrawal was completed at the end of June 1787. Despite the withdrawal, Britain maintained an unofficial protectorate over the kingdom, often intervening to protect Miskito interests against Spanish encroachments. ...Spanish settlers first began to arrive in Miskito land in 1787, but the Miskitos contin-*

ued to dominate the area because of their numbers and the experienced military. Also, the Miskito territory is very inaccessible, and was therefore little affected by the Spanish conquest of the area. Their political structure allowed the Miskito people to retain their independence all through Spanish rule and through the Federation of Central American States. ...However, they were finally absorbed into Nicaragua."

With an estimated 180,000 speakers, Miskito is the most widely spoken of a family of languages of Nicaragua and Honduras that has come to be known as Misumalpan (from the subgroups Miskito, Sumo, and Matagalpan). According to [everipedia.org/Miskito language](http://everipedia.org/Miskito_language) *"In the 20th century the Miskito language started to dwindle. Honduras, being a former Spanish colony, officially used the Spanish language... In schools, children were forbidden from speaking Miskito for most of the 20th century and could only speak Spanish; young generations had less of an opportunity to practice the language. In the 1990s, many groups lobbied against the rule and promoted bilingual schools to preserve the Miskito language. Twenty such bilingual schools exist."*

Traditionally small-scale farmers who cultivate a few hectares of land and use the jungle and rivers for hunting and fishing, the Miskito are particularly vulnerable to the impacts of climate change – including severe drought and extreme hurricanes – which have altered the way they have farmed for centuries. Environmental scientists believe their survival could depend on their ability to adapt to climate change, and it is our hope that the translation of the GB Farmer's Handbook will help the Miskito people in their quest for food sovereignty and climate resilience.

Additional information about the Miskito people and their language can be found online at:

- samepassage.org/miskito
- [everipedia.org/Miskito language](http://everipedia.org/Miskito_language)
- encyclopedia.com/places/latin-america-and-caribbean/nicaragua-political-geography/miskito
- seedsandlovetogether.com/miskito-phrase
- kuscholarworks.ku.edu/bitstream/handle/1808/25656/Grammar_YamniBalam.pdf
- miskitunation.org/miskitu-history
- doi.org/10.7560/702806 ●

Watering: When, Where, and How

From Bountiful Gardens Archive

Water behaves differently in different soils and climates—so the more you know, the better you can decide how and when to do it. The time of day to water is controversial, with vociferous champions for both morning and evening watering. We like to take a more situation-specific approach. Watering will cool the soil, not just because the water is cooler, but through evaporation. So, in the spring, when nights are cold and it is important to let the soil warm up as much as possible, we like to water early in the day. That gives the soil all day to warm in the sun, and allows it to start the night as warm as possible.

Later, when the sun's heat is a threat as well as a boon, we might switch to evening watering, giving the plants the water they need to for growth during the night, when they are not heat-stressed. If the weather is brutally hot, we will water during the hottest part of the day. Some water will be lost to evaporation, but by evaporating, it forms a little pocket of cooler, moister air to refresh the plants. And it cools and moistens the tender roots.

We do not generally water the plants themselves, but the soil underneath. Water can be a cooling, cleansing, and refreshing shower for plants—they are used to rain, after all. But there are situations where it is best to keep water off of the leaves:

- When the sun is high and hot, water spots on the leaves—especially smooth leaves, like pepper plants—can act like a lens and actually cook the area underneath the droplets.
- If you live in an area affected by fungal diseases such as rust, or late blight of tomatoes, avoid wetting the leaves, which can spread fungal disease.
- If temperatures are right for powdery mildew, avoid evening watering; water in the mornings instead so the leaves have all day to dry.

We recommend mulch as well. Not only does it retain moisture in the soil, and add organic matter, it prevents disease. It works like this: studies (and our experience) show that fungal diseases, and even some pests, arrive on the plant with soil splashed up from the surface by water droplets. Even with a good watering wand, the drops of water from your hose have a lot of force: they compact the soil after con-

stant impact, and they also cause drops to splash up on the bottom leaves. Commercial tomato growers sometimes remove the bottom leaves to avoid this. Mulch cushions the impact and holds the soil particles, so you get less compaction, less erosion, and less disease from splashback.

Your soil type makes a big difference in how water behaves in the ground. In clay soil, water takes a long time to penetrate, but spreads out over a large area, and stays moist for a long time. However, if it once dries out completely, it takes a long time to get completely remoistened. Pure clay will crack, allowing hot dry air to get at the root zone. If you find that cracks start in the unwatered paths and extend into the beds or your garden, you may need to water the paths as well, or at least mulch them.

Sandy soils allow the water to pass through quickly—so it goes straight down, and the top will dry out again soon. If you are using drip irrigation, you will need your emitters much closer together in sandy soils, and your watering times closer together as well. Hand-watering needs to be done often and sweep the entire bed.

Silt is a lesser-known soil type: it is very very fine sand, too fine to feel gritty. It takes a bit longer for water to run through it. But silt is very different than clay: The particles in clay soil are flat plates that interlock, and slide against one another when wet, almost feeling greasy. They are also held together by an electrical charge that holds water within the matrix of plates. Clay can be rolled into a “snake” or a bowl shape. Silt feels slick, but crumbles rather than holding a shape. In terms of watering, silt should be treated as a less-extreme form of sand.

Organic matter, like humus, compost, worm castings, manure, etc., will increase the soil's ability to hold water because it can absorb water within the particles as well as between them. It makes water available to plants gradually, mitigating both sog-giness and dryness. The more organic matter you have, the less often you need to water, and the more available the water is to your plants. It make both clay and sand better for gardening. You can add to the effect of organic matter in the soil by mulching with organic matter on top of your beds. The mulch will increase biological activity in the top inch of soil, and allow feeder roots to flourish there without being killed by heat and dryness. (In cold, wet, soils, you should not mulch—but then you may not need to water much, either.) ●

ECOLOGY ACTION'S GARDEN COMPANION

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Ecology Action newsletters and full-length articles are available online at growbiointensive.org/Enewsletter/Archive.html

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ECOLOGY ACTION EVENTS: 2022

Dear GROW BIOINTENSIVE Family,

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

The Jeavons Center Mini-Farm Tour will take place on July 30, 2022. Information and Registration at growbiointensive.org/tour

The *onsite* Fall 3-Day Workshop is canceled, but an *online* Zoom-based version will take place over four consecutive Saturdays: Oct. 29, Nov. 5, 12 & 19, 2022. Register at: growbiointensive.org/workshop.html

Our 2022 schedule of events:
growbiointensive.org/events_main.html
or call 707-459-0150

Wishing everyone good health and good gardening,
Ecology Action

Ecology Action

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