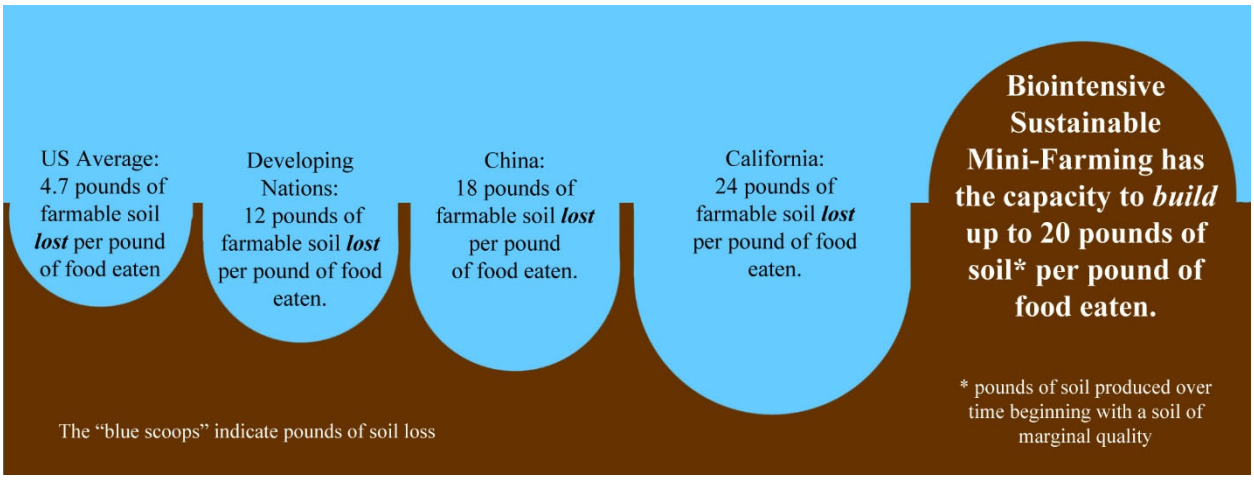
Final Draft Sustainable Soil Fertility: Ecology Action's GROW BIOINTENSIVE® Soil Test Analyst and Amendment Recommender (STAAR) Standards and Certification Program

Introduction

Scientific studies show that as little as 20 years of farmable soil remains globally. UN studies and other data document soil loss due to wind and water erosion and other factors because of the farming practices being used, per pound of food eaten. Since each person on the Earth eats about 2000 pounds (one ton) of food annually, this means that 4.7 tons of farmable soil are lost per person annually on average in the U.S., 12 tons in developing countries, 18 tons in China, and as much as 24 tons in California.

The illustration below demonstrates the challenge conventional farming is posing to world farming soils — and a possible solution provided by GROW BIOINTENSIVE® Sustainable Mini-Farming.



One of the primary functions of the GROW BIOINTENSIVE method is to allow small-scale farmers everywhere to build and maintain soil fertility levels that will allow the farmers 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 the application of the correct type and quantity of organic soil amendments at the correct time is a fundamental part of building and maintaining sustainable soil fertility levels. Inaccurate soil test analysis and amendment recommendations can damage soil, cost farmers time and money, and hinder the development of a sustainable closed-loop GROW BIOINTENSIVE soil fertility system. As the GROW BIOINTENSIVE movement expands across the globe, soil testing and soil amendment recommendation standards must be established and unified across all GROW BIOINTENSIVE sites, and all GB practitioners and teachers must understand the importance of carrying out the specified tests, the recommendations, and the maintenance of the soils according to those standards, to ensure quality control of soil fertility and the GB method across climates, cultures, and soil types.

Soil Tests and Amendment Recommendations: Current Status

Currently, John Beeby, (Ecology Action Soil Fertility Advisor and the owner/operator of the soil test and soil amendment recommendation service Grow Your Soil™ (growyoursoil.org)) is the sole

designated soil test analyst/soil amendment recommender for certified GROW BIOINTENSIVE sites. Grow Your Soil is a soil consultancy service that provides organic fertilizer and compost recommendations based on a specific and unique set soil sampling and testing parameters. Grow Your Soil has over two decades of experience working with the GROW BIOINTENSIVE method, over a wide range of farmers, soils and climates around the world, and provides high-quality, comprehensive and affordable recommendations. Grow Your Soil's founder and proprietor, John Beeby is a former Ecology Action 3-Year Apprentice and Staff person, Cornell University-trained soil scientist, and author of two important books, *Test Your Soil with Plants* and *Future Fertility*.

Concerned by the current and ongoing global loss of soil fertility, John is offering Grow Your Soil's organic fertilizer recommendations at a discount of 50% to all GROW BIOINTENSIVE® Certified Teachers.

John is expanding Grow Your Soil's services to provide multi-year trend analysis of soils. Soil sampling and testing only reflect the soil's status at moment the soil is sampled. However, when a farmer has sent two or more test results for the same soil over several years, the soil's responses to fertilizer applications over time can be used to create even more comprehensive recommendations to build and maintain soil fertility. This data can also assist in evaluating the sustainability of the soil's fertility and how it is being managed. It is anticipated that this service will be available by July 2020 and will be offered at no additional cost to GROW BIOINTENSIVE Certified Teachers.

<u>Soil Tests and Amendment Recommendations: Future Plans</u>

While Grow Your Soil currently provides all the necessary soil test analysis and amendment recommendations for GB sites globally, it is clear that the sustainability, quality control, and continued expansion of GB programs will be better supported if more people have the ability to accurately and consistently analyze and diagnose soil fertility problems, and to recommend soil amendments correctly, in keeping with the strict GB sustainability standards established by Ecology Action.

However, the soil test analysis and soil amendment recommendations used by Grow Your Soil are calculated with based on combinations of 24 unique variables – an extremely complex system. To be a skilled soil test analyst and make accurate soil amendment recommendations, you must be familiar and comfortable with a large combination of these 24 variables, and to understand how they interrelate in order to provide accurate recommendations for inputs to soil based on soil tests.

For this reason, Ecology Action, John Beeby, and Ecology Action's International Partner for Latin America, the Caribbean and Europe, ECOPOL/El Mesquite, are undertaking the following initiatives to ensure quality control of current and ongoing soil amendment recommendations at GB sites, and to develop a program to train and certify GB soil test analysts and two levels of certified soil amendment recommenders.

- John Beeby, John Jeavons, Matt Drewno of Ecology Action and Juan Manuel Martínez Valdez, Agustín Medina abd Marisol Tonorio of the NGO-ECOPOL/El Mesquite will work together to develop and implement this program as the ***International GROW BIOINTENSIVE Soil Fertility Team (IGBSFT)*.** Team members have significant experience and training in GROW BIOINTENSIVE and soil fertility improvement, and are dedicated to continually learning and sharing knowledge in order to increase our effectiveness in improving soils.

- The IGBSFT will develop a 2-tiered ***Soil Test Analyst and Amendment Recommender (STAAR) Training and Certification Program*****,** including the development of a standardized procedure for soil supplementation recommendations based on soil tests conducted at *official* GB demonstration and training sites.

  The program will certify STAARs at Basic and Advanced Levels to increase the number and professional effectiveness of people skilled in soil test analysis and GB amendment recommendation standards globally.

  Training provided for Basic and Advanced Certification will be in the form of written material and videos to be review and commented on, student-specific email and video conversations, and written exams. Time required to achieve either basic of advanced training will depend on the level of knowledge and the work ethic of the candidate and is expected to range from 1 to 3 years. Cost of training will depend on the amount of time required and is expected to range from $2,000 to $6,000 for each level of certification per candidate. This may be subsidized by Ecology Action, if applicable and depending on funding.

  Basic and Advanced Certified Soil Recommenders will utilize the Grow Your Soil database to generate recommendations for soil improvement. They will review each recommendation generated and provide feedback to John Beeby, if they feel a change is needed. Approval must be granted prior to making changes to the recommendations generated. In addition, all client communications will be shared with John Beeby/GYS. This review, feedback and approval process as well as transparency in communications will ensure the quality and consistency of all GYS recommendations globally. Feedback, including ideas for expansion of Grow Your Soil services and clientele are welcomed and expected, especially from Advanced recommenders.

  In addition to providing recommendations, Basic and Advanced recommenders are expected to provide all necessary support to: 1) locate a local soil testing lab capable and qualified to do the necessary testing, and communicate with that lab to ensure the proper extraction and testing methods are used to analyze the sample(s); 2) ensure proper soil sampling, labelling, submission documentation, permits and shipment to that laboratory occurs; 3) locate all of the recommended fertilizers needed or work with John to adjust the recommendation for the fertilizers available; and 4) ensure that only the recommended fertilizers are used and no other inputs are used, especially those not permitted in GROW BIOINTENSIVE agriculture. Advanced Certified Recommenders are also qualified at the discretion of the IGBSFT to train other Soil Recommenders at the Basic Level, with certification granted with the approval of the IGBSFT.

  Soil improvement projects requiring GYS recommendations are encouraged to have at least 10 GROW BIOINTENSIVE beds per site, and to have at least one recommendation per site. GYS recommendations cost US$25 per recommendation, which includes all necessary communications and follow-up to ensure successful implementation of the recommendations and achievement of soil improvement results.

  Basic Certified Recommenders receive 60% of the recommendation fee, and 40% is used to maintain the GYS program, including full, prompt and ongoing support for certified recommenders and clients, marketing, and maintenance and advancement of the worldwide

database. Advanced Certified Recommenders receive 75% of the recommendation fee with 25% supporting GYS.

Until there are additional certified soil recommenders, John Beeby will serve as the sole soil recommender for Ecology Action and all GB demonstration, training, and research projects, as others *develop* the skills to achieve Basic certified soil test recommender status. During this development process, members of the IGBSFT are encouraged to locate, cultivate and facilitate soil testing projects globally. Principle facilitators of soil testing projects that are not certified soil recommenders receive 25% of the recommendation fee with 75% supporting GYS.

The *goal* of the program is to have one person in each of the 42 countries in the Latin American region and in each of the 4 European countries currently covered by ECOPOL/EM (Spain, Portugal, France, and Italy) trained and certified in this system – 46 in total for the initial training and certification program.

The protocol and standards that will be used in the STAAR training and certification program will be developed, by John Beeby, over a two-year period (estimated delivery January 2023), with the other members of the IGBSFT involved in the process, and eventually becoming soil test recommenders themselves. Until Jan 2023, John Beeby will remain the sole soil supplementation recommender for Ecology Action and all GB demonstration, training, and research projects, as others in the team *develop* the skills to achieve certified soil test recommender status.

To facilitate the development of and check the accuracy of this system, ECOPOL/El Mesquite will provide the existing Soil Test Data and Amendment Recommendations made for the thirty-two Amigos de las Tierra project sites in Spain actively pursuing GROW BIOINTENSIVE demonstration, education and research. Comparing the existing data and recommendations from these sites with the standards and models created for the STAAR project will provide a valuable learning tool for beginning soil test analysts/recommenders, and also help to track the fertility of the soil at these sites over time.

(NOTE: This is a big project that will require a lot of time and funding. We need a way to provide on-line rather than one-on-one training, to provide the basic and intermediate level knowledge to a student. This process would require serious work and study on the part of the student to ensure they are very, very dedicated before Ecology Action invests in one-on-one training.)

- **Soil Testing Spotlight.** To introduce the topic of soil testing and the reasoning and methodology involved in soil test analysis and making soil amendment recommendations to a wider audience, John Beeby and Ecology Action will create a series of topics on the subject, posted to growbiointensive.org in the "Protocol" section beginning in April 2020, with new posts added regularly.

- **In addition to the standardized soil test, the soil amendment recommendation protocol, and the Soil Testing Spotlight series, John Beeby is working on a 3-Plant *Test Your Soil with Plants*-type system** that people everywhere can use to make significant soil fertility evaluations and

amendment recommendations. This will greatly enhance the ability of those knowledgeable in soil test evaluation and recommendation to advise and make decisions regarding soil fertility and amendment recommendations in the field, especially in those regions where standard soil testing is either unavailable or prohibitively expensive. John Beeby will be working with the *IGBSFT* as well as potentially others including Samuel Nderitu of G-BIACK and Mlesh Elijah of Garden of Hope – both in Kenya - to ensure the effectiveness and comprehensiveness of this innovative method. It is anticipated that this system will be completed by January, 2022.

- **Following the establishment of the STAAR program, the *IGBSFT* will work with other organizations to develop projects demonstrating how powerful GROW BIOINTENSIVE is when combined with soil test analysis** and the limited (one or two-time) application of appropriate organic fertilizers to improve soils, based on the system used by Grow Your Soil. This team will meet regularly online via Zoom to develop sampling and testing strategies that will work for each project's farmers, assist in locating the necessary fertilizers (not always easy in some locations), and develop ways to ensure each project's success.

  Project success will be defined in collaboration with funding organization(s) and will be measured by meeting not only funders' expectations but also *ensuring the soils are progressing toward closed-system sustainability*. This is particularly important considering the diminishing availability and increased cost of many organic fertilizers globally – it is imperative that GB farmers be as independent as possible from the burden of continual soil amendment that conventional farmers struggle with. Monitoring of each project ideally occurs in collaboration with the funding organization and its farmers and could be facilitated through sharing *photos of crops; soil, biomass, edible yield and water consumption data; farmer surveys; and scheduled soil testing throughout each project's lifespan.*