**COSECHA SOSTENIBLE INTERNACIONAL – PANAMÁ**

**SEGUNDO INFORME DE AVANCE DEL PROYECTO DE HUERTOS BIOINTENSIVOS**

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**INTRODUCTION**

Participant families invovled in the project are currently in phases 1 and 2 of SHI Five-Phase program. Though still in the early segments of the program, families have demonstrated extraordinary shifts in their way of thinking and acting. Families demonstrate a high level of proficiency in the techniques taught, and capacity to move forward in the five-phase program. All achievements are measured within the context of the organization’s five areas of impact: Agroforestry, Environment, Food Security, Livelihood, and Learning Capacity.

**ACTIVITIES ACCOMPLISHED:**

1. **Disclosure of project**

SHI-Panama extentionist, as well as other functionaries of SHI, continue to visit and provide technical assistance to the 20 selected farms, and execute the project. This project has had much disclosure on an internal level with SHI-Panama and subsequently we’ve been progressively introducing the biointensive techniques with other small-scale farmers in the two communities, as well as in other communities where SHI-Panama works. Presently the biointensive methodology is being taught and implemented in the community of San Pedro, Penonome; and El Entradero, Membrillo and Tranquilla, all in the municipality of Anton. Photos can be seen on SHI’s Flickr account or at the following album that shares images from the communities San Juanito, Paguá, and Algarrobal:

 <http://www.flickr.com/photos/sustainableharvest/sets/72157627792089833/>

The biointensive methodology, has also be extrapolated and applied to farms in 10 communities located along the sub-watershed of the Rio Trinidad of the Panama Canal Watershed. Community members participated in a joint project focused on improving well being and climate change mitigation through the adoption of appropriate technologies. Project was co-financed with Fundacion NATURA. Photos can be found here: <http://www.flickr.com/photos/sustainableharvest/sets/72157624522800924/>

1. **Current Situation of Families and Land**

Families that had been selected for the implementation of this project have varied in their overall performance, due mainly to the challenges of adopting new agricultural techniques, which typically is seen as a radical shift in mindset. Converting or shifting how a family cultivates after decades of being taught something different is costly and takes time; thus the broad differences in where some families are in the adoption process. Frequently, rural families hesitate to change their behaviors, especially for something that might imply more time and energy, versus the conventional agriculture that relies heavily on agrochemicals versus physical labor, attention to detail, etc. Lastly, one should acknowledge that farming families are exposed to a variety of circumstances and factors that affect their motivation, self esteem, and time committed.

**List of Selected Families**

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| **Name** | **Community** | **Current situation** | **Comments** |
| 01 Austina Soto | Paguá | Active | Constructed double dig beds, applied lime and has cultivated vegetables twice a year.  |
| 02 Víctor Martínez | Paguá | Active | Currently has biodynamic beds and is producing / harvesting produce twice a year. |
| 03 Eraclio Soto | Paguá | Active | Currently has biodynamic beds and is producing / harvesting produce twice a year. |
| 04 Encarnación Rojas | Paguá | Active | Currently has biodynamic beds and is producing / harvesting produce twice a year. |
| 05 Melva Soto | Paguá | Active | Currently has biodynamic beds and is producing / harvesting produce three times a year. |
| 06 Leovigildo Soto | Paguá | Above average | Currently has biodynamic beds and is cultivating / harvesting produce throughout the year. Surplus is being commercialized on a small scale within local and regional markets.  |
| 07 Eligio Soto | Paguá | Inactive | Constructed biointensive beds and cultivated for a period; however acquired a job in another community and thus has abandoned his work. |
| 08 Dimas Soto | Paguá | Above average | Currently has biointensive beds and cultivated twice per year with impressive results. Surplus is being sold within local market.  |
| 09 Ricardo Guardado | Paguá | Above average | Currently has biointensive beds and is cultivating / harvesting produce throughout the year. Surprlus is being sold within local market.  |
| 10 Uviberto Araya | Paguá | Active | Currently has biodynamic beds and is producing / harvesting produce twice a year. |
| 11 Jacinto Martínez | San Juanito | Active | Currently has biodynamic beds and is producing / harvesting produce twice a year. |
| 12 Isidro González | San Juanito | Active | Currently has biodynamic beds and is cultivatingg / harvesting produce three times a year. |
| 13 Santos Lorenzo | San Juanito | Active | Currently has biodynamic beds and is cultivatingg / harvesting produce three times a year. To some extent is selling surplus within local market. |
| 14 Encarnación Martínez | San Juanito | Active | Currently has biodynamic beds and is cultivatingg / harvesting produce three times a year. |
| 15 Clemente Hernández | San Juanito | Active | Currently has biodynamic beds and is cultivatingg / harvesting produce twice a year. |
| 16 Saturnino Rojas | San Juanito | Active | Currently has biodynamic beds and is cultivatingg / harvesting produce twice a year. |
| 17 Esteban Rojas | San Juanito | Active | Currently has biodynamic beds and is cultivatingg / harvesting produce twice a year. |
| 18 Juan Vega | San Juanito | Active | Currently has biodynamic beds and is cultivatingg / harvesting produce twice a year. |
| 19 Anselmo Hernández | San Juanito | Active | Currently has biodynamic beds and is cultivatingg / harvesting produce twice a year. |
| 20 Dimas Guardo | San Juanito | Above average | Currently has biointensive beds and is cultivating / harvesting produce throughout the year. Surprlus is being sold within local market.  |

In all farm plots, organic compost has been applied on three occassions in order to improve the overall content of the soils.

Agricultural items being grown in gardens has varied to some degree, but majority of gardens have included a combination of the following:

**Vegetable crops:**

Tomato, sweet pepper, green beans, common bean, chives, mustard greens, cucumber, celery, pepper, tropical spinach and others. With all crops, participants have used techniques related to biointensive agriculture such as planting distance, crop association, and rotation.

**Carbon crops:**

Items most frequently cultivated for their carbon composition for use in compost, has been corn; however, now we are beginning to introduce amaranth as a carbon source, as well as nutritional supplement for humans and animals.

**Caloric crops:**

Those most grown include cassava, , tenemos la Yuca, taro and cocoyam.

**Open Pollinated Seeds**

When possible, the project has attempted to use local seed varieties, and not hybrid nor genetically modified.

In actuality, not all of the farmers meet the 8 core principle of biointensive farming, but rather a minimum of five. Little by little families implement the principles, but like most things, some require more time than others

1. **Meetings with Participants**

During the period, field trainer Mariano Navarro has organized informal and formal meetings with all participants. During each meeting, a project evaluation is done in which participants describe idnvidiual and collective achievements, difficulties, and goals.

1. **Training**

In order to confront challenges, it is imperative that staff overseeing the project understand to the fullest extent possible, the concept of biointensive farming, how it differs from conventional gardens / agriculture, and anticipated outcomes. Currently all SHI-Panama staff are trained in the methodology, have participated in a number of workshops and events, and trained others. During this time, the organization has also developed an internal training program whereby all staff are required to research and subject matter related to organic agriculture and train their co-workers. Internal trainings occur on a monthly basis. Lastly, staff have participated in intensive training courses on both bioitensive agriculture (Chiriqui, Panama), and Biodynamic agriculture ( Costa Rica). Upon completing these courses, staff are required to replicate courses subject matter and train community members and other staff.

1. **Soil Analysis**

During the first week of September of this fiscal year, soil samples were retaken in ten of the twenty plots where soil samples were taken last fiscal year. A minimum of three samples were taken from each plot, lableled, and dried, and sent to the Agriculture Department at the University of Panama where a chemical analysis was done. When completed, we will be able to evaluate the differences / changes in organic matter, pH, micro and macronutrients, and understand how biointensive agriculture is affecting soil composition.

Samples were taken from the following participant plots

|  |  |
| --- | --- |
| **Community of Paguá** | **Community of San Juanito** |
| 1. Eligio Soto
 | 06 Jacinto Martínez |
| 1. Austina Soto
 | 07 Santos Lorenzo |
| 1. Víctor Martínez
 | 08 Encarnación Martínez |
| 1. Dimas Soto
 | 09 José Dimas Guardado |
| 1. Melva Soto
 | 10 Isidro González |

1. **Training for Participant Families**

In those communities directly invovled in the project, SHI-Panama has done much in the way of training and capacity building for families. Participant families have taken part in a variety of formal and informal workshops related to biointensive agriculture and organic production. Also, families have participated in exchanges with other farmers and community members. In those exchanges they shared knowledge and experiences they had learned from SHI-Panama.

Due to the low fertility and pH of soils that was detected during the first soil analysis, and the difficulties in accessing the communities, SHI-Panama has been capacitating and training the farmers in the use and application of biotechnologies in agriculture, specifically EM – efficient microorganisms – a means to reactivate microbial flora in soils. Staff are educating families on the incorporation of worm casting in their gardens, or vermiculture, an excellent source of micronutrients and microorganisms. Participants have also been taught and are applying the basic principles of compost as taught by John Jeavons – the founding figure behind the biointensive movement.

1. **Purchase of materials and inputs**

In order to facilitate the work of the families, SHI-Panama has provided participants with materials necessary to fulfill their work and the workshops offered. SHI-Panama has purchased and distributed plastic tanks / barrels used for the production / storage of efficient micro-organisms and other biofertilizers, accessories for irrigation systems and other items.

Majority of costs were incurred in transportation – more specifically fuel and repair of the motorbike used by the field extentionist Mariano Navarro.

1. **Primary problems encountered during the period**
	1. Delays in the repair of the SHI-Panama vehicle has been a hinderance to the transportation of materials. During the vehicles absense, SHI-Panama has depended on other local with access to vehicles for the movement of goods and materials.
	2. Road conditions to the community of San Juanito has been a cause for concern at times (heavy rains typically make the road inaccessible by vehicle or motorbike).
	3. The condition of a majority of the soils that we’re working with in both communities requires enormous attention and work in order to convert them to productive and healthy soils. Farmers cannot begin to consider producing on a large scale until they’ve amended their soils with sufficient micro & macronutrients to warrent them healthy and stable.
	4. Transfer of knowledge and adoption of new techniques is frequently slower than anticipated. Though participants have demonstrated motivation and interest, the transition from one school of thought, to another, requires extensive attention, follow-up and hands on training.
2. **Primary Achievements**
	1. Capacity building and training manuals have inspired participants and increased their level of interest. Many participants express greater levels of dedication as a result of the trainings the receive (sense of empowerment results in increases self confidence)
	2. Some participants have surpassed expectations and as a result become model farmers in their community. For example, Ricardo Guardado, an older participant with very poor soils has allocated several hours a day to improving his soil. Little by little his yields have increased, thus permitting him to adequately feed his family and sell surplus to other community members.
	3. Implementation of a collective work model and solidarity within the group of farmers. By creating a cohesive group of farmers, SHI and participants are able to harness the energy of the group and complete projects at a faster pace, and more importantly share experiences and knowledge.

Currently, we are in a stage to further promote the production of vegetables and other items (diversification) in order to improve family nutrition, but also create surplus for sale in local markets. As participants building their soils and revive them with micro-organisms, they will be able to plan more and improve yields so that they can sufficiently meet local and regional demands.

With this project, we are laying down the foundation for achieving the aforementioned goal; however, it is a process that requires time. Changes, tangible and intangible, are already occuring as farmers who previously relied on synthetic fertilizers and chemicals are abandoning them for more ecological practices like the use of homemade composts and living barriers. Participants are abandoning past practices like slash and burn for sustainable techniques that emphasize permanant agriculture, diversity and rotation. By abandoning such practices, they are able to have a direct effect on soils and conserve valuable humus and nutrients that are typically washes away with the first rains on a newly burned field. We are also observing a greater respect for biodiversity in the area, with the decline of hunting and poaching, as well as the protection of forest areas. The adoption and use of wood conserving stoves (DAMAK) has also contributed to the increase environmental awareness.

Most of the farmers invovled in the project are also artisans and generate much of their revenue from the sale of handicrafts, which are booming with the growth of tourism in Panama. The recent approval of the Free Trade Agreement between Panama and the United States, will be an opportunity for farmers in Panama to explore new markets and expand demand for their goods. In partnership with FUNDES, an international organization dedicated to economic development, SHI-Panama will examine marketing opportunties and how participants might fill niche markets with their raw and value added goods and servicies.

Other notable partnerships have included Peace Corps Panama, and the Finca Perezoso (Sloth Farm / Lazy man’s farm). Regarding the latter, SHI Panama has collaborated with Finca Perezoso and taken numerous farmers to John Douglas’s farm to learn about about the basic principles of permaculture and how it applies to agriculture in the tropics. Though in Spanish, several of the following videos feature SHI participants explaining their desire to create an ecosystem similar to the finca perezoso and its importance in preserving biodiversity.

<http://www.youtube.com/watch?v=FfQkPdiZWRU>

<http://www.youtube.com/watch?v=ZCCajj2rfEY>

<http://www.youtube.com/watch?v=chSOG5onL4E>

<http://www.youtube.com/watch?v=lwkZicD8dNo>

<http://www.youtube.com/watch?v=sV5uPCPg2DU>

<http://www.youtube.com/watch?v=7ovYQNQHBHk>

Something important to note is that SHI Panama is emphasizing the importance of replicating lessons learned in each community with other communities. Taking into consideration our experience with biointensive agriculture in Pagua and San Juanito, SHI Panama has been able to utilize its knowledge and experience and transmit it to other communities including San Pedro, Calle Larga, Rincon Claro, Tranquilla and others. Unlike Pagua and San Juanito, these communities have been able to implement some of the techniques much more quickly and with immediate results due to the apparent physical and chemical difference in soil.

1. **Projections**

Beginning in November, we will be evaluating gardens and the affect lime and organic fertilizers has had on soil health and quality, yields, and more. Once the results have been obtained and analyzed, we will begin to identify what crops will be ideal for the improved soils and initiate an intensive diversified planting phase that utilizes the basic principles of John Jeavons and biointensive agriculture.

Other activities that will occupy much of our time is the preparation of organic composts and fertilizers with local resources in order to ensure sustainability and low inputs. Each family will establish a vermiculture box for production of california reds and worm castings which will later be applied to home gardens, farm plots or incorporated in compost teas. Given the exceptionally poor soils in the area, participants and field trainer must pay close attention to this phase and the eventual improvement of humus and microrganisms. We plan to aternate planting with leguminous plant species or green manures like canavalia or mucuna which permit the fixation of nitrogren as well as further carbon intake.

Following the aforementioned activities, we will being working with the participants and establishing greenhouses which will facilitate in expanding the growing season, and controling humidity. Once greenhouses are installed, farmers will be able to extend their growing seasons, and reduce the rate of fungal attacks on cash crops lime tomatos and cucumbers.

During the “dry months” from January to April, participants will be focusing on Proactive and Transformational Leadership training. Subject matter includes:

* Identifying values, goals, objectives and priorities.
* Managing resources: time, information and money
* Forming and reforming effective groups
* Empowerment through Empathy and Motivation
* Involvement through communication and education
* Others

**Collatoral Activities**

Families who participate directly in this project and the remaining participants in both communities are engaged in the production of other traditional items, but are now increasingly incorporating organic techniques in these plots. Embodying the concept of “Small is beautiful” farmers are able to experiment within their garden and analyze their results so that they can then apply similar techniques in their larger farm plots. Taking what they have learned and implemented in their gardens, SHI participants are now transitioning their other crops to organic – including beans, corn, rice, pigeon peas, roots and tubers like cassava and yams, fruits such as pineapple, plums, papaya and other cash crops like coffee, cashews, etc.