FINAL TECHICAL REPORT

SUSTAINABLE HARVEST INTERNATIONAL

PROJECT NO: RS-1B2013-29

PARTICIPATORY Evaluation on the Introduction of Leguminous Cover Crops in Slash and Mulch Systems for Sustainable Corn Production in the Toledo District, Belize

ALLIANCE: **Sustainable Harvest international, Ministry Of Natural Resources and Agriculture (Research Department), Ministry of Natural Resources and Agriculture (Extension Department)**

TOLEDO, BELIZE DECEMBER 2013

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ACKNOWLEDGEMENT

First of all Thanks to God for giving us the life and strength in executing this innovation technology project.

A heart full thanks to the Swiss agency and IICA/Red-SICTA for the financial support for this valuable project, without the financial supports it would not be possible to assist the small farmers in the community of Santa Teresa and San Benito Poite. This Innovation Technology project assisted families and the community in general in improving the livelihood.

To Inter-American Institute for Corporation on Agriculture for the valuable technical support render to Sustainable Harvest International (SHI) during the execution of the project through the service of Mr. Maximilliano Ortega IICA`s Innovation Technology specialist. Sustainable Harvest International also recognized the invaluable support received by Red-SICTA`s liaison officer that render the time, technical support and guidance for this project to accomplished the set objectives and goals.

We also recognize the Coordinating committee for assisting in the coordination of the activities that was require in fulfilling the objectives.

A special thanks and appreciation to alliance: Ministry of Natural Resources and Agriculture, to the Extension and research department, even with the hardship confronted due to the lack of resource were still able to participate in some activities planned.

Thanks to all those that contributed in one way or the other for this project to be successful, especially thanks colleagues of Sustainable Harvest International, to Mr. Jose Coy Financial Officer and co-workers.

Finally thanks to all the farmers that participated in this project, since they were the ones that without knowing the results they risk them self in validating the experiment and assisting in the dissemination and transfer of the technology.

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I. GENERAL INFORMATION

A. Name of the Project: " Participatory Evaluation Of The Use Of Leguminous Cover Crops for the introduction of Slash And Mulch Systems For Sustainable Corn Production In The Toledo District, Belize **"**

B. Name of Organization Executing the project: Sustainable Harvest International-Belize (SHI-B)

C. Name of the Coordinator: Mr. Ernesto Pop

D. Date of the Report: December 2013

E. Period: June to December 2013

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EXECUTIVE SUMMARY

On March 7than Alliance agreement was formed between Sustainable Harvest International and the Ministry Of Natural Resources and Agriculture to implement an Innovation Technology project "Participatory Evaluation of the Use of Leguminous Cover Crops for the Introduction of Slash and Mulch Systems for Sustainable Corn Production in the Toledo District, Belize". The project was funded by IICA/Red-SICTAS to improve the livelihood of the corn and bean farmers in the villages of Santa Teresa and San Benito Poite. The Project officially started on June 7th 2013 when the first disbursement of funds was done and a coordinating committee was formed to ensure that the project is properly executed and the activities carried during the life of the Project.

These villages have a total population of 709 inhabitants, 352 in the village of Santa Teresa and 357 in San Benito Poite. The basic grains such as maize and beans are staple food for almost 90% of the rural population in the Toledo district. Farmers in the Toledo District especially from those villagesof Santa Teresa, San Miguel, Silver Creek and San Benito Poite and those which are adjacent to the Guatemala border, plant maize in May/June and beans in December for their own consumption and marketing to the adjacent villages in Guatemala and also within Belize. These farmers also plant small amount of maize in December, called "Matambre" maize. Most of the small producers plant white maize and beans using slash and burn system, "Milpa". Farmers have seen that their production is decreasing and their land is visible showing degradation as year passes, this has raised many concerns to the farming community in the Toledo District as maize and beans production is one of the major income earners for farmers to sustain their families.

The intensification of land use in agricultural practices in Belize, has led to a decline in soil fertility and crop yields. Soil quality is at risk from a number of threats driven by a range of man-made and natural pressures including climate change, land use and land management practices. Human activities have changed the character and quality of our soils over time. Destruction of the protective vegetation cover for long periods of time, lack of good agricultural practices and incorporation of technology to assist in soil management has had a tremendous negative impact on soil fertility. All of these activities can impair, or even destroy, the ability of soil to carry out its essential functions.

When land is degraded, its productivity is reduced and may continue to decline unless steps are taken to restore the soils and prevent further losses. Unchecked land degradation may result in an almost total loss of the productive capacity of the land. Hence it is necessary to find environmentally friendly methods that will solve soil fertility problems and enhance the agriculture sector in Belize.

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The technological innovation project promotes the introduction of Slash and Mulch system through the Establishment of Farmer Field School. The Slash and Mulch system will assist farmers in the southern part of the country (Toledo District) to safeguard agricultural land from degradation and loss of soil fertility. This cropping system will protect and conserve the soil and at the same time optimize the income by obtaining higher yield in production and reducing on the investment of fertilizer to supply the plant with the proper nutrient for optimum growth as it has been proven by many other countries. This technology involves the incorporation of leguminous plants in between the main crops. The legume is allowed to grow and then it is chopped to decompose in the farm providing nutrient to the crop and at the same time reduce soil erosion, less soil compaction and better moisture retention capacity.

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DESCRIPTION OF THE RESULTS OBTAINED: (based on the matrix of products, list of program activity in the project, the indicators, % of indicator fulfilled and means of verification**)**

Component 1. Validation				
Expected Results	**Activity Programmed for the Period**	**Period achievements**	**Achieved Percentage (%)**	**Means of Verification**
A1.1 Gathering of baseline data of experimental plots	Baseline data of experimental plots collected	Baseline data of experimental plots collected	100	Base Line Final Report
A1.1 Through the FFS, select farms/farmers for the establishment of experimental plots	Selection criteria developed 12 farms/sites selected	Selection Criteria developed 12 farm site selected	100 100	Document on criteria of selection Name of farmers provided
A1.2Establish leguminous cover crops on experimental plots selected by the FFS.	Experimental plot delimited Seeds sourced and planted	All the plot were measured and marked and all planted with corn	100	FFS session reports Pictures Field visits
A1.3 Data collection	Data on soil fertility indicators	Data on soil fertility indicators	100	FFS session reports Visual observations Field data sheets
Component 2. Monitoring and Evaluation				
Expected Results	**Activity Programmed for the Period**	**Period achievements**	**Achieved Percentage (%)**	**Means of Verification**
A2.1 Establish corn fields on selected experimental plots	24 experimental plots established with corn crop	Technical reports Quarterly reports	50	List of farmers and picture of farms
A2.2 Monitoring of experimental plots	4 farmer field visits carried out	FFS session reports Field visits	100	Field visit reports
A2.3 Data collection	Data on soil fertility indicators and crop yield collected	Field data collected Soil analysis carried out to measure yields, microorganism population, soil density and amount of organic matter	90	Field data sheets Technical reports Soil analysis results Farm records Harvest yields
Component 3. Knowledge Transfer and Dissemination				
Expected Results	**Activity Programmed for**	**Period achievements**	**Achieved Percentage (%)**	**Means of Verification**

	the Period			
A3.1 Identify and form alliances and technical coordination mechanism in the corn network	One alliance formed with key actors in corn production	The alliance was formed with the Ministry of Natural Resources and Agriculture	100	Alliance Act document
A3.2 Establish the Farmer Field School as technology transfer mechanism	The FFS established in two farmer groups	FFS established in two communities (2 Groups)	100	Technical report Consultant report FFS session report
A3.3 Elaboration and dissemination of technical bulletins, brochures and manuals.	200 technical brochures, pamphlets printed	2 guides were elaborated (row plating methods and slash and mulch guide) Posters, Calendars, Radio Ad and T Shirt was done for dissemination of information	100	Copy of brochures and pamphlets Proof of purchases
A3.4. Carry out regular technical coordination meetings with stakeholders in the corn network	4 coordination meetings carried out	More than four coordinating meeting was carried out.	100	Minutes of meetings

EXPLANATORY SUMMARY OF THE DEVELOPMENT OF THE ACTIVITIES BY EACH RESULT.

Result 1. Validation

In the month of June technical officers from SHI organized a meeting with corn farmers to participate in the innovative project in both Santa Teresa and San Benito Poite. During this meeting farmers were educated and informed about the project, its purpose, what it encompassed and how it will be implemented. At the end of the session 12 farmers expressed keen interest and were identified as the main players who participated in establishing the experimental plots.

The twelve farmers volunteered to carry-out the validation of the technology in using (*Mucuna pruriens)* locally known as pica pica; a nitrogen fixing plant (legume). The project provided enough funds for the establishment of experimental plots. At the beginning twelve farmers were interested in part-taking in the validation of the innovative technology, but due to the lengthy process in the procurement of the funds and the lateness of the planting season, some

farmers lost interest in validating the technology, however in the end 12 still participated in the project. Twelve one (1) acre plots were established, these plots were divided into two obtaining a total of twenty-four half (1/2) acre subplots, twelve half acre subplots with the innovation and the other twelve was without the innovation using the same planting system. Each farmer was guided by the technical officer during the planting and establishing of the plot.

Coordination Meetings

A national coordinating committee was formed with the purpose of overseeing activities of both Red-SICTA projects and ensuring proper flow of information to aid in the implementation of activities. Through this committee joint capacity building activities were carried out. The committee actively participated in the coordination of the activity that was needed to be done in order for the project to execute properly.

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Baseline Study

Before the project started SHI hired the service of a consultant to carry out a base line study to evaluate the surrounding in which the project will be implemented. The baseline study clearly showed that all the farmers did not use system that protect and conserve the soil more over they had limited knowledge of any conservation method. All the farmers in the village plant corn and beans along with perennial crops, fruits tree such as cacao (*Theobroma cocoa*) (**see appendix of baseline**) The base line study was directly focused on soil conservation, management and production system.

Before the establishment of plots, training was conducted in San Benito Poite for the farmers establishing the corn plots. Mr. Alberto Choco, an experienced farmers in the use of slash and mulch system trained and educated the farmers about the technology, its benefits and challenges and its importance to both the farmers and the environment.

The experimental plots was cleared and prepared by using the traditional system, the bush was chopped and burnt (Slash and burn) a month before the establishment of the crop. Each subplot was measured (1/2 acre) and the base line study was done.

At the beginning of the project farmers were given a special format for the collection of data, each farmer was trained for record keeping and data collection. This was done in order for the farmer to assist the technical officer in keeping and maintaining a good record of their farm. The format used is shown in the appendix.

The protocols for the method used for measuring the soil conservation indicators were elaborated and in July 2013 the methods for measuring the indicator was set in the fields. The method set measured soil erosion, quantity soil macro-organism and identified soil type through the percentage of its components and to determined soil nutrients of specific field. It was also necessary to find the density of soils in the different farms.

Results (Findings at the end of the experiment)

Results in soil improvements **(See Appendix for data)**

*Soil Microorganism

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Microorganism count was conducted with all 3 farmers from Santa Teresa and 5 farmers from San Benito Poite Village. This was done in the initial stage of the project and at the end of the harvesting period for corn. Data was collected from the plot that was slashed and mulch with sample measuring 1feet by 1feet by 3 inches deep. Based on the results collected in Santa Teresa Village with the three farmers, data show that there was a large increase in the amount of earthworms and other microorganisms within the soil. The number of earthworms increased by 40% and other microorganism such as bugs and spiders saw an increase of about 47%.

In the village of Poite only one test was done with 5 farmers in the first stage of the second crop season. The reason for this is as results of crops from the first planting season were destroyed by tropical depression 2 that struck the rural villages causing massive floodings. Therefore data collected will not indicate any changes in the results obtained from the plots. In addition data was only collected from 5 farms because the remaining 4 plots have yet to be established because farmers were waiting until the end of the rainy season so as not to suffer any losses as was previously experienced.

*Soil nutrient

There is no data to reflect changes in soil nutrient because no soil analysis was conducted with any of the farmers. Reasons' being is that although it was an indicator of measurement there was no fundings budgeted to conduct soil analysis with the farmers. This proved difficult for the implementing agency SHI-Belize to perform and complete this section of the project.

*Water retention

A soil composition test was carried out in the experimental plots with farmers from Santa Teresa and San Benito Poite. Data shows that in the village of Santa Teresa farmers' plots mostly consisted of a silty clay soil type. This shows that soils found in this region were more water logged that in other regions because of the high quantity of clay present in the soil.

Data collected from the village of Poite revealed that the soil type present in that region were mostly of the type silty clay loam. This soil compared to that of Santa Teresa was more fertile and does not hold as much water as the amount of clay present was less than that of Santa Teresa region.

*Production and yield

In this experiment farmers were asked to conduct side by side plots in order to monitor several variables including amount of corn produced in each plot. In one plot farmers used their traditional method of burning and planting randomly and in the other plot they did not burn but mulched and planted in rows using measurements of 1 ft by 1 ft between corn plants and 3 ft between corn rows. In row planting the farmers also reduced the amount of seed per hole using only 3 as opposed to the 5 that was used in the traditional plot.

Farmers in the village of Santa Teresa maintained record keeping of their harvest and at the end the results showed that of the 3 farmers only 1 yielded better results from his slash and mulch plot with yield increasing by 88%. The other 2 farmer's data indicate that their traditional methods were much more efficient and yielded better results that the slash and mulch plot. The slash and mulch plot showed a decrease in production as low as 34% compared to the plot that was burnt. The reason for such results was cause by many external indicators such as low germination rate of seeds, location of the two farms being in much lower regions of the village that is prone to floodings, no proper management, etc.

Farmers in the village of Poite yielded no production during the first planting season of the project hence there is no data to reflect whether the experimental plots were more efficient or inefficient in this region.

*% of soil cover

Mucuna beans were distributed to three of the farmers in Santa Teresa Village and one in San Benito Poite. Of the three farmers in Santa Teresa, one famer planted his seeds but due to the intense rain they did not survive and all was lost. The remaining two farmers choose not to plant their mucuna beans and wait until the next planting season in November so that they can incorporate it within their corn field. The farmer in San Benito Poite decided to save his seeds and incorporate them into his plots near the end of the second planting season.

As a result organic matter that was measured consisted of mulch that was incorporated within the soil when the farmers cleaned their plots and slashed the plots over to prepare for the second planting season. Data was collected from a sample area measuring 1 meter by 1 meter within the slash and mulch plot. The results obtained indicate that the amount of organic matter within the plot increase by a total of 50% in the village of Santa Teresa. In the village of Poite only initial data has been collected as plots are newly established and data will not be reflected until the end of the crop cycle which will occur next year and therefore cannot be accounted for.

Result 2. Monitoring and evaluation

From the time the project started the execution; various field visits was conducted to ensure that the project progressed every month. These visits were carried out on a regular basis by SHI technical officer, the Ministry of Natural Resources or by IICA technical personnel along with the company of Red-Sicta liaison officer. Every visit that was done, time was taken to dialogue with the farmers and obtained information on what the farmer is experiencing on the farm. For

every field visit, a field visit report was elaborated in detail as in the Annex attached. This was done to ensure the progress of the validation of the project. The field visits in monitoring and evaluation was accomplished as was planned in the project, even though difficulties were encountered during the execution since the hurricane season has started and the area prone to natural disasters. There were times that the roads were inaccessible and the villages unreachable due to flooding especially in the village of San Benito Poite, where the topography is known to be low. In the field visit that was carried out in the month of July it was observed that the intensive precipitation caused the plots to flood and all the nine (9) experimental plots in the village of San Benito Poite was destroyed.

Field Visits carried out during the Project execution

No	Date	Responsible	Observation
1	20/05/2013	Bibiana Paquiul	Arrange meeting with farmers for consultant (Mr. Tzul)
2	21/05/2013	Bibiana Paquiul & Ernesto Pop	Fill out questionnaires with farmers in Santa Teresa and Poite on corn and beans production with Mr. Tzul
3	5/06/2013	Bibiana Paquiul	Delivery of NB6 corn seeds to farmers in Santa Teresa
4	6/06/2013	Bibiana Paquiul & Ernesto Pop	Farm visit with Leonardo and Max Ortega
5	8/06/2013	Bibiana Paquiul & Ernesto Pop	First training for farmers from Santa Teresa and Poite in Row Planting
6	12/06/2013	Bibiana Paquiul & Ernesto Pop	Visited 3 farms in Santa Teresa with Leonardo and Max Ortega to monitor progress of project
7	5/08/2013	Bibiana Paquiul	Visited farmers to inform and arrange second training in Poite
8	6/08/2013	Bibiana Paquiul & Ernesto Pop	Second training for farmers from Santa Teresa and Poite in Soil sampling and its importance
9	7/08/2013	Bibiana Paquiul & Ernesto Pop	Arrange and attend field exchange visit for farmers to Silver Creek
10	16/08/2013	Bibiana Paquiul & Ernesto Pop	Gather data from the field with Leonardo in Santa Teresa
11	27/08/2013	Bibiana Paquiul	Make arrangements for Yaxche trip to Santa Teresa
12	28/8/2013	Ernesto Pop	Host visit from Yaxche participants in Santa Teresa
13	27/09/2013	Bibiana Paquiul	Field visit to Santa Teresa with Leonardo to experimental plots
14	01/10/2013	Ernesto Pop	Organize meeting/ workshop session with farmers in Poite

15	02/10/2013	Ernesto Pop	Farmers meeting/workshop with Red SICTA Farmers in Poite
16	7/10/2013	Bibiana Paquiul	Visit Red SICTA Farmers in Santa Teresa to check on recordkeeping and collect data
17	15/10/2013	Bibiana Paquiul	Invite farmers in Santa Teresa to the upcoming FFS session
18	17/10/2013	Ernesto Pop	Field visit at three farms in Poite
19	21/10/2013	Bibiana Paquiul Ernesto Pop	Make arrangements with farmers from Santa Teresa to postpone training to another date Field visit with two farmers of san Benito
20	22/10/2013	Ernesto Pop	Field visit with Two farmers in san Benito
21	23/10/2013	Bibiana Paquiul	Discussion with farmers from Santa Teresa about organic fair
22	28/10/2013	Bibiana Paquiul Ernesto Pop	Met with Red SICTA farmers in Santa Teresa to discuss Organic Fair aftermath Field Visit with two farmers in San Benito
23	29/10/2013	Bibiana Paquiul Ernesto Pop	Meet with 2 farmers from Santa Teresa to make arrangements with farmers for second planting season Monitor and evaluation of farms in poite
24	30/10/2013	Bibiana Paquiul Ernesto Pop	Meet with remaining farmer from Santa Teresa to discuss second planting season Delivery of corn seed to farmers in San Benito Poite
25	31/10/2013	Bibiana Paquiul Ernesto Pop	Make arrangements for upcoming FFS training at Santa Teresa Organize meeting/ workshop/ FFS session on site selection, land clearing, and row establishment for farmers in Poite
26	4/11/2013	Bibiana Paquiul	Meet with Santa Teresa farmers to find out area of second experimental plot and corn needed
27	5/11/2013	Ernesto Pop	FFS training in Poite
28	6/11/2013	Ernesto Pop	Field visit to monitor clearing and mulching of plot in San Benito
29	7/11/2013	Bibiana Paquiul Ernesto pop	Check on Mr. Max field that was just planted and made final arrangements for FFS session in Santa Teresa Field visit to monitor clearing and mulching of plot in San Benito
30	8/11/2013	Bibiana Paquiul	Conduct presentation on slash and mulch at Boom Creek School
31	11/11/2013	Bibiana Paquiul	Conduct slash and mulch presentation at Julian Cho High School and Santa Teresa Primary School

32	12/11/2013	Bibiana Paquiul Ernesto Pop	Conduct presentation on slash and mulch at 2 primary school and 1 high school Field visit to monitor clearing and mulching of plot in San Benito
33	13/11/2013	Bibiana Paquiul	Conduct presentation on slash and mulch at two schools
34	14/11/2013	Ernesto Pop	Field visit to monitor clearing and mulching of plot in san Benito
35	18/11/2013	Bibiana Paquiul Ernesto Pop	Collect data from all 3 experimental plots in Santa Teresa Field Visit to monitor corn being planted in row by farmers of San Benito
36	20/11/2013	Bibiana Paquiul	Meeting with Red SICTA and field visit to Santa Teresa and Poite
37	21/11/2013	Ernesto Pop	Field Visit to monitor corn being planted in row by farmers of San Benito
38	23/11/2013	Ernesto Pop	Field Visit to monitor corn being planted in row by farmers of San Benito
39	26/11/2013	Ernesto Pop	Field Visit to monitor corn being planted in row by farmers of San Benito and arrange meeting for Pomonzol group
40	27/11/2013	Bibiana Paquiul	Preparations towards Big Falls Trip with Pomonzol Group
41	28/11/2013	Ernesto Pop Bibiana Paquiul	Organize meeting with 2 farmer in Poite for technical training. Attend field trip to Pomonzol Group with farmers and arrange transportation for 2 farmers to attend technical training.
42	30/11/2013	Ernesto Pop	Inform farmers from Poite on field day date for CARDI central farm
43	2/12/2013	Ernesto Pop Bibiana Paquiul	Field visit to get micro-organism count from 2 farms in Poite Deliver corn seeds to farmers in Santa Teresa and visit plots
44	3/12/2013	Ernesto Pop Bibiana Paquiul	Field visit to get micro-organism count from 2 farms in Poite Arrange transportation for farmers for the trip to CARDI
45	4/12/2013	Ernesto Pop Bibiana Paquiul	Field visit to get micro-organism count from 2 farms in Poite Gather final data from Red SICTA participants for report
46	5/12/2013	Ernesto Pop & Bibiana Paquiul	Accompany farmers on the trip to CARDI central farm field day
47	6/12/2013	Ernesto Pop & Bibiana Paquiul	Arrange and attend technical training for the 6^{th}, 7^{th} , 8^{th} & 9^{th}
48	7/12/2013	Ernesto Pop & Bibiana Paquiul	Arrange and attend technical training for the 8^{th} and 9^{th} and compile data for report.

49	8/12/2013	Bibiana Paquiul	Arrange and attend staff training in conflict resolution.

Through these constant visits to the communities participating in the project SHI was able to fulfil the criteria for Monitoring and Evaluation 100% satisfactorily.

Result 3. Knowledge transfer and Dissemination

In the month of May an alliance was formed between the different actors to assist in the execution of the project and to contribute valuable resources with one another. The alliance was formed between Sustainable Harvest International and the Ministry of Natural Resources and Agriculture. The two departments of the ministry involved were the extension service and the research department. During the life of the project some participation and contribution was given by the ministry of Natural Resources. One of the hardships always confronted was the lack of means of transportation for the technical officer of the ministry since vehicle was not always available.

The alliance contributed in technical training to SHI technical staff and also in conducting Farmer's Field School sessions in the village of Santa Teresa and San Benito Poite.

Signing on Behalf of MNRA (alliance)

As part of the dissemination component, Sustainable Harvest International elaborated two hundred copies of two (2) different guides to provide valuable information to the small corn and beans farmers in the village of Santa Teresa and San Benito Poite. The guide provides information on the use of slash and mulch system to improve soil fertility in areas where soil nutrient is poor and is currently being used to produce corn in the Toledo District. 100 Posters were produced and distributed to farmers and a banner was designed to be used for special

activities such as that of the Organic fair. In the month of October an Organic fair was organized by SHI to massively disseminate the Innovation Technology of the Slash and Mulch system to the farmers in general. During this event information was delivered to the farmers and to the public in general. Many Nongovernmental Governmental Organizations attended the event such as, Maya Mountain Cacao, Toledo Cacao Growers Association, Yaaxche Conservation Trust, Ministry of Natural Resources and Agriculture, the Department of the Environment, and farmers of different nearby villages. During the event many questions on the technology were asked and answered by the technical officers of SHI.

T-shirts were also produced for the event with the theme “Feed the Soil” this was selected since slash an mulch system involved incorporation the organic material into the soil, hence feeding the soil with the nutrient needed for proper plant growth.

Dissemination of information through Organic Fair Event organized by Sustainable Harvest International

Many farmer field school sessions was conducted by SHI technical officer with the cooperation of the alliance: Ministry of Natural Resources and Agriculture. SHI also conducted field exchange experience between different farmers of other communities, during this time farmers learnt from other corn and beans farmers that are working with different technology. A great opportunity was taken is sharing information with high school students and primary school student in the rural villages who are children of farmers and who participate in farming as well. SHI technical officer visited high school in the Toledo district to share the information to the students, since students are the ones that know how to read and hence share the information to their parent. Through these activities planned, SHI was able to accomplish the targeted population of 200 individual in the community is specified in the logical frame work. During the different sessions different topics were cover as discussed by the farmers through a curriculum assessment and development.

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The farmers along with the technical officer developed the farmer field school curriculum based on the needs and crop growing stage. Based on the topics of concern the farmer field school session was delivered. All the activities were recorded in the table below.

Sustainable Harvest International field technician also recorded a radio advertisement so as to disseminate information to over 1500 indirect radio listeners through the air waves of local radio station Akutan Radio. This was a great approach of disseminating information to rural Toledo since it is there only means of communication. The radio station gains coverage to over 10 village of Toledo. The radio advertisement is being aired 3 times a day a will run for a period of 1 month.

Farmer Field School Sessions

No	Date	Responsible	Topic	Participants
1	October 2, 2013	Ernesto	FFS introduction, identifying farmers training needs	12
2	November 5, 2013	Ernesto	Site selection and row establishment demonstration	10
3	November 5, 2013	Bibiana	Introduction to and implementation of FFS	16
4	November 14,2013	Bibiana	Land identification and preparation and measuring soil composition	17
5				
Total				**55**

Technical training to Sustainable Harvest International

No	Date	Responsible	Topic	Participants
1	July 22, 2013	Consultant	Methodology for FFS	19
2	December 5, 2013	CARDI	Corn seed planting, storage and post storage	56

3	December 6 &7, 2013	Consultant	Corn Pest and Diseases Management	12
4	December 8, 2013	Consultant	Conflict Resolution	10
5	December 9, 2013	Consultant	Research Methodologies	8
Total				**105**

Field Exchange Visits

No	Date	Responsible	Topic	Participants
1	June 8, 2013	SHI (Ernesto & Bibiana) and Farmers	Production System and Row planting	12
2	August 6,2013	SHI (Ernesto & Bibiana) and farmers	Soil Sampling and Analysis	12
3	August 7,2013	Farmers Silver Creek	Production System	20
4	November 27, 2013	Pomonzol Group Big Falls	Production System	24
Total				**68**

Dissemination Events

No	Date	Responsible	Topic	Participants
1	October 25,2013	SHI	Organic fair	80
2	November 8, 2013	SHI	School Presentation	29
3	November 11,2013	SHI	2 School Presentation	57
4	November 12,2013	SHI	3 School Presentation	71
5	November 13, 2013	SHI	2 School	93

			Presentation	
6	November 27,2013	SHI	School Training	28
7				
Total				**358**

CHALLENGES IN PROJECT IMPLEMENTATION

One of the major problems in the implementation of the project was the lateness in the disbursements of funds. Farmer who originally expressed interest from the onset of the project was not able to participate in the project due to the lateness of the start of the project. The planting season was already over in the month of May; June is the start of the rainy and hurricane season. However, they will participate in the matambre season with planting beginning in the second half of October.

Terrible road and weather conditions make it difficult to reach farms and thus causing a delay in proper monitoring and evaluation of experimental plots.

As a result of the tropical depression number two in Belize, a major devastation of 6 experimental plots in San Benito Poite was lost. Farmers now have to clear plot over and replant.

Another challenge for most of the farmers is not being able to read and write. Taking down notes, doing calculations and keeping records can be a hindrance to them. However, a few farmers facing difficulties brought along their sons to read and write for them. This then becomes an opportunity for the students to learn about the technology and to assist in the transfer of information.

One of the major constrain in the implementation of the project is time dedication. The technical officer of the organization has many projects with limited staff, therefore in many occasion the officer does not have time to invest in a particular project.

Technical officers need more training in this particular Innovation since it is the first time that this innovation is being implemented and the requirement of data collection has seriously been required.

The lack of Mucuna beans is a challenge since there in none in the country. Farmers did not store the seed from the past season because many farmers do not used it in their farms therefore it is scarce.

In order for the project to be implemented in the time frame proposed, it is necessary for the organization to be receptive to follow norms and procedure set, since from the beginning of the project lots of problem was delaying the second disbursement, since this is the first time that lots of norms were set which were not clear from the beginning of the project. All roles and regulation needed to be in English, Spanish language post a barrier for following the correct procedure in recording and accounting correctly as required.

LESSON LEARNT AND RECOMMENDATION

The implementation of the project would have been more effective if the technical staff from the organization had knowledge and experience in this type of Project.

- Training of technical personnel in the project they are undertaking (Alley Cropping and Slash and mulch) is crucial.
- Allocation of time on the part of the technical officers is required, even though the human resources are limited in the organization to carry-out the activities plan for the months.
- More effort and support of their directors is important to effectively execute the project

Annex

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Selection criteria for farmers participating in the validation of plots and in Farmer Field School Session

In order for the farmer to participate the following characteristic must be considered

1. The farmer participating must be a corn and beans farmer.
2. Must live in the village where the validation is desire to take place.
3. The farmer must be interested in actively participating in programmed activity.
4. The farmer should be flexible and follow instruction as directed by the technicians.
5. The person must have an open mind for learning and must be inquisitive in trying new technology.
6. Famer must have a desire to share the information with other farmers in the community.
7. Farmer should allocate time when requested by the technician, especially for the monitoring and evaluation purposes.
8. Farmer should participate in at least 90% of the Farmer Field School Session delivered during the period of the project.
9. The farmer should conduct his/herself in a disciple manner.
10. Farmers should listen and learn along with their colleagues.

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SUSTAINABLE HARVEST INTERNATIONAL

Participatory Project Evaluation Report

"The use of leguminous cover crops in slash and mulch systems for sustainable corn production in the Toledo District, Belize."

Submitted to: Sustainable Harvest International

Submitted: Project Assessment Consultant: Glen Enriquez

Date: October 17, 2013

FINAL TECHICAL REPORT

Background:

Sustainable Harvest International in collaboration with the Ministry of Natural Resources and Agriculture (Extension Department) and Ministry of Natural Resources and Agriculture (Research Department) embarked on a project to implement the use of leguminous cover crops in slash and mulch systems for sustainable corn production in the Toledo District, Belize. The project sought to address the issue of reducing soil fertility in the villages of Santa Teresa and San Benito Poite. Twelve (12) corn farmers from the villages of Santa Teresa and San Benito Poite participated in the project, which was implemented over a ten (10) month period. The main focus of the project was to use leguminous cover crops in slash and mulch systems to improve soil fertility. The expected results of the implementation of this project were that it would contribute to an increase in crop production and a resultant increase in farmers' incomes.

The technology involved the use of the leguminous species (Mucuna pruriens and Cannavalia ensiformis) as a cover crop in corn fields. Previous studies in other countries such as Guatemala have demonstrated that farmers who use this system have reported an increase in soil fertility, crop reduction and income. According to Milton Flores (2012) who has done extensive studies on the use of leguminous fertilizers in Honduras, maize fields that made use of the leguminous cover crop technology produced more than double the yields of those that did not. Flores further reported that the use of this method also reduced hillside erosion. (http://www.tropag-fieldtrip.cornell.edu) SHI in collaboration with the Ministry of Natural Resources and Agriculture (Extension Department) and Ministry of Natural Resources and Agriculture (Research Department) therefore undertook the task of implementing this method involving the use of leguminous cover crops in slash and mulch systems in the villages of Santa Teresa and San Benito Poite with the ultimate goal of increasing soil fertility in those areas.

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Report Format:

This report consists of several main segments. Firstly, the general objective of the project will be identified and discussed. Secondly, the expected results of the project will be covered and analyzed as they relate to the general objective. Thirdly, the data collection method and activities will be explained. Next, the results of the survey will be presented and analyzed. Additionally, lessons learned after the implementation of the project will be identified. Lastly recommendations will be provided for future project implementation.

The general objective of this particular study was: to improve the use of cover crops in slash and mulch system in corn production. As is it relates to this project, the overarching objective was to utilize leguminous cover crops in slash and mulch systems for sustainable corn production in the Toledo District. The indicators used to determine if this objective was met included the following:

a) Increase in organic matter content in the soil
b) Increase in the presence of micro-organism activity in the soil
c) Increase in corn production by 75% on farms

The use of these indicators would make it possible to adequately assess whether the implementation of the project yielded the intended results.

The expected results of the project included the following:

a) Improved soil fertility on farms in Santa Teresa and San Benito Poite Villages
b) Increase in crop production
c) Increase in farmers' income

The table below shows the indicators for each of the above mentioned objectives:

Expected Results	Indicators
Improved soil fertility on farms	• 24 farms with increased organic matter content in the soil • Increase in the presence of micro-organism

	activity in the soil • Presence of root nodules on plant (cannavalia)
Increase in crop production	Farms produce higher yields per area
Increase in farmers' income	Farmers obtain more money as a result of higher yields

Sample

Twelve (12) farmers from the villages of Santa Teresa and San Benito Poite participated in the project and were interviewed by the consultant. The list of names of the farmers was gathered from Sustainable Harvest International. The consultant prepared a questionnaire that was administered to the farmers.

Instrument

A questionnaire was used to gather information from the farmers who participated in the project. The questionnaire included three (3) sections. The first section was based on demographic data regarding the farmers. Section two included questions based on result one: improved soil fertility on farms. Section three was composed of questions pertinent to result two: increase in crop production. Section four featured questions relevant to result number three: increase in farmers' income.

Data Collection

The consultant conducted the surveys in two days; one day per community (Santa Teresa and San Benito Poite). A farmer from the village of San Miguel was hired to serve as an interpreter for those farmers who speak Ketchi and could not speak English fluently. Some of the questions needed to be thoroughly explained by the interpreter so that the respondents

understood clearly what was being asked. After the data was gathered, it was then entered into a spreadsheet for analysis.

Data Analysis

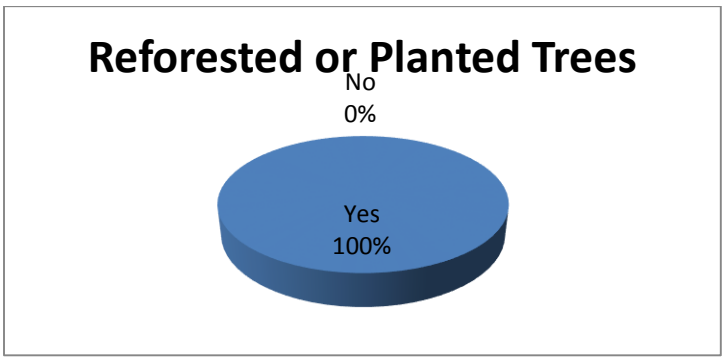
The responses from the questionnaires were entered into a spreadsheet and analyzed. Charts (pie charts and bar graphs) were generated from the data entered and frequencies and percentages were calculated to facilitate analysis.

Findings

This section is based on the responses to the questions presented to the farmers in Santa Teresa and San Benito Poite.

Fig. 1

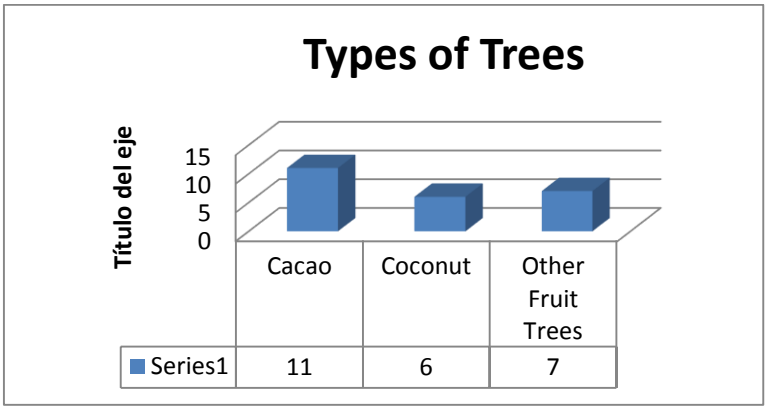
Reforested or Planted Trees	
Yes	11
No	0



As is evident, all farmers who participated in the project had reforested their land or had planted trees.

Fig. 2

Types of Trees	
Cacao	11
Coconut	6
Other Fruit Trees	7



The farmers who planted were all engaged in cacao farming. They also planted coconut and other trees to a lesser extent.

Fig. 3

Practice Slash and Burn	
Yes	11
No	0

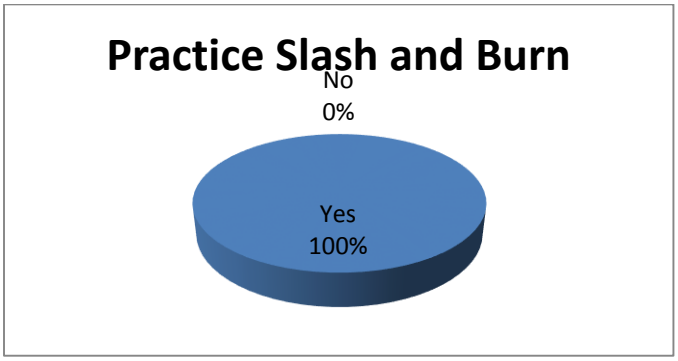
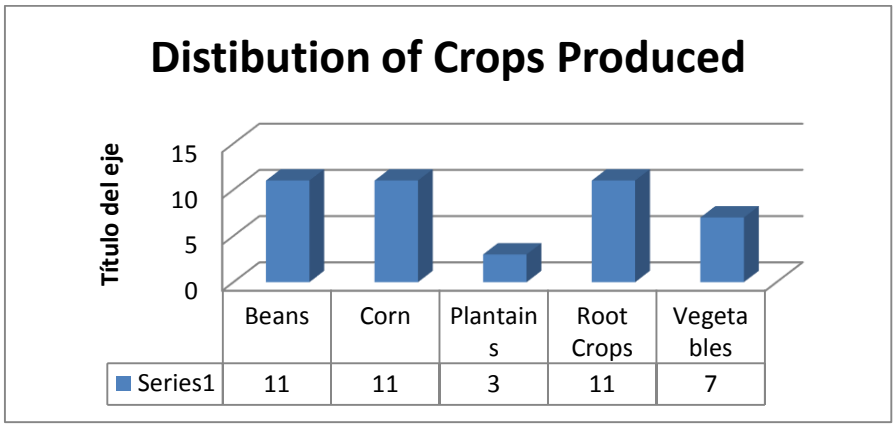


Fig. 4

Crops Produced on Land	
Beans	11
Corn	11
Plantains	3
Root Crops	11
Vegetables	7



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Lessons Learned and Recommendations:

One of the most significant lessons learned was that the evaluation was conducted too soon after project implementation and it was therefore challenging for the farmers and the evaluator to determine if the any of the three main objectives of the project were met or if they would or could eventually be met. Bear in mind that the objectives of the project included the following:

a) Improved soil fertility on farms
b) Increase in crop production
c) Increase in farmers' income

The results of the project would require at least six more months, after the first crop would come before a determination could be made regarding the most recent output in comparison to previous output. The recommendation would therefore be for a reasonable time period (the length of time it takes a particular crop to produce since the administering of any treatment) to be allowed for any assessment of the effectiveness of a project to be conducted.

An observation that was also made during the study and deduced after interviews with farmers was that the farmers particularly did not keep sufficient and accurate baseline data regarding output and productivity on their farms. Therefore they would probably not be in a position to properly assess the extent of the effectiveness of the project even if adequate time was allowed for the results of the project was granted.

In this regard, it would be recommended that farmers keep accurate records regarding the soil make up on their farms; the output of crops produced on their farms and the income generated by the sale of output. This would allow more accurate comparisons to be made between different periods of outputs. This way, the effectiveness of any project that entails the administering of a particular treatment to the soil or crops; the introduction of new technology or the introduction of a new farming practice may be more accurately measured and assessed.

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Potential Benefits of the Project:

The information received during field meetings with the farmers revealed that there were various benefits that the project could yield for the participants. One such benefit was that participants have learned about and embraced better field management practices, particularly as it relates to organic methods of enriching the soil on their farms. Most farmers claimed that the project encouraged them to manage their farms in ways that would enable them to get the most out of their crops. They also expressed optimism that the improved field management practices they learned would eventually result in improved production and yields in the future, which would translate into significant increases in income for them and their families.

Some farmers also expressed optimism that if successfully managed, the project could be very effective in addressing the issue of land degradation and the resultant decrease in yields. Several farmers claim that they would be willing to expand the application of the project to other areas if successful.

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Baseline Study

Questionnaire for Farmers

1. Name: _____
2. Community: _____
3. Sex: _____
4. Have you reforested your land or planted trees (type of trees)? Yes _____ No _____
5. Type of trees (if yes) _____
6. Do you currently practice slash & burn? Yes _____ No _____
   a) If yes, how much land is burned (m^2) and for what crops? _____
   b) How many times per year do you burn? _____
7. What crops are produced on your land? _____
8. Are any crops grown organically (i.e. without chemical inputs)? Yes ____ No ____
9. Are you currently incorporating soil conservation techniques (i.e. terracing, barriers, etc)? Yes ____ No ____
10. Types of techniques employed on land (mark all that apply)
    i. Slash and burn _____
    ii. Slash and mulch _____

Result 1: Based on whether there was improved soil fertility on farms:

11. Did you observe an increase in organic matter content in the soil? Yes _____ No _____

12. Were you able to detect the presence of micro-organism activity in the soil? Yes _____ No _____

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Result 2: Based on whether farmers obtained higher yields per area:

13. Do you keep a record of the crop production from your farms from one period to the next? Yes _____ No _____

14. Did you observe an increase in crop production since utilizing the slash and mulch system?
    Yes _____ No _____

15. If you answered Yes to question 3, by approximately what percentage/lbs was the increase in crop production? _____

    a) What was the yield per acre before using the clash and mulch system? _____

    b) What was the yield per acre after utilizing the slash and mulch system? _____

16. If you answered No to question 3, was there a decrease in production or was it the same as before you utilized the slash and mulch system? Yes _____ No _____

Result 3: Based on whether farmers obtained higher income

17. Do you keep financial records of the cost of producing corn on your farms for a period of time?
    Yes _____ No _____

18. Did you obtain more income from your crop yields after utilizing the slash and mulch system?

    Yes _____ No _____

19. If you answered Yes to Question 5, by how much did your income increase (in dollars preferably)? _____

    a) What was the income generated per acre before using the slash and mulch system? _____

b) What was the income generated per acre after utilizing the slash and mulch system?
_____

20. If you answered No to Question 5, did your income decrease or did it remain the same after utilizing the slash and mulch system

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PARTICIPATORY Evaluation on the Introduction of Leguminous Cover Crops in Slash and Mulch Systems for Sustainable Corn Production in the Toledo District, Belize

Determining Macro-organism in the soil

Soil organisms are responsible for breaking down the organic matter into the different nutrients in order for it to be available to the plant, hence it is important for the farmer to see the presence of organisms such as earthworms to be present in the soil.

Materials

1. Shovel
2. Container or crocus bag
3. Magnifying glass
4. Notebook
5. Pencil or pen
6. A frame 1m by 1m square

Procedures:

1. Construct a frame of wood or PVC pipe
2. On the field select the location where sample will be taken.
3. Construct a mapping sampling
4. Place the frame on the spot to sample and dig the area 7 inches in depth mark by the frame.
5. Place the dugout soil sample on a container of crocus bag
6. Break the lumps of soil and count all organism observed in the sample.

Classify the organisms and record information on a data sheet.

Soil Macro-organism count

Phylum	Class	Order	Family	Beginig Sample 1	End Sample 2
Arthopod	Insecta	Homoptera			
		Hemiptera			

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PARTICIPATORY Evaluation on the Introduction of Leguminous Cover Crops in Slash and Mulch Systems for Sustainable Corn Production in the Toledo District, Belize

Protocol for measuring the composition of soil

Soil is made of three basic components, silt, sand and clay. These components can easily to be measured by doing a sedimentation test which is very practical for farmers. The sedimentation test is based on the fact that large heavy particles will settle most rapidly in water, while small light particles will settle most slowly and at the end calculating the percentage of each component.

Materials

a. Machete
b. Container with cover(Large coffee bottle)
c. Soil sample (1pound)
d. Metric ruler
e. Spoon (stick for stirring)
f. Note book to record information

Procedures

1. Collect a pound of soil crush it to become fine and place it in the jar.
2. Fill the jar with water until it reaches ¾ of the container
3. Cap the jar and shake for 5 minutes. Leave the jar on an undisturbed place and let settle for 24 hours.
4. After 24 hours, measure the depth of settled soil. All soil particles have settled so this is the total Depth. Write it down and label it. (silt, sand soil)
5. Shake for another 5 minutes. Let stand 40 seconds. This allows sand to settle out. Measure the depth of the settled soil and record as Sand Depth.
6. Do not shake again. Let the jar stand for another 30 minutes. Measure the depth, and subtract the sand depth to get the Silt Depth.
7. The remaining unsettled particles are clay. Calculate clay by subtracting silt and sand depth from total depth to get Clay Depth.
8. Now calculate the percentage of each soil separate using the formula:

% sand = sand depth / Total depth X 100

%silt= silt depth / Total depth X 100

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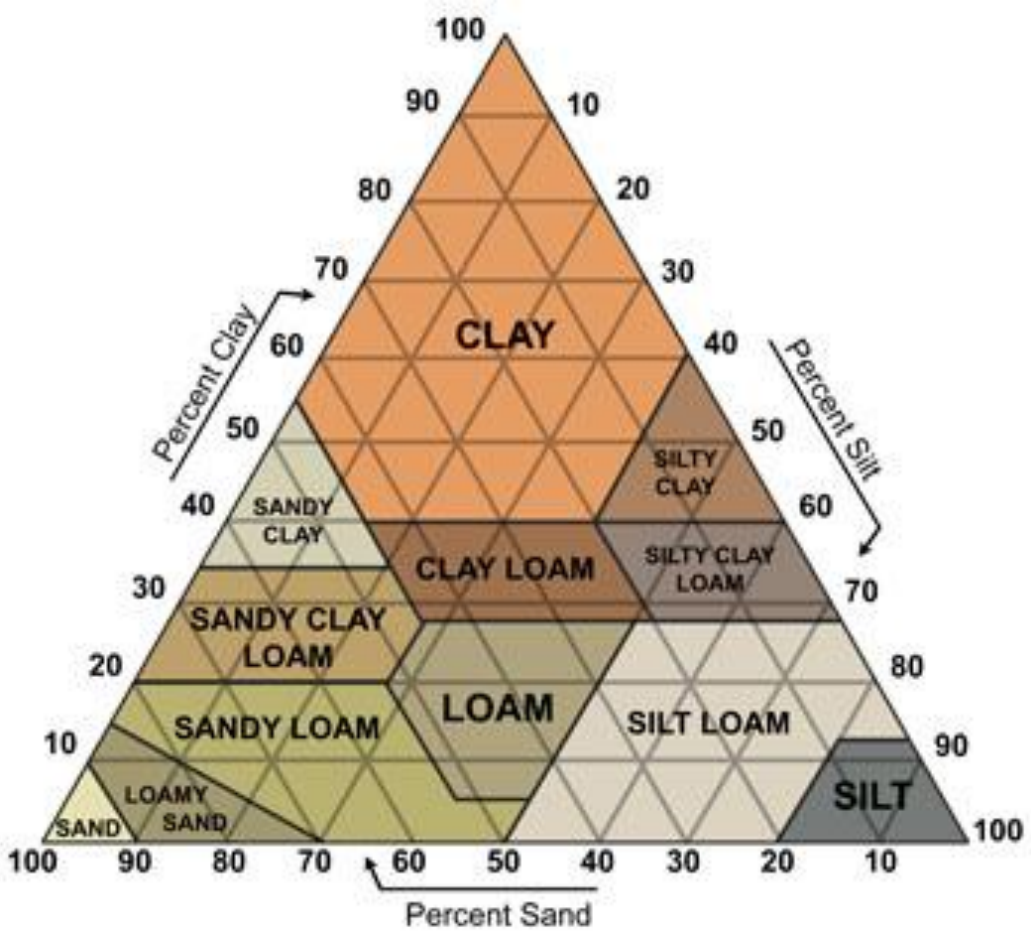
Total depth

%clay= clay depth X 100

Total depth



PARTICIPATORY Evaluation on the Introduction of Leguminous Cover Crops in Slash and Mulch Systems for Sustainable Corn Production in the Toledo District, Belize

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Protocol for Soil Sampling

Soil sample is very important for good soil fertility management since it provides information on the soil nutritional condition. This will allow the farmer to know the soil deficiency in specific nutrients and for the correction of the deficiency.

Materials and equipment's:

1. Soil sample bags, soil information forms.

2. A chrome plated or stainless steel soil probe or auger. Shovels and spades may be used.

3. A plastic bucketto mix the "cores" of soil.

4. A pen or marker with water-proof ink for labelling the soil bags.

5. Carry a clipboard or notebook to map the field and record how the field was sampled.

Sampling Procedures

1. Map the field where sample will be taken.
2. Take the Soil samples using a professional soil probe, or simply a shovel, spade, or garden trowel.
3. For agronomic crops and conditions, the sample core must be taken to a depth of 7" inches.
4. Each sample should be composed of from 10 to 15 cores. (about 2 pound of Soil)
5. As the cores of soil are taken, put it into the plastic bucket. Mix the soil thoroughly in the bucket.
6. Breaking up all cores. Then, fill the soil bag to about 1 pound of sample and discard any extra soil.
7. The cores should be taken in a random pattern that is uniform across the area being sampled (grid sampling may require a specific pattern).
8. Each sample should represent 10 acres, or less, per sample(grid samples will represent from 2.5 to 5 acres per sample).
9. Complete the information on the soil bag while being in the field! Assign each sample bag an ID numbers that will identify the field. Record the sample ID on a field map (hand drawn if necessary), as well as the pattern and locations in the field that the samples were taken. This will enable others to take the next samples in the same locations.

INFORMATION FOR EACH SOIL SAMPLE:

DATE: _____

NAME: _____

ADDRESS: _____

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FARM LOCATION: _____

FIELD AND SAMPLE: _____

CROP TO BE FERTILIZE : _____ LAST CROP: _____

FERTILIZER APPLIED _____

LIME APPLIED _____ YEAR _____

MANURE APPLIED _____ YEAR _____

LIST ANY ABNORMAL CONDITIONS OR SPECIFIC INFORMATION DESIRED:

_____

_____

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Collected Data on Red-Sicta Projects 2013

Community Information	
Community	Population
Santa Teresa	352
San Benito	357

No	Farmer	location	Gps reading	Experimental plot size	innovation	total farm area(Acres)	planting method	planting date	seed/ hole	germination% of	germination of	Flat.low land	% of slope	Siol ph	Soil Type	Micro Organism	Soil Nutrients	Comments
Sustainable Harvest International																		
1	Julian Makin	San Benito Poite		1 acre	Slash&Mulch	1 acre	Row	nov. 21st 2013	2	90		flat	10		Silt Clay loam	337,500		planted for this last crop seaso
2	Mateo Choco	San Benito Poite		1 acre	Slash&Mulch	1 acre	Row	Nov. 18th 2013	2	90		flat	15		Silt Clay loam	112,500		planted for this last crop seasor
3	Santiago Quib	San Benito Poite		1 acre	Slash&Mulch	1 acre	Row	Nov.26th 2013	2	90		flat	5		Silt Clay loam	450,000		planted for this last crop seasor
4	Jose Rash	San Benito Poite		1 acre	Slash&Mulch	1 acre	Row	Nov. 23rd2013	2	90		flat	5		Silt Clay loam	225,000		planted for this last crop seasor
5	Ignacio Teck	San Benito Poite		1 acre	Slash&Mulch	1 acre	Row		2	90		flat	15					not planted
6	Juan Ash	San Benito Poite		1 acre	Slash&Mulch	1 acre	Row		2	90		flat	10					not planted
7	Antonio Paau	San Benito Poite		1 acre	Slash&Mulch	1 acre	Row	Nov.30th 2013	2	90		flat	10		silt clay loam	180,000		planted for this last crop seasor
8	Nicohlas Xuc	San Benito Poite		1 acre	Slash&Mulch	1 acre	Row		2	90		flat	15					not planted
9	Densford Teck	San Benito Poite		1 acre	Slash&Mulch	1 acre	Row		2	90		flat	10					not planted
10	Pedro Teul	Santa Teresa		1 acre	Slash&Mulch	1 acre	Row	june 12 & dec.	2	70 and 90	n/a	flat low land	0		silty clay	4410,000		
11	Mariano Max	Santa Teresa		1 acre	Slash&Mulch	1 acre	Row	june 10 & nov	2	70 and 90	0%	flat low land	0		silty clay	5850,000		
12	Frehilio Choco	Santa Teresa		1 acre	Slash&Mulch	1 acre	Row	10-Jun	2	70 and 90	n/a	flat low land	0		silty clay	2430,000		

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REDSICTA COORDINATING COMMITTEE

MEETING MINUTES

Meeting Date: <06/25/2013>

Meeting Location: <Belmopan City>

Approval: <06/25/2013>

Recorded By: <Leonardo Perez>

1 ATTENDANCE

Name	Title	Organization	Present
<Bartolo Teul>	<Chairperson of committee>	<Ya`axche>	<Yes>
<Kenny Cal>	Technician	Ya`axche	Yes
<Maynor Hernandez>	Director Research	MNRA	Yes
<Max Ortega>	IICA Technician	IICA	Yes
<Leonardo Perez>	Liaison Officer	Red-Sicta	Yes
<Ernesto Pop>	Technician	SHI	NO
<Bibiana Paquiul>	Technician	SHI	NO

2 MEETING LOCATION

Building: IICA Belmopan

Conference Room:IICA

Conference Line: N/A

Web Address: N/A

3 MEETING START

Meeting Schedule Start: <10:00 am>

Meeting Actual Start: <10:00 am>

Meeting Scribe: <project planning execution>

4 AGENDA

- **<Agenda Item 1: Baseline study>**
- **Discussion**
  - It was discussed that it is important to identify the consultant for the baseline study which must be done in July.
  - Mr. Leonardo Perez will make contact with Mr. David Tzul to see if he is interested in carrying out this job
  - Information gathered will be geared toward specific farms where the Red-Sicta project is being implemented.
  - Max and Leonardo will elaborate the Terms of Reference for the baseline study and will be forwarded to SHI and Ya`axche for comments.
  - Agreement that one consultant will do the base line for both organization (Ya`axche and SHI) and the report will be separated, one for each organization with the specific information required.

- **<Agenda Item 2: consultancy for Farmer Field School <FFS>**
- **Discussion**
  - the farmer field school will be commencing with the first training in the month of July (8th to 12th 2013)
  - The terms of reference will be elaborated by Mr. Max Ortega and Leonardo Perez.
  - The consultant for the Farmer field school has been identify (Mr. Carlos ostorga and Mr. Francisco Crasasola) both is planned to be contracted since one is specialized in alley cropping system and the other is specialized in organic cacao production.
  - The total cost of the consultancy is US$2,475.00 per consultant apart from airline flight.
  - It was reached to an agreement that Ya`axche will cover the cost of one consultant and SHI of the other.
- **<Agenda Item 3: Monthly program plan>**
- **Discussion**
  - <the monthly program was discussed and agreement reached that Ya`axche and SHI will send the monthly program with all the activities that will be done summing to the total cost of the first disbursement by the 26 June, 2013.
  - The plan needs to be submitted for monitoring purpose and to ensure that the execution is aligned with the project.
  - Financial reports must be submitted by the 27th of June 2013, the latest on the 28th>
- **<Agenda Item 4: Dissemination of Information>**
- **Discussion**

  - It was discussed that the activities for the dissemination of information must start now (eg, Designing and printing of brochure, t-shirts etc.)

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MEETING END

Meeting Schedule End: <12:00 pm>

Meeting Actual End: <12:00 pm>

POST MEETING ACTION ITEMS

Action	Assigned To	Deadline
<Elaborate TOR for baseline study>	<Max, Leonardo>	<06/28/2013>
<Monthly program for project Ya`axche>	<Bartolo, Kenny>	<06/27/2013>
<Monthly program for project SHI>	<Bibiana, Ernesto>	<06/27/2013>

DECISIONS MADE

[Document any decisions made during the meeting

- **Decision 1: Work on the monthly Program and handed in by Wednesday June 26**
- **Decision 2: Ya`axche will cover cost for one consultant and SHI the other**
- **Decision 3: work on dissemination of information and baseline study**

Etc.]

NEXT MEETING

Next Meeting: <Location: to be decided by Mr. Bartolo Teul> <Date> <Time>

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RED-SICTA COORDINATING COMMITTEE

MEETING MINUTES

Meeting Date: <07/17/2013>

Meeting Location: <Ya`axche Office, Toledo district>

Approval: <07/17/2013>

Recorded By: <Leonardo Perez>

ATTENDANCE

Name	Title	Organization	Present
<Bartolo Teul>	<Chairperson of committee>	<Ya`axche>	<Yes>
<Kenny Cal>	Technician	Ya`axche	Yes
<Ina Sanchez>	Acting Director Research	MNRA	Yes
<Max Ortega>	IICA Technician	IICA	Yes
<Leonardo Perez>	Liaison Officer	Red-SICTA	Yes
<Ernesto Pop>	Technician	SHI	Yes
<Bibiana Paquiul>	Technician	SHI	Yes
<Victor Kuk>	Extension Officer	MNRA	Yes
<Jose Coy>	Administrator	SHI	Yes
<Julio Chub>	Administrator	Ya`axche	Yes

MEETING LOCATION

Building: Ya`axche Office

Conference Room: Ya`axche

Conference Line: N/A

Web Address: N/A

MEETING START

Meeting Schedule Start: <10:00 am>

Meeting Actual Start: <10:00 am>

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Meeting Scribe: <Project Progress and Planning>

AGENDA

- **<Agenda Item 1: Progress report Ya`axche Conservation Trust>**
- **Discussion**
  - The organization has accomplished 50% on the establishing of the experimental plots
  - This month the other 7 plots will be established.
  - The plots that has been established, weed control is being done.
  - The financial and technical report was submitted and all documents were checked by IICA office in Belmopan.
  - The TOR for the base line was done and the contract is elaborated.
  - Quotation for the soil conservation manual is 2,495.00 bze and is planned to be printed this month.
  - Soil sample has been taken and send to CRIE
  - Monthly program plan was done with the respective cost of the activities.
  - Simultaneous execution of activities will be done.

- **<Agenda Item 2: <SHI progress report>**
- **Discussion**
  - All the experimental plots was established last month, but due to the bad weather conditions 4 plots in San Benito Poite were completely destroyed.
  - This month re-establishing of the plots will be done.
  - It has been difficult in acquiring Mucuna seed in Toledo
  - Soil sampling will be carried out, each sample cost $75.00 bze one sample per plot
  - It is very hard for farmers to cash a check when purchasing service due to the lack of ID etc. farmers prefer being paid by cash rather than check.
  - Lack of time in attending many projects. SHI works with other projects and it has been difficult just to dedicate time to one project, since many reports is required.
- **<Agenda Item 3: <Red-Sicta Report on progress>**
- **Discussion**
  - The project is moving slowly, simultaneous activities need to be done in order to accomplish the objectives of the month.
  - Reports need to be submitted on time.
  - Each organization must ensure that activities is being executed timely.
- **<Agenda Item 4: Dissemination of Information(FFS)>**
- **Discussion**

  - Mr. Carlos Ostorga and Mr.Francisco Casasola the two consultant from CATIE are hired for the FFS.
  - Logistics will be done by Ya`axche (Francisco Casasola) and SHI (Carlos Astorga) for the individual consultant

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MEETING END

Meeting Schedule End: <12:00 pm>

Meeting Actual End: <12:00 pm>

POST MEETING ACTION ITEMS

Action	Assigned To	Deadline
<Baseline Hiring and contract>	<Bartolo, Ernesto>	<22nd July, 2013>
<FFS Training (logistic)>	<Bartolo Teul>	<22nd -26th July, 2013>
<FFS Consultants(logistic, hiring>	<Ya`axche(Julio) and SHI (Jose) >	<22nd -26th July, 2013>
<Technical and Financial report>	<Ya`axche (Julio) SHI (Jose)	<2nd August 2013>
<Next coordination meeting>	< SHI (Ernesto and Jose)>	<August 1st, 2013>

DECISIONS MADE

[Document any decisions made during the meeting

- **Decision 1:** both project will work to accomplish the objectives for this month as stated in the monthly plan.
- **Decision 2:** SHI will be responsible of the logistic and payment of one of the FFS consultant and Ya`axche of the other.
- **Decision 3.** Since farmers are having problem in cashing check when paid for a service, it was agree that the organization will paid them cash, and re-imbursement will be done, ensuring that a list of names and signature of the farmer be provided.
- **Decision 4:** SHI and Ya`axche agree to hire one baseline consultant for both projects and to finalize the TOR and Contract.
- **Decision 5.** Baseline study will star on the week of the 22-26 of July, 2013
- **Decision6.** Ya`axche will organize the logistic for the FFS training for this coming week July 22-26th, 2013
- **Decision 7.** SHI will be sending the financial and technical report by tomorrow July 18th , 2013 **.**
- **Decision 8.** Both organization will summit the financial and technical report by the 2nd of August 2013.

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NEXT MEETING

Next Meeting: <Location: to be decided by SHI (Jose coy and Ernesto Pop)> < Date: 1st August > <Time: 9:00am>

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RED-SICTA COORDINATING COMMITTEE

MEETING MINUTES

Meeting Date: <08/1/2013>

Meeting Location: <Punta Gorda T.C.G.A>

Approval: <08/1/2013>

Recorded By: <Leonardo Perez>

5 ATTENDANCE

Name	Title	Organization	Present
<Bartolo Teul>	<Chairperson of committee>	<Ya`axche>	<Yes>
<Kenny Cal>	Technician	Ya`axche	Yes
<Ina Sanchez>	Acting Director Research	MNRA	Yes
<Max Ortega>	IICA Technician	IICA	Yes
<Leonardo Perez>	Liaison Officer	Red-SICTA	Yes
<Ernesto Pop>	Technician	SHI	Yes
<Bibiana Paquiul>	Technician	SHI	Yes
<Victor Kuk>	Extension Officer	MNRA	No
<Jose Coy>	Administrator	SHI	Yes
<Julio Chub>	Administrator	Ya`axche	No
<Flint Wagner>	District Agriculture Coordinator	MNRA	Yes

6 MEETING LOCATION

Building: Toledo Cacao Growers Association

Conference Room: TCGA

Conference Line: N/A

Web Address: N/A

7 MEETING START

Meeting Schedule Start: <9:00 am>

Meeting Actual Start: <9:45 am>

FINAL TECHICAL REPORT

Meeting Scribe: <Project Progress and Planning>

8 AGENDA

- **<Agenda Item 1: <FFS workshop - Post Mortem>**
- **Discussion**
  - It was good and interesting, participants did learnt.
  - The challenge during the training was understanding one of the consultant due to the language barrier (Consultants must be fluent in English).
  - The consultants were not well coordinated with the activities that they were doing (it caused confusion).
  - 100% of SHI staff participated in the week training.
  - More participation of the Ministry of Agriculture is required.
  - It was observed that organizations are weak in terms of technical expertise of the officers as mention on the FFS report submitted by the consultants.
  - Officers requires lots of technical training to build technical capacity.
- **<Agenda Item 2: <Activities and expenditures for month of July - Ya'axche>**
- **Discussion**
  - The establishment of more plots was done this month and expenditures have reached to 60%
  - The main activity that used lots of money was the Farmer Field School training that was done this month.
  - Expenditures have reached to 16,000 dollars Belize
  - The expenditure included: fuel food, venue materials payment of consultancy, establishment of plots etc.
  - All of the expenses will be detail in the financial report that will be handed in.
- **<Agenda Item 3: <Activities and Expenditures for month of July - SHI>**
- **Discussion**
  - 70% of the total budget has been spent as programed
  - Activities that was done are: the buying of seed for the re-establishing of the plots.
  - Paying of the Farmer Field School Training, fuel, food for technical officer and people traveling from far distance.
  - Payment for the baseline study done by Mr. Glen Enriquez.
  -
- **<Agenda Item 4: <Baseline study>**

- **Discussion**
  - The baseline study is being done by Mr. Glen Enriquez for SHI
  - Ya`axche will contract the same consultant to do the baseline study
  - Establishing of the indicator methods on the field for the measurements

- **<Agenda Item 4:<Reports for July)>**
- **Discussion**

  - Electronic copy of technical and financial reports will be handed in to IICA office by Friday 2nd August 2013.
  - Hard copy will be submitted to office by Monday 5th.
  - The report must include the expenditures with all the supporting documents scan and attached to it, the technical report must include the attendance list and pictures.
- **<Agenda Item 5: <Upcoming activities>**
- **Discussion**

  - On august 21st, 2013 FFS training. The technical Officers from Ya`axche and SHI will get a group of farmers for the FFS and develop the curriculum with the assistance of the facilitators Max Ortega from IICA and Flint Wagner from Ministry of Agriculture.
  - Setting the methods to measure the indicators in the field.
  - Finish with the baseline study
  - Printing of soil conservation guide and other dissemination materials
  - Field day exchange visits SHI on the 7th of August and Ya`axche on the 14th of August

9 MEETING END

Meeting Schedule End: <12:00 pm>

Meeting Actual End: <11:45 pm>

10 POST MEETING ACTION ITEMS

Action	Assigned To	Deadline
<set indicator measurement method in the field>	<Kenny, Julio Ernesto and Bibiana>	<16 August 2 weeks time>
<print dissemination materials>	<Jose and Julio>	< 5-10 August>
<technical training>	<Max and Flint >	<21 August>
<establishing of the rest of plots>	<Kenny, Julio, Ernesto,>	<this month>

<field day visit>	<Ernesto, Bibiana >	<7th August>
<Field day visit>	<Julio, Kenny>	<14 August>

11 DECISIONS MADE

[Document any decisions made during the meeting

- **Decision 1:** all the rest of plots be established
- **Decision 2:** set indicator method for measurements in the fields
- **Decision 3.** Both SHI and Ya`axche will use the service of the same consultant to do the baseline study (Mr. Glen Enriquez)
- **Decision 4:** Mr. Max and Flint will be the facilitator for the training on August 21th.
- **Decision 5.** Disseminating material will be printed this month.
- **Decision 6.** All reports will be hand in by Friday and Monday for revision and verification by IICA administrator

12 NEXT MEETING

Next Meeting: <Location: Toledo at Yaaxche office> < Date: 30th August > <Time: 9:00am>

FINAL TECHICAL REPORT

RED-SICTA COORDINATING COMMITTEE

MEETING MINUTES

Meeting Date: <08/1/2013>

Meeting Location: <Via Skype>

Approval: <30/9/2013>

Recorded By: <Leonardo Perez>

ATTENDANCE

Name	Title	Organization	Present
<Bartolo Teul>	<Chairperson of committee>	<Ya`axche>	<Yes>
<Kenny Cal>	Technician	Ya`axche	Yes
<Ina Sanchez>	Acting Director Research	MNRA	Yes
<Max Ortega>	IICA Technician	IICA	Yes
<Leonardo Perez>	Liaison Officer	Red-SICTA	Yes
<Ernesto Pop>	Technician	SHI	Yes
<Bibiana Paquiul>	Technician	SHI	No
<Victor Kuk>	Extension Officer	MNRA	No
<Jose Coy>	Administrator	SHI	No
<Julio Chub>	Administrator	Ya`axche	Yes
<Flint Wagner>	District Agriculture Coordinator	MNRA	No

MEETING LOCATION

Building: N/A (Via Skype)

Conference Room: N/A

Conference Line: N/A

Web Address: N/A

FINAL TECHICAL REPORT

MEETING START

Meeting Schedule Start: <9:30 am>

Meeting Actual Start: <9:45 am>

Meeting Scribe: <Project Progress and Planning>

AGENDA

- **<Agenda Item 1: <Project up-date>**
- **Discussion**

Ya`axche Conservation Trust

- For the month of August not much was done due to small amount of financial resources that was available, so Ya`axche was not able to fulfill all the activities that was program for the month.
- Ya`axche carry-out a field day (Field exchange with other farmers)
- Ya`axche also participated in the leadership and motivational training done on the 19 and 20th of August in Toledo.
- Ya`axche has 2 farms that needs to be established
- The financial and technical was also done and submitted to IICA office for revision

Sustainable Harvest International

- Presently only have 3 well established plots, the other plots were destroyed by the flooding.
- Farmers will be re-establishing the plots in October (new planting season)
- Field exchange visit was done for the is month of August, where farmers had the opportunity to visit the farmers in Silver Creek implementing Alley cropping system in their farms as a method for soil management and control of erosion.
- The T shirt has been printed for the dissemination of information, and will be used for the Organic Fair where the Red-SICTA project will be promoted.

- **<Agenda Item 2: <upcoming activities>**
- **Discussion**

Ya`axche

- Gathering of all the farmers for the elaboration of the curriculum which will be done on the 6th of September Depending on the financial status of the project (second disbursement)
- Based on the curriculum other trainings will fallow on the 11,20,25 and 4th of Octuber, 2013.
- The field method for measuring the indicators will be set in the other plots this month.
- Baseline will be done once finance is approved.

FINAL TECHICAL REPORT

SHI

- Getting finish with the soil sample this month.
- Will gather farmers for the elaboration of the curriculum which will be done on the 6th of September along with Ya`axche.
- Will continue setting the field methods for measuring the project indicators.
- Re-establishing the rest of plots that the flooding destroyed.
- Elaboration of a report showing that SHI has used all the financial resources allocated for the project for the 1st disbursement.

- **<Agenda Item 3: <training priorities>**

- **Discussion**

  - I was suggested the Mr. Ricardo Thomson be invited for the up-coming activity so he will know about the project Red-SICTA is implementing.
  - Technical officers and the farmers need to develop a curriculum and submit a list on training required so as to find professional individual in the subject.
  - **<Agenda Item 4: <Baseline study>**

  - **Discussion**
    - SHI has done the baseline study. The baseline final report needs to be submitted for the revision to ensure that the information provided is exactly what is required by the project in order to be measurable at the end.
    - The baseline consultant gets the last payment percentage after the final report has been revised and approved.
    - Ya`axche has not started the baseline, but will give the consultant to read the project and prepare the work plan for the baseline and when the finance is disbursed the first payment will be done.

MEETING END

Meeting Schedule End: <11:30 pm>

Meeting Actual End: <11:30 pm>

POST MEETING ACTION ITEMS

Action	Assigned To	Deadline

FINAL TECHICAL REPORT

<set indicator measurement method in the field>	<Kenny, Julio Ernesto and Bibiana>	<Sept>
<development of curriculum>	<Technical officer>	< 6th Sept.t>
<baseline>	<Bartolo, Kenny, julio >	<Sept.>
<establishing of the rest of plots>	<Kenny, Julio, Ernesto,>	<this month>
<Training>	<Ya`axche >	<Sept. 11,20,25>

DECISIONS MADE

[Document any decisions made during the meeting

- **Decision 1:** all the rest of plots be established
- **Decision 2:** set indicator method for measurements in the fields
- **Decision 3.** SHI will submit the baseline final report and Ya`axche will start the baseline
- **Decision 4:** the farmers will be gather along with technical officer to elaborate the curriculum.

NEXT MEETING

Next Meeting: <Location: To be determine By SHI> < Date: 27th Sept> <Time: 9:00am>

FINAL TECHICAL REPORT

RED-SICTA COORDINATING COMMITTEE

MEETING MINUTES

Meeting Date: <24/10/2013>

Meeting Location: <Ya`axche Office Toledo>

Approval: <29/10/2013>

Recorded By: <Leonardo Perez>

ATTENDANCE

Name	Title	Organization	Present
<Bartolo Teul>	<Chairperson of committee>	<Ya`axche>	<Yes>
<Kenny Cal>	Technician	Ya`axche	Yes
<Ina Sanchez>	Acting Director Research	MNRA	No
<Max Ortega>	IICA Technician	IICA	No
<Leonardo Perez>	Liaison Officer	Red-SICTA	Yes
<Ernesto Pop>	Technician	SHI	No
<Bibiana Paquiul>	Technician	SHI	No
<Victor Kuk>	Extension Officer	MNRA	No
<Jose Coy>	Administrator	SHI	No
<Julio Chub>	Administrator	Ya`axche	Yes
<Flint Wagner>	District Agriculture Coordinator	MNRA	No

MEETING LOCATION

Building: Ya`axche Office

Conference Room: N/A

Conference Line: N/A

Web Address: N/A

MEETING START

Meeting Schedule Start: <1:30 pm>

FINAL TECHICAL REPORT

Meeting Actual Start: <1:30 pm>

Meeting Scribe: <Project Progress and Planning>

AGENDA

- **<Agenda Item 1: <Project up-date>**
- **Discussion**

Ya`axche Conservation Trust

- For the month of September training for the farmers was done on Record Keeping, an assessment for the farmer`s need was done to find out the training needs and a fiels exchange was carried out.
- The elaboration of technical pamphlets and other materials was printed
- Preparation for the massive dissemination of Red-SICTA project in Alley cropping for the Organic fair.
- Monitoring and farm visit was done.
- Planting for the second cycle of corn crop.

Sustainable Harvest International

- Update provided by SHI (the establishment of the plots (planting of Mucuna Beans in the plots)
- Elaboration of technical pamphlets and guides on row planting and slash and mulch system for the dissemination of information for the Organic fair.
- Purchasing of a tent for the organic fair.
- Farm visit for monitoring and evaluation

- **<Agenda Item 2: <upcoming activities>**
- **Discussion**

Ya`axche

- Field exchange activity on Saturday 2nd November 2013
- Farmer field school Activity on the 6th November (Visitor from Nicaragua)
- Training of technical officers in Honduras in Alley Cropping (Inga Foundation)
- Forwarding record keeping data to Leonardo for the final technical report (data on type of soil, harvesting, measurement of erosion ect.
- Ensure that the base line is finished and report submitted

SHI

- Carry out farmer Field School sessions
-

- **<Agenda Item 3: <training priorities>**

- **Discussion**

    - Ya`axche will investigate the possibility of doing a technical training for ya`axche officer in Honduras in alley cropping system at Inga Foundation
    - Alley cropping forum will be done with farmers involved in the Red-SICTA alley cropping project. The participation of the Ministry of agriculture will be asked (the research department and extension department in Toledo District)
    - Field exchange activity will be done on Saturday 2nd Nov, 2013

13 MEETING END

Meeting Schedule End: <2:30 pm>

Meeting Actual End: <5:00 pm>

14 DECISIONS MADE

[Document any decisions made during the meeting

Decision 1: Ya`axche (Julio Chub) will investigate the possibility of doing a technical training for ya`axche officer in Honduras in alley cropping system at Inga Foundation

Decision 2: Alley cropping forum will be done on Nov. 1st with farmers involved in the Red-SICTA alley cropping project. The participation of the Ministry of agriculture will be asked (the research department and extension department in Toledo District)

Decision 3. Field exchange activity will be done on Saturday 2nd Nov, 2013

Decision 4: Ya`axche will accomplished the program expenditure for the month.

15 NEXT MEETING

Next Meeting: <Location: To be determine By SHI> < Date: 28th Nov> <Time: 9:00am>