

**“Implementation of Sustainable Farming Practices in
Trinidad’s Northern Range Communities”**

**Report of
Technical Coordinator
(For the period Nov. 16, 2010 to Oct. 15 2011)**

Submitted by

Allan N. Williams
Technical Coordinator

The Cropper Foundation

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INTRODUCTION

The Cropper Foundation along with the Multilateral Investment Fund (MIF) of the Inter-American Development Bank (IDB) initiated the project “**IMPLEMENTATION OF SUSTAINABLE FARMING PRACTICES IN TRINIDAD’S NORTHERN RANGE COMMUNITIES**” (TT-M1017) for the period 2009 - 2011. The project has entered its second year (2011) of funded project activities which have been built on the observations and indications coming out of the first year’s activities. These preceding events included the Baseline Assessment Survey, Profile of Farmers, Field Visits and a Stakeholders’ Workshop. From our early interaction with farmers in their fields and in their Association meetings, we recognized the following:

- a. That farmers in the target areas were very much aware of the need to conserve their environment and were not adverse to becoming better stewards of their environment;
- b. That there were many supporting institutions willing to join in our response;
- c. That the approach of promoting more eco-friendly farming practices was welcomed by the Extension Service of Ministry of Food Production that serviced the Northern Range; and
- d. That funding was available for material support to farmers in our project.

Being the final year of the project under external funding, we focused on four (4) interactive objectives:

- 1) **Building organization capacity** to assess the ecologically sound basis of actual farming practices through the “High Nature Value Index”;
- 2) **Direct farm visits** to ascertain immediate farmer concerns and to respond with information and material support;
- 3) **Continued dialogue and Information sharing with farmers** to bring all of us onto the same page where the goals of sustainability, enhanced agricultural production and livelihoods are concerned;
- 4) **Exchange of experiences** among farmers by facilitating on-farm visits to observe outstanding individual farm practices (Proof of Concept Sites).

FRAMEWORK FOR PROJECT ACTIVITIES

The Framework for project activities in 2011 had three components. The first was to open a dialogue with our list of selected farmers in order to:

- Find common ground between their desire to increase agricultural productivity and our desire to reduce negative environmental impact;
- Utilize our intervention instruments to promote the land-use patterns which, on the whole, would better address their concerns;
- Seek out and where possible reinforce on-farm integration practices that can serve as model demonstration of sustainable practices;

In addition to building a common understanding among stakeholders, the dialogue allowed us to identify leverage points for interventions, bearing in mind that one of our explicit goals was

to achieve a high level of exposure (60% of farmers) to “acceptable sustainable farming practices”

The second component was to prepare ourselves for the ever-changing scenario of small farmer operations in these valleys, i.e., their changing locations, what they do, part-time farming, abandonment and resuscitation of farming, etc. Our early survey had identified the diversity in the farming practices that we would face and our own preparations had equipped us with sufficient information to identify farming practices we would consider critical to sustainable up-stream farming. We were also on the lookout for production and marketing links that influenced farming systems decisions by introducing new commercial products.

The third component was a little more theoretical. We were well prepared to play our part in monitoring and evaluation of farming practices, but we also wanted our interventions to become part of the farmer’s operational farm plan. We did not expect to find anyone with a conventional “Farm Plan” like a written response for decisions in “ordered space”, i.e. this will happen, then followed by that, etc.

What we expected to find and did find in practice, were farm decision making operating more or less in “**Un-ordered Space**”¹. They were characteristic of an unordered domain; the stakeholders’ interests were difficult to identify, or kept changing; the practices changed frequently, and often conflicted with one another or with the overall objectives; ecologically sound solutions were easily derailed by local politics, or because the technology didn’t work as it’s supposed to, or expectations were misplaced; and cause and effect were only coherent in retrospect and did not repeat.

The planning that would inform record keeping presumed a context of “ordered space”. The farm decisions as conveyed to us appeared to be influenced by current circumstances in which cultural factors, inspired leadership, believable information, gut feelings and other factors **dominate**. As our recommendations for each farm will show, what we had to do was to spot “patterns” and intervene to structure these patterns in favour of sustainability within the environment, without directly confronting contrary behaviour².

¹ In “*The New Dynamics of Strategy: Sense-making in a complex and complicated world*” Cynthia Kurtz and Dave Snowden introduce the term “un-order” as describes things which are neither systematically ordered, nor completely disordered. In chaotic or complex real-world systems, patterns of behaviour or structure can often be found in which consistency or logic can only be recognized in retrospect after other conditions have emerged..

² This is the source of the challenge portrayed by Dr. Shango Alamu, when he pleaded in our last Project Update Bulletin (October 2011) that “*Ecological crop management must not be seen as an option. It must be adopted as the central philosophy guiding agricultural development*”.

SEVEN INSTRUMENTS OF INTERVENTION

The Project utilized seven (7) instruments of intervention in 2011.

A. Farmer Participation Survey

The “Farmer Participation Survey” was executed by Consultant Beaumont Celestain in January 2011. The Consultant had obtained from official sources a list of 66 farmers (38 in Maracas/St. Joseph and 28 in Caura). However, as Table 1 indicates we were only able to locate and interview 34³ from these lists. We have not explored the reasons for this discrepancy, as we were only interested in meeting persons who were actually farming in these valleys at this time. We did recognize some abandoned farms, and were told that some persons had moved away or were deceased.

Table 1: Selection of Farmers.

Geographical Areas of Administration of the survey	Total number of potential interviewees	Numbers successfully interviewed	% of Total
Maracas St Joseph / Watershed Area	38	18	47.36%
Caura / Tacarigua watershed Area	28	16	57.1%
TOTAL	66	34	46.9%

Source: Report of Consultant

The criteria for choosing the farmers for participation⁴ in the project were as follows:

- The farmer is practicing a high degree of sustainable farming practices;
- The farmer has serious land tenure issues such as occupying the land illegally without applying for any form of regularization;
- The farmer indicates a high level of interest and willingness to participate in the project;
- The farmer indicates a high level of interest to share his or her newly acquired knowledge and skills with others (highly charitable individual);
- The farmer indicates a fairly strong commitment to continue with proposed farming methods beyond the project period.

This Survey also allowed us to define for our farmers the nature of the project’s “benefit package” as follows:

- Information on better farming practices;
- Learning to manage your farmer and the environment around you;
- Learning techniques on reducing farm input cost whilst increasing productivity;
- Trying new technologies on your farms;
- An opportunity to use part of your farm as a demonstration plot.

The results of the survey indicated that 83.3% of the farmers in Maracas/St. Joseph showed a keen interest in participating in the project, while 69% of Caura farmers did.

³ “Report on supporting the selection of participating Farmers in the watershed areas of Maracas /St Joseph and Caura Tacarigua Valleys”, by Beaumont Celestain, March 2011

⁴ Criteria were indicated in the Project Document: **Plan of Operations – TT-M1017, IADB Project Document**

B. The High Nature Value Index

The vision of the Project was to implement farming practices that fully managed both land and natural resources to meet three goals simultaneously: (a) provide agricultural products and services on a sustainable basis, (b) support viable livelihoods for local people, and (c) conserve a full complement of native biodiversity and ecosystem services. But to make the preservation and management of bio-diversity a farming concern, we had to create a mechanism that would weave these landscape/environmental concerns into the farmer's assessment of personal risks, production security and perceived threats.

The approach was to identify with the farmer that he was farming in a **High Nature Value (HNV) Environment** and to introduce an indexation process to evaluate how well he/she was doing. The basic function of the **High Nature Value Index (HNVI)** was to award positive points for sound farming practices that built on the resilience of nature systems such as maintaining closed cycles of materials and wastes through effective recycling practices, understanding and using the full range of micro environments within the farm (soil, water, temperature, altitude, slope, fertility, etc) and relying on a complexity of biological interdependencies for more effective biological pest and weed suppression; and awarded negative points for practices such as a heavy reliance on chemical inputs that collectively would tend to reduce the sustainability of the very environment in which they occur.

More importantly, the HNV Index score recalibrated the apparent success of a **resource appropriator** into a deficiency that reduces the nature-value of the environment and established the framework for introducing a series of corrective measures⁵, focusing on increasing the farmer's economic gains as a **resource-sustainer** in the HNV Environment.

We have engaged 18 farmers in Maracas/St. Joseph Valley and 13 farmers in Caura in responding to the questionnaire of the HNVI. The analysis of these responses showed that a majority of the farmers were in the lowest category of the index, i.e. below 45 indicating that they can definitely improve their performance by changing both their inputs and also their approach to crop production.

C. The Eco-Friendly Farming Practices Portal

Part of our preparation was to be able to bring to the farmers, information on a farm production/management system that uses the knowledge of soil biological activity, crop diversity and the biological cycles of plants, to produce healthy and cost-effective crops. The Eco-friendly Farming Practices (**EFP**) portal provides instantaneous access to about 50 information bulletins that share the experiences of sustainable small scale farming in a tropical environment.

⁵ See the Eco-Friendly Farming Practices Portal

The material covers six distinct areas, namely:

- 1) Learning from Nature
- 2) Soil Management
- 3) Managing Plant Nutrient Organically
- 4) Managing Weeds, Pests and Diseases
- 5) Starting an organic farming system
- 6) Making profits in a High Nature Value Environment

Most of the material was obtained from the Training Manual for Organic Farming in Tropical Environments done by the International Federation of Organic Agricultural Movements (IFOAM) and facilitated for our use through the Trinidad & Tobago Organic Agricultural Movement (TTOAM). In our introductory visits, the farmers were invited to request any information package that they desire. On subsequent visits we distributed information packages that directly addressed the issues they were currently attempting to resolve.

D. Farming Practices Plan

Our technical team has been engaging farmers on an individual basis to discuss and advise on key elements of their farm management plans (soil quality management, land preparation, crop management, and environmental integrity). We have observed a significant amount of useful “patterns”. For instance many farmers use organic chemical inputs such as Phyton 27, New Fol Cal and Neemex, while some farmers even made their personal ‘home-made remedies’ , e.g., one farmer uses a combination of hibiscus, corn and peppers as a natural pesticide. At the same time all of the farmers used some type of inorganic inputs. NPK fertilizers and Gramoxone are two common inputs used.

The technical team is working with farmers to share and discuss various ways of reducing or completely eliminating their use of inorganic inputs by increasing the use of organic inputs and/or methods. This is our build-up towards the introduction of the “Farm Practices Plan” in the form of a guide to actions that would produce a healthy and cost-effective cropping system. These guidelines will follow four general outlines.

- 1) **A Quality Soils Management Plan:** Suggestions on Defining activities to manage soil quality;
- 2) **Land Preparation Plan:** Identifying material inputs; Structural Changes to land
- 3) **Crop Management Plan:** Methods of monitoring Crop Growth and Crop Management Inputs;
- 4) **Integrating Farming system activities:**

E. Material Support

To a measurable extent, introducing what we consider to be sustainable farming practices involves new and/or additional farm inputs. Some of these are specified in our Farming Practices Plan. In support of sustainable farming practices, The FAO **TeleFood Special Fund**

(TSFP) had approved funds to provide a limited number of farm inputs. This meant that our team members, while meeting farmers in their fields were able to offer a limited amount of material support in addition to discussion and advice on farming practices. The items are likely to include:

- a. Off-farm produced compost
- b. Limestone
- c. Organic certified foliar fertilizers
- d. Granular and liquid organic certified fertilizers
- e. Organic based and certified plant growth enhancers
- f. Organic certified pesticides
- g. Hoes, Shovels, machetes etc

F. Project Update Bulletins

Our communications objective goes beyond the farmers with whom we are in direct contact. To maintain interest in the project, the project team has conducted frequent contacts with key persons in the community such as heads of village councils and farmers' organisations, to keep them updated on project activities, and what is the likely course of action over the next month. In January 2011, the project issued its first "Project Update Bulletin". The Bulletin is issued every two months and tends to cover the more important events of the project. This Bulletin is distributed widely in electronic format.

G. Portable HNVI Software

The High Nature Value Index is a program that accomplishes four (4) functions.

- 1) It records and stores the response of respondents to 130 data inquiries;
- 2) It calculates an HNVI score on the basis of these responses and according to a set of established algorithms;
- 3) It reports the respondent's responses, summary score and detail score by each of eight (8) sections.
- 4) It allows the administrator of the program to review any of the reported outputs and to update the respondent's responses

To accomplish these tasks in a user-friendly environment the program depends on a set of short algorithmic processes being present and accessible by the program. If these are not present on any machine operating the HNVI software it would not run. These preset programs would have to be uploaded to that machine before the program can operate on them.

On account of this configuration, the program is in fact hard-wired to one machine from which it is currently operational. The task being undertaken is to reconfigure the program so that it becomes operational in other environments

ON-FARM INTERVENTIONS:

In July 2011, a technical team was assembled to implement our intervention model using the above mentioned instruments. The Team visited these farmers to:

- Determine their current status in terms of farming activities
- Discuss their farming plans for the next 5 – 6 months
- Share their HNVI scores with the farmers
- Offer the farmers information packages on a range of ecologically-friendly farming practices
- Explain this phase of the project and exchanging general information

Table 2 indicates the evolution of the number of farmers involved in the project.

	Caura	St. Joseph	Total	% of Total Identified
Number Farmers Listed	28	38	66	
Number of Farmers Identified	16	18	34	
Interviewed & HNVI scored	12	18	30	88%
Currently Farming	9	12	21	62%
Visited by Team	7	12	19	56%
In Transition	3	6	9	26%

Source: Compiled from Report of Consultant Beaumont Celestain

From a listing of 66 farmers, we identified 34, evaluated the farming practices of 88% of those identified and are currently working with 62% now in production. Dr. Shango Alamu captures the experiences of the Team in the Box below.

From the field reports of the Team for the month of August we note the following:

- 1) **In the Caura Valley**, 8 active farmers were interviewed during the month of August:
 - 6 showed strong interest in good ecological farming practices with varying levels of knowledge on ecological farming practices
 - 6 used some degree of on-farm generated inputs;
 - All eight (8) farmers practice the use of ecologically friendly external farm inputs. The most common being cured pen manure
 - All eight farmers interviewed indicated that they use non-ecologically friendly farm inputs but the degree of usage in their farm plan varies;
 - The majority of farmers have indicated that they are willing to reduce the use of inorganic farm inputs,

2) **In The Maracas/St. Joseph Valley** 12 active farmers were interviewed during the month of August

- All showed strong interest in ecologically friendly farming practices with one declaring himself a self-expert
- 11 used at least one type of on-farm generated inputs, some as much as four
- 10 used some type of off-farm purchased eco friendly farm inputs. The most common being cured pen manure.
- All 12 farmers interviewed indicated that they use non-ecologically friendly farm inputs but the degree of usage in their farm plan varies as the type of crop cultivated determines the amount of pesticides, herbicides and fertilizers applied and the subsequent damage including the timeframe for this damage to physically manifest itself.
- The majority of farmers have indicated that they are willing to reduce the use of inorganic farm inputs,

Based on the receptivity of the farmers and their current production activities, the Team presented detailed recommendations as a first step to encouraging sustainable farming practices.

Box 1: Report of Activities, Dr. Shango Alamu
September 8, 2011

Executive Summary

The objective of the exercise was to share with the farmers their High Nature Value (HNV) indices and to give some explanation of their scores, to set the stage for the distribution of information on ecologically friendly farming practices and to be appraised of their current status of production and projections for the rest of this production cycle. It was also intended to introduce some eco-friendly strategies they may not have been familiar with for possible introduction into their programs.

Based on previous interactions on the project most of the farmers had a good understanding of the HNV concept and were willing to make the necessary transformation to improve their scores. In this regard they welcomed the opportunity to receive information on improving their farming practices. Their status of production varied from holdings still in abandonment, through lands now being prepared, to fully operational projects. Some farmers are engaged in conservation agriculture especially as regards soil conservation. However the use of toxic pesticides, herbicides and mineral fertilizers is still very popular.

Farmers shared with the consultant their major concerns in making the transition particularly how the changes would impact on farm productivity and the availability of an alternate suite of inputs. However farmers were willing to experiment even to make changes to their existing farm plans as appropriate information became available.

CONCLUSION

The achievements of the Project may be listed as follows:

- 1) Identification of 53 % of farmers listed in Ministry and other official sources for the Caura and Maracas/St. Joseph Valleys;
- 2) Situation Analysis and Baseline data on the Maracas and Caura Valleys
 - a. Demographic characteristics
 - b. Landscape features
 - c. Agricultural activities (Historic and current)
 - d. Livelihood functions
 - e. Settlements and institutions
- 3) Identification of Farmers and diagnosis of farming systems
 - a. Verification of farm profile of 30 farmers in Maracas/St. Joseph and in Caura Valley
 - b. Interaction with Farmer Organizations: Maracas Valley Farmer Association; Caura Valley Farmers Association
- 4) Evaluation of farm practices
 - a. 88% of farmers in selected communities exposed to sustainable farming practices
 - b. 67% of identified farmers were evaluated and their farming practices scored using the HNVI.
- 5) Participatory workshops
 - a. Stakeholders Workshop (Priority Setting)
 - b. HNVI Scoring Workshop
- 6) Selection of Farmers as participants based on established criteria
 - a. 21 active farmers currently in dialogue with Project Team on implementing sustainable farming practices
- 7) Field Monitoring & evaluation of 21 participating farmers
 - a. Technical support for changes in selected sites
 - b. Material support to farmers in selected areas

Two outstanding events remain. The first is an effort to construct a “**Proof of Concept**” dialogue.

- We have identified two farmers who have exemplified holistic approach to sustainable farming practices. Our intentions are to bring the remaining of the farming population into initial contact with them through a field visit.

The second is the option of *using Scenarios as a tool* to reinforce the farming practices we are promoting. The objectives are three-fold:

- 1) **Anticipatory learning** focusing on gathering information about what might happen based on an understanding of drivers of change, the probabilities of future events and the interests of different actors;

- Scenario-based techniques are tools for improving anticipatory rather than retrospective learning.

2)Adoption of new farm management practices:

- By simplifying complexity, the scenario methods can provide just enough information to the farmer to allow him/her to construct plausible alternative practices based on the confidence of his/her experiences.
- By understanding what is going on, farmers can adjust their management strategies to cope better with change.

3)Negotiated perceptions or commitments by stakeholders to the conceptual Farm Practices plans

- Scenarios can be enhanced with pictures, photos, written stories, videos, geographic information systems (GIS), maps, graphs or any combination of these and other media to build consensus on the values and assumptions underlying the recommended changes in farming practices and land use in the valleys.

Submitted by

Allan N. Williams

Technical Coordinator

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