

Fourth (4th) and Final Report on the provision of technical assistance to farmers towards implementation of sustainable farming practices in the Maracas/ St. Joseph and Caura/ Tacarigua Valleys

TIME PERIOD: NOVEMBER - DECEMBER 2011

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1.0 INTRODUCTION

1.1 Background

An assessment of Trinidad's Northern Range completed in 2005 and published as the 2004 National State of the Environment Report for Trinidad and Tobago¹, concluded, among other things, that unregulated and unauthorized small-scale farming practices are becoming more evident throughout several of the watersheds of the Range. Such practices are driven by a number of socio-economic factors including land use policy and practices, and accelerated development of housing, which often work in combination.

While small-scale farming is a means of livelihood for several farmers (especially in rural areas) and it also plays a key role in local food production, it is becoming increasingly evident that unsustainable agricultural farming practices are part of the cause for downstream environmental impacts being experienced throughout Trinidad. The main impacts include an increase in the incidence and severity of flooding at the foothills of the Northern Range, especially in densely populated areas such as the capital city Port of Spain and in several towns along the East-West Corridor; and a disruption in potable water production by the watersheds of the Range. With the Northern Range is known to produce a large proportion of Trinidad's water supply, reductions in both the quality and quantity of potable water are beginning to have a national-level impact which is only expected to worsen in the foreseeable future.

In order to address the problem of unsustainable agricultural practices in the Northern Range and provide a model for reconciling socio-economic needs of hillside farming communities with environmental conservation, the Inter-American Development Bank (IDB) and The Cropper Foundation have designed and embarked on a project entitled **'Implementation of Sustainable Farming Practices in Trinidad's Northern Range Communities'**. The goal of this project is to pilot alternative farming practices in two watershed of the Northern Range - the Caura and Maracas/ St. Joseph watersheds - that can assist in improving the returns and sustainability of agriculture for small farmers while mitigating negative impacts on the environment and affected downstream communities. Specifically, this project seeks to: examine how to sustain livelihoods based on hillside agriculture within the Northern Range while protecting the resources of the ecosystem and alleviating downstream impacts; support the social and economic development of selected communities; collect valuable baseline information to facilitate present and future participatory applied research and analysis; and understand how to replicate the approach and disseminate learnt lessons stemming from the project.

¹ Northern Range Assessment 2005. Report of an Assessment of the Northern Range, Trinidad and Tobago: People and the Northern Range. State of the Environment Report 2004. Environmental Management Authority of Trinidad and Tobago. 184pp.

The project's concern centers on five (5) main sources of impact, namely:

- a) Agricultural production (food)
- b) Community Governance and empowerment
- c) Landscape management (Biological impact)
- d) Demographic changes (settlement, tenure)
- e) Watershed Maintenance

2.0 SUMMARY OF ACTIVITIES - NOVEMBER/DECEMBER 2011

During this time period, categorized as the concluding phase, the last one and a half months of the project the technical team visited the subject areas Maracas St /Joseph and the Caura Valleys, and engaged in the following activities

- I. Distributed the HNV compatible inputs requested by participating farmers in the two subject areas
- II. Shared more information in one-page bulletins in the eight areas on ecologically friendly farming practices
- III. Continued Sharing and adjusting farm plans (sustainable farming practices with farmers) on soil quality, land preparation, crop management and environmental integrity as an ongoing exercise
- IV. Continued training on the construction, calibration and use of the “A” frame during this reporting period
- V. Farmers in the Caura Valley area mainly from Tumbasson road were in the process of formalizing their farmer’s group association.
- VI. Discussions on the establishment of a network of eco-producers
- VII. Captured more footage on farming activities in both valleys

Note

The farmers in the Maracas St Joseph areas are with the majority solely depending on rain fed conditions are beginning to wind down activities due the approaching dry season and would continue farming at the onset of the rainy season in 2010.

3.0 MARACAS/ ST JOSEPH FARMERS

3.1 General

Interactions with the farmers in Maracas/ St Joseph during the month of November / December 2011 were continued on the basis of:

- I. Distribution of more information bulletins
- II. Observations and discussions on ongoing projects and future projections
- III. Capturing continuing footage on progress
- IV. Continued developing possible HNV initiatives
- V. Distributed the HNV compatible inputs requested by participating farmers in the Maracas St Joseph areas
- VI. Continuing farm visits
- VII. Continued training on the construction, calibration and use of the “A” frame during this reporting period
- VIII. Held preliminary discussions on the establishment of a network of eco-producers

3.2 Soil Quality

Table 1 –Notes on Maracas/ St Joseph Farmers’ practices aimed at building and maintaining soil quality

	Last Name	First Name	Activities
1	Farrier	Holasco	<u>THUMBS UP!!</u> Continues to use compost in addition to on-farm generated cured manure from his livestock operation. This integration of the two farming systems namely livestock and crops ensures a high degree of on recycling on farm produced bio mass
2	Reyes	Andrea	<u>THUMBS UP!!</u> Continues to make and utilize compost, in addition to recycling crop residues as green manure and applies ash to the soil. A good example of a perma-culture system Eagerly awaiting the results of the soil test..
3	Audain	Terrence	<u>THUMBS UP!!</u> Continues to use compost and has received liquid cured pen manure and limestone will assist in building his soil quality particularly as his farm shows extreme variability in crop performance, also eagerly awaiting the results of his soil test to assist in building and maintaining his soil quality program
4	Sinanan	Cathryn	<u>THUMBS UP!!</u> Continues to make and utilize compost, in addition to recycling crop residues as green manure and applies ash to the soil. A good example of a perma-culture system. Eagerly awaiting the results of the soil test...
5	Herbert	Yusuff / Bruce	<u>THUMBS UP!!</u> Continues to Use compost in addition to applying limestone received from the TCF grant and recycles crop residues as green manure / mulch and is in the

			<p>process of building terraces, improving of on-farm drainage and enhancing accessibility on the hillside. Eagerly awaiting the results of the soil test to assist in building and maintaining his soil quality program</p> <p><u>THUMBS DOWN!!</u> The farmer continues to utilize some herbicide (glyphosate) for weed management during the preparation phase of the terraces</p>
6	Thompson	Leon	<p><u>THUMBS UP!!</u> Mr. Thompson still continues to uses compost, recycles crop residues as green manure in his grow box system. On his hillside production plot he normally has a ten (10) year fallow period. Eagerly awaiting the results of the soil test. Very pleased with the results from using molasis to control his soil nematode problem.</p> <p><u>THUMBS DOWN!!</u> Continues to use environmentally harmful herbicides in his agronomic program but is willing try HNV compatible products particularly on food produced for home consumption and compare the results with main ongoing program which is based on the use of environmentally non friendly inputs.</p>
7	Applewhite	Wayne	<p><u>THUMBS UP!!</u> Mr. Wayne Applewhite has crops at different stages as such he continues to build his soil quality by recycling crop waste as green manure and utilizing compost.</p>
8	Padillia	Ryan	<p><u>THUMBS DOWN!!</u> Still continues in the non use of on-farm generated eco friendly farm inputs on his very limited farm activities</p>
9	Williams	Chad	<p><u>THUMBS UP!!</u> Continues to produce and manage a compost heap Eagerly awaiting the results of the soil test particularly as he had some problems with his crops at the home location which appear related to soil borne pathogens and may be related to soil quality, this has resulted in Mr. Williams discontinuing his production at this site for the 2011 season.</p>
10	Bernard	Nigel	<p><u>THUMBS UP!!</u> His current program is a non-till hillside operation with little incorporation of soil ameliorants. Mr. Bernard has received limestone and compost that these will be utilized in the farmer's soil quality management program.</p>
11	Applewhite	Kurn	<p><u>THUMBS UP!!</u> Still continues to manage compost heap to apply to his farm. In addition through the TCF, this farmer has received limestone and liquid pen manure which would contribute to this farmer's soil quality management program.</p>
12	Walter	Dave	<p><u>THUMBS UP!!</u> Still Continues to incorporate compost and recycles crop residues as green manure and applies ash. Eagerly awaiting results of his soil test.</p> <p><u>THUMBS DOWN!</u> Still uses non environmentally friendly herbicides</p>

3.3 Land Preparation

Table 2 –Notes on Maracas/ St Joseph Farmers’ Land Preparation practices

	Last Name	First Name	Activities
1	Farrier	Holasco	<u>THUMBS UP!!</u> Still continuing his program that involves the ongoing use of compost in addition to on-farm generated cured manure from his livestock operation in the establishment of his new fruit trees and new Columbian cedar trees. Most his crop production is taking place on flat areas of the allotment, therefore no need for major soil conservation works. No extensive drainage works has been established but due to the elevation there is no problem with run off even after heavy rains.
2	Reyes	Andrea	<u>THUMBS DOWN!!</u> Still continues to utilize inorganic pesticides and herbicides in her crop management program. A poly culture system has been established on un terraced parcels of the hillside <u>THUMBS UP!</u> Has begun to receive training on the use of the “A frame.”, which on completion would encourage this farmer to plant on the contours thus aid in soil conservation.
3	Audain	Terrence	<u>THUMBS UP!!</u> Farmer has received training in the use of the A-Frame and built one and has begun to terrace his farm for the production of sweet peppers that are intercropped between the plantain observing proper hillside conservation techniques including applying hillside cardboard mulch.. In addition has established a grow box system which would be totally dedicated to bio friendly inputs carefully observing the journey and final outcome
4	Sinanan	Cathryn	<u>THUMBS DOWN!!</u> Still continues to utilize inorganic pesticides and herbicides in her crop management program. A poly culture system has been established on un terraced parcels of the hillside <u>THUMBS UP!</u> Has begun to receive training on the use of the “A frame.”, which on completion would encourage this farmer to plant on the contours thus aid in soil conservation.
5	Herbert	Yusuff / Bruce	<u>THUMBS UP!!</u> Management of unwanted vegetation (weeding-keeping

			<p>a low vegetative cover but not removing totally) between fruit trees</p> <p>Preparation of terraces for cash crop program</p> <p>Clearing and preparation of land for expanding. Has established tomatoes, Melongene and hot peppers and is preparing to put in a crop of cauliflower</p> <p><u>THUMBS DOWN!!</u></p> <p>Continues to use non friendly eco logical chemical inputs in his program in addition continues to establish crops of the same family in the same area on a continues basis for example tomato, sweet pepper and hot pepper all from the solanacae family.</p>
6	Thompson	Leon	<p><u>THUMBS UP!!</u></p> <p>This farmer is wrapping up 2011 production on the hillside and will place this parcel of land in a ten year fallow which is enough of a timeframe to allow soil restoration.</p> <p><u>THUMBS DOWN!!</u></p> <p>Although he is aware of the negative impact of the use of conventional inputs he utilizes a full range of such products (herbicides, insecticides, fungicides, miticides) in his production system. Again re-inforcing the point that he is a full time farmer and is not prepared to take the risk of crop loss. But is slowly coming around on the HNV initiative by establishing a plot to produce food for home consumption based on only using environmentally friendly farm inputs.</p>
7	Applewhite	Wayne	<p><u>THUMBS UP!!</u></p> <p>Mr. Applewhite still continues to create bench terraces check dams, drip irrigation systems as some soil conservation techniques since most of his farm is sloping.</p>
8	Padillia	Ryan	<p><u>THUMBS UP!!</u></p> <p>Still finds little time for farming activities which he states is to help generate additional income for which some will be used to re-invest in his farm.</p> <p><u>THUMBS DOWN!</u></p> <p>Did not attend the training provided in the use of the “A frame”, probably due to his non farming activity consuming all his time at the moment.</p>
9	Williams	Chad	<p><u>THUMBS UP!!</u></p> <p>Has received training in the use of the “A Frame” which will assist in is soil conservation practices for his 2012 farming programme.</p>
10	Bernard	Nigel	<p>This farmer has established a small plot of string beans which failed is in the process of re-establishing before the dry season makes this virtually impossible. In addition has plans to establish a poly culture system of medium term and short term crops all of different genera which is good for farm diversity. The latter continues to be a plan at this stage as no time frame can be given for this activity to begin.</p>

			<u>THUMBS DOWN!!</u> Still did not have anytime November December 2011 month to receive training in the use of the “A frame” to plant on the contour.
11	Applewhite	Kurn	<u>THUMBS UP!!</u> At the hilly location he has developed some benches protected by bamboo barriers and intends to continue some terracing work using the A-frame. This farmer had some previous training in the use of the A-frame and in fact has access to one. In terms of planning still has plans to establish short term crops on raised beds in planting holes with no further tillage, in order to minimize disturbance to the soil on his slope. In addition, plants will be established in a mixture of compost and rabbit manure <u>but nothing has materialized as yet</u> but still continues to manage his barbadene, mangoes and citrus.
12	Walter	Dave	<u>THUMBS UP!!</u> Has cleared some new additional lands for planting by of brush cutting. Has received training in the use of the ‘A Frame’ to encourage soil conservation on the slopes when new planting are to e established. <u>THUMBS DOWN!!</u> Has used herbicides in the process of clearing additional lands.

Source: Technical Team visits in November / December 2011

3.4 Crop Management

Table 3 –Notes on Maracas/ St Joseph Farmers’ Crop Management practices

	Last Name	First Name	Activities
1	Farrier	Holasco	<u>THUMBS UP!!</u> Still continues in the management which involves the further establishment of fruit trees in an eco friendly way Management of livestock where the manure is used in the tree crop production system
2	Reyes	Andrea	<u>THUMBS UP!!</u> Continues to maintain her mixed crop farm system with a range of short term and long term crops: Food crop production - string beans, plantains, bananas, tannia, cassava and eddoes; Fruit trees - coconuts. This farmer has a strong program of building and maintaining soil quality and the inclusion of the TCF inputs would assist in enhancing her program. Has agreed to establish a plot solely based on the use of environmentally friendly inputs and compare with her traditional approach which uses some non environmentally friendly inputs and

			<p>compare the results.</p> <p><u>THUMBS DOWN!!</u> Still has some challenges in crop management in terms of still using harmful non environmentally friendly fertilizers and pesticides</p>
3	Audain	Terrence	<p><u>THUMBS UP!!</u> Farmer has began to produce sweet peppers intercropped between the plantain observing proper hillside conservation techniques including applying hillside cardboard mulch.. In addition has established a grow box system which would be totally dedicated to bio friendly inputs carefully observing the journey and final outcome</p>
4	Sinanan	Cathryn	<p><u>THUMBS UP!!</u> Continues to maintain her mixed crop farm system with a range of short term and long term crops: Food crop production - string beans, plantains, bananas, tannia, cassava and eddoes; Fruit trees - coconuts. This farmer has a strong program of building and maintaining soil quality and the inclusion of the TCF inputs would assist in enhancing her program. Has agreed to establish a plot solely based on the use of environmentally friendly inputs and compare with her traditional approach which uses some non environmentally friendly inputs and compare the results.</p> <p><u>THUMBS DOWN!!</u> Still has some challenges in crop management in terms of still using harmful non environmentally friendly fertilizers and pesticides</p>
5	Herbert	Yusuff	<p><u>THUMBS UP!!</u> Has indicated that HNV compatible products are to be utilized as the first option in a short term farming program.</p>
6	Thompson	Leon	<p><u>THUMBS UP!!</u> This farmer is wrapping up 2011 production on the hillside and depending on his experiment with the sole use of environmentally friendly products on his grow box for home consumption may incorporate in his hillside farming program for 2012.</p> <p><u>THUMBS DOWN!!</u> Although aware of the negative impact of the use of conventional inputs in his production system. Again reinforcing the point that he is a full time farmer and is not prepared to take the risk of crop loss. But is slowly coming around on the HNV initiative by establishing a plot to produce food for home consumption based on only using environmentally friendly farm inputs.</p>
7	Applewhite	Wayne	<p><u>THUMBS UP!!</u> Continues to maintain his mixed crop farm system with a range of short term and long term crops for food crop</p>

			<p>production.</p> <p><u>THUMBS DOWN!!</u> Faces some challenges in crop management in terms of still using harmful non environmentally friendly fertilizers and pesticides.</p>
8	Padillia	Ryan	<p>This farmer is relatively inactive.</p> <p><u>THUMBS UP!!</u> The farmer continues on a very slow basis to prune his fruit orchard and brush cutting the shrubbery in between trees</p>
9	Williams	Chad	<p><u>THUMBS UP!!</u> Still is utilizing the use of marigold plants and having received the telefund eco friendly inputs is looking forward to utilizing them in the management of his 2012 farm program which will commence in the rainy season.</p>
10	Bernard	Nigel	<p><u>THUMBS UP!!</u> Mr. Bernard intends to adopt a strictly eco-friendly approach. Is eagerly awaiting the results of his soil test and will establish part of his farm solely based on the use of eco friendly farm inputs and compare the results based on his conventional farming approach which uses non eco friendly farming inputs.</p>
11	Applewhite	Kurn	<p>Continued maintenance of mangoes, oranges and barbadene (currently being harvested),</p> <p><u>THUMBS UP!!</u> The desired objective is to change the management approach from one that is routine more of a calendar approach to one where interventions are based on information gathered through an agro-eco-system analysis. Perhaps the factor in relative minimum here is the collection and recording of data. With enhanced knowledge on ecological crop management and with the availability of the bio-safe inputs it is intended to guide the farmer with his present short term initiative in this direction. Thus the plan for the pakchoi production is to enhance the drainage and fertility, to use as far as possible the HNV inputs as the pest management strategy and to manage unwanted vegetation with an organic mulch of news paper and bamboo leaves.</p>
12	Walter	Dave	<p><u>THUMBS UP!!</u> Crop management consist primarily of brush cutting to maintain his short and long term crops and the incorporation of the Marigold plants</p>

Source: Technical Team visits in November / December 2011

3.5 Environmental Integrity

Table 4 – Maracas/ St Joseph Farmers’ views on maintaining environmental integrity and a summary of their progress in adopting eco friendly farming practices

	Last Name	First Name	Activities
1	Farrier	Holasco	<u>THUMBS UP!!</u> Mr. Farrier practices continue to contribute to building a strong program of soil quality which is very beneficial to ensuring environmental integrity. There is a mix of activities on his farm but all that is required is general maintenance. It is a sustainable operation with little impact on eco-stability and the farmer is not reluctant to enhancing his farming system towards the improvement of its natural value. He was invited but did not attend the inaugural meeting on the establishment of the network.
2	Reyes	Andrea	<u>THUMBS UP!!</u> Has received training in the use of the A Frame. This farmers new planting program will benefit from contour planting which minimizes soil erosion and will contribute towards maintaining environmental integrity. Currently this farmer could score high using the HNV indexing system and were never averse to the concept of sustainable farming. Additionally the individual who manages the farm has not been the one attending meetings. However I think that they can make a valuable contribution to the development of this initiative and the establishment of this eco producer’s network.
3	Audain	Terrence	<u>THUMBS UP!!</u> From inception, Mr. Audain was willing to make the transition to a more sustainable approach and in reality had already begun the production of organic plantains. He has now strengthened his resolve and is encouraging others to make the change. He is willing to do the on-farm research and fortunately because of his alternate means of generating income, he not being a full time farmer, he is not averse to taking risks.
4	Sinanan	Cathryn	<u>THUMBS UP!!</u> Has received training in the use of the A Frame. This farmers new planting program will benefit from contour planting which minimizes soil erosion and will contribute towards maintaining environmental integrity. Currently this farmer could score high using the HNV indexing system and were never averse to the concept of sustainable farming. Additionally the individual who manages the farm has not been the one attending meetings. However I think that they can make a valuable contribution to the development of this initiative and the establishment of this eco producers network..
5	Herbert	Yusuff / Bruce	<u>THUMBS UP!!</u>

			<p>This farmer's lifestyle has been about sustainability. He has a proper understanding of the recycling concept and about the utility of all materials on the farm. There is hardly any loss of biomass; even the stones gathered during bed preparation have been utilized for retaining soil and for construction. He has been an easy farmer to work with and is quite willing to work towards enhancing the sustainability of his farm operations and to train others. Although invited he did not attend the inaugural meeting of the network which appear related to some personality problems. Thus there is still some need to work on attitude.</p> <p><u>THUMBS DOWN!!</u></p> <p>Mr. Herbert still continues to utilize non friendly chemical farm inputs in his program. With continued dialogue this will change.</p>
6	Thompson	Leon	<p><u>THUMBS UP!!</u></p> <p>This is an interesting personality who through our interaction appears to fully appreciate the need for sustainable approaches but is not prepared to take too many risks, being a full time operator, not being assured of the effectiveness of eco-friendly management systems. He has demonstrated that he is not averse to conducting research as long as his livelihood demands can be met. In this light as suggested earlier, we need to work on a system of compensation for farmers who are prepared to test HNV compatible systems considering their investment in time, land and other resources.</p>
7	Applewhite	Wayne	<p><u>THUMBS UP!!</u></p> <p>Continues the usage compost, recycles crop residues as green manure and builds check dams and bench terraces. These actions will make strong contributions towards maintaining environmental integrity. This farmer is willing to try strict HNV compatible products on part of his farm. And compare the results with his traditional farm practices which encourage the use of non environmentally friendly inputs.</p>
8	Padilla	Ryan	<p><u>THUMBS DOWN!!</u></p> <p>Currently this farmer is not very active and based on his approach of leaving parcels of his farm without any vegetative cover on the effect these negative practices not only would they damage the integrity of the environment but would lead to a farm environment that as depleted of any fertile elements.. Still negotiating with him to desist from this activity of clearing, applying harmful herbicides and leaving the soil bare.</p>
9	Williams	Chad	<p><u>THUMBS UP!!</u></p> <p>This farmer is easy to work with and seem amenable to change. The father is more into it full time and may be</p>

			more risk averse, however the home location provides an excellent opportunity to test alternative systems as there are problems and it is also easily accessible. In this regard there was agreement to experiment with the development of a more sustainable approach to producing cabbages at this location. This could be attempted as a component of their next season's program
10	Bernard	Nigel	<u>THUMBS UP!!</u> This farmer has been involved in the discussion on developing more sustainable farming systems from inception and is in no way averse to transitioning. However it seems that he is having some difficulty in getting his program going. He seems pre occupied with a number of other activities some income generation. He participated in the inaugural meeting of the Network of Eco Producers.
11	Applewhite	Kurn	<u>THUMBS UP!!</u> An appropriate query at this stage is to what extent has transitioning to sustainable practices among the farmers taken place; the question is has there been movement. This may not be manifested immediately in changes on the ground, considering all the related challenges, a key one being livelihood concerns, but even by the level and type of conversation. With this farmer one can easily detect that there is the will and he now has the opportunity to test and possibly compare management approaches with the knowledge acquired through the literature provided, the one on one and the group sessions and the availability of HNV compatible inputs.
12	Walter	Dave	<u>THUMBS UP!!</u> There has been continuous interaction with this farmer but it is unclear whether there is a proper grasp of the sustainability concept. He operates next door to a model farm and indeed there is a good relationship between the farmers. With some support it is likely that he would adopt some of the conservation practices but there is need for some work on the attitudinal change.

Source: Technical Team visits in November / December 2011

4 SUMMARY OF MARACAS ST JOSEPH FARMERS

The limited timeframe afforded to the implementation phase of this project, exacerbated by the difficulty to interact with farmers in the Maracas Valley not only because of the inaccessibility of some of the farms but also because of the part time nature of their farming activities, the technical team has made some progress given the challenges of this area in terms of its accessibility due to the areas steep terrain. However, interactions have continued on transitioning to sustainable farming systems and in most instances the responses remain positive. Farmers would like to see continuance of the program and a deepening of the relationship with the foundation. The distribution of HNV compatible inputs took place during this period. This was conceived as genuine commitment by TCF; an indication that the foundation was truly willing to walk the talk. All farmers have now received their inputs and some have already begun using them in their cropping program. It is intended to promote initiatives where they compare these with normal farming practices. However it is continually being emphasized that this is not an input substitution program. Although farmers are coming to closure of the current season's production, some have indicated that they are willing to hold the inputs for next season's production when they will be better able to conduct some research on the effectiveness of the inputs. There was continued work on the use of the A-frame. Some farmers have already begun terracing their land utilizing the A-frame. Additionally a workshop is to be set up where farmers will participate in the construction and calibration of A-frames. Materials for this project will be supplied by TCF. To promote further interaction and sharing of experiences among the farmers in the Valley a "Network of Eco-producers" was organized. Continued observation and capture of footage on ongoing projects were also conducted

5.0 CAURA VALLEY FARMERS

5.1 General

As 2011 comes to an end and the Caura Valley farmers approach the dry season, the farming community in the Caura valley that have direct access to the Caura river have the opportunity to continue farming in the dry season (year round production). The dry season is better than the rainy season for farming once adequate water is available. The main reasons cited are; fewer incidences of pest and diseases in the environment, significantly less probability of heavy rainfall, which may result in flooding, water logging and the heavy water droplets beating off flowers resulting in significantly less fruit set contributing to lower yields.

Quoting from the third progress report; chapter 5, reference was made to this observed behavior amongst the Caura valley farmers, where the farmers whom have direct access to the Caura river and engage in year round production had significantly more farm investment on their farms vs. the farmers whom did not have direct access to the Caura river thus only farming in the rainy season. The technical team has begun discussions with the farmers who don't have direct access to the river to introduce grow box technology particularly in the dry season as a way to maximize year round production because the grow box system can be supported by WASA as its main water source which affords a reliable supply year round in the Caura valley.

Another area that the technical team would want to work with the Caura valley farmers is encouraging contour farming on the farms that have hilly topography.

The Tumbasson road farmers have continued the process of forming and registering themselves into a farmers association with help from the Trinidad and Tobago Agri Business Association (TTABA).

During this time period, categorized as the concluding phase of this project during the last one and a half months the technical team visited the Caura Valley and engaged in the following activities

- VIII. Distributed the HNV compatible inputs requested by participating farmers in the Caura Valley
- IX. Distributed more one-page bulletins in the eight areas on ecologically friendly farming practices
- X. Continued Sharing and adjusting farm plans (sustainable farming practices with farmers) on soil quality, land preparation, crop management and environmental integrity as an ongoing exercise
- XI. Farmers in the Caura Valley area mainly from Tumbasson road were in the process of formalizing their farmer's group association.
- XII. Captured more footage on farming activities in the Caura Valley

5.2 Soil Quality

Table 5 –Notes on Caura Farmers’ practices aimed at building and maintaining soil quality

	Last Name	First Name	Activities
1	Heera	Krishna	<p><u>THUMBS UP!!</u> Mr. Heera is eagerly awaiting the results of his soil test. Mr. Heera was able to recover some of his papaya crop by staking them.</p> <p><u>THUMBS DOWN!!</u> Mr. Heera was not provided with any inputs because of his reluctance to try any and also because of the stage of his papaya field. As noted in previous reports, his field is almost three years old and so any organic input utilized at this stage will not give a fair result. Mr. Heera believes in his ecologically non friendly inputs, His soil test should present some interesting findings.</p>
2	Tannis	Clement	<p><u>THUMBS UP!!</u> Mr. Tannis is eagerly awaiting the results of his soil test. Mr. Tannis continues to recycling crop residues as green manure and applies ash to the soil. Mr. Tannis has received HNV compatible inputs and the manure and compost provided would go towards building his soil quality.</p>
3	Howard	Vivian	<p><u>THUMBS UP!!</u> Mr. Howard is eagerly awaiting the results of his soil test. He continues to recycling crop residues as green manure and applies ash to the soil. He has received HNV compatible inputs and the manure and compost provided would go towards building his soil quality.</p>
4	Balgobin	Kevin	<p><u>THUMBS UP!!</u> Mr. Balgobin is eagerly awaiting his soil test results. He continues to make and utilize compost, in addition to recycling crop residues as green manure. He has received HNV compatible inputs and the manure and additional compost and limestone provided would go towards building his soil quality</p>
5	Ramcharan	Naresh	<p><u>THUMBS UP!!</u> Mr. Ramcharan is very grateful for his soil test and eagerly awaits the results. He continues to recycle crop residues as green manure / mulch. He has received HNV compatible inputs and the manure and compost and limestone provided would go towards building his soil quality.</p> <p><u>THUMBS DOWN!!</u> He continues to use environmentally harmful pesticides on his farm operational plans such as herbicides and its negative effect on building soil quality</p>
6	Ramcharan	Rajendra	<p><u>THUMBS UP!!</u> Mr. Ramcharan is eagerly awaiting the results of his soil test and continues to recycle crop residues as green manure / mulch. He has received HNV compatible inputs and the manure, compost, limestone and new gel provided would go towards building his soil quality.</p> <p><u>THUMBS DOWN!!</u> He continues to use environmentally harmful pesticides on his farm operational plans such as herbicides and its negative effect on building soil quality</p>
7	Haywood	Terrance	<p><u>THUMBS UP!!</u> Mr. Haywood is awaiting the results of his soil test. He continues to recycle crop residues as green manure / mulch. He has received HNV</p>

			compatible inputs and the manure, compost, limestone and new gel provided would go towards building his soil quality. ecological farming practices <u>THUMBS DOWN!!</u> Mr Haywood sometimes uses environmentally harmful herbicides
8	Mohammed	Quddus	<u>THUMBS UP!!</u> Mr. Mohammed is eagerly awaiting his soil test results and continues to recycle crop residues as green manure / mulch and incorporate compost which is continuing to build his soil quality, He has received HNV compatible inputs and the compost, limestone and new gel provided would go towards building his soil quality.

Source: Technical Team visits in November / December 2011

5.3 Land Preparation

Table 6 –Notes on Caura Farmers’ Land Preparation practices

	Last Name	First Name	Activities
1	Heera	Krishna	<u>THUMBS DOWN!!</u> Mr. Heera lost most of his papaya crop due to excessive flooding. He is preparing to replant in early 2012 but has very interest in eco friendly inputs and besides incorporating manure will continue to utilize his mineral non environmentally fertilizers..
2	Tannis	Clement	Mr. Tannis did make some progress with creating bench terraces in preparation for planting citrus and pumpkin and will utilize some of the HNV compatible inputs in the production of these crops where eagerly awaits the progress of these crops particularly the pumpkin.
3	Howard	Vivian	<u>THUMBS UP!!</u> As stated in the previous report, Mr. Howard has intentions of using the inputs provided on recently transplanted barbadine and passion fruit plants. He also indicated that he will strategically mark the plots in which he utilizes the organic inputs so that in this way he will be able to clearly see the results.
4	Balgobin	Kevin	Mr. Balgobin is in the process of preparing a plot for a crop of string bean. He indicated that he will utilize the material inputs on this crop to ensure that it is a totally organic effort. He wants to do this in order to easily identify the results as opposed to other crops he might have used inorganic chemicals and techniques.
5	Ramcharan	Naresh	<u>THUMBS UP!!</u> Mr. Ramcharan intends to utilize the HNV compatible inputs on a new crop of eggplant. He agreed he would only utilize organic remedies on this crop, allowing him to a fair comparison to his other plots. <u>THUMBS DOWN!!</u> Mr. Ramcharan is familiar with some of these HNV compatible inputs since he has used them in the past. Nevertheless, he stated

			that in order to get the results he desired some inorganic inputs must be used.
6	Ramcharan	Rajendra	<u>THUMBS UP!!</u> MR. Ramcharan displays knowledge of the advantages in sustainable farming practices. To this end, Mr. Ramcharan has recently planted pumpkins and cabbage and it is on these crops he intends to use the HNV compatible organic inputs.
7	Haywood	Terrance	Mr. Haywood is in the process of transplanting some tomato seedlings and intends to use the material inputs to assist him with this crop. Since the inputs may not be able to sustain his entire crop, he has agreed to clearly identify a plot where he would use the organic materials. In this way he would be able to compare results.
8	Mohammed	Quddus	<u>THUMBS UP!!</u> Mr. Mohammed indicated to me that because of recent inclement weather some of his farm plans have been hindered. He plans to set up a nursery of chive, parsley, celery and fine thyme. It is here he intends to use the material inputs provided.

Source: Technical Team visits in November / December 2011

5.4 Crop Management

Table 7 –Notes on Caura Farmers’ Crop Management practices

	Last Name	First Name	Activities
1	Heera	Krishna	Mr. Heera was able to salvage some of his papaya crop and has staked the recovered ones <u>THUMBS UP!!</u> Mr. Heera also received additional information bulletins on soil conditioning, preventing soil erosion and companion planting
2	Tannis	Clement	<u>THUMBS UP!!</u> Mr. Tannis also received additional information bulletins on soil conditioning and preventing soil erosion. And polyculture
3	Howard	Vivian	<u>THUMBS UP!!</u> Mr. Howard also received additional information bulletins on soil conditioning and preventing soil erosion.
4	Balgobin	Kevin	Mr. Balgobin also received more information bulletins on soil conditioning and preventing soil erosion and companion planting..
5	Ramcharan	Naresh	<u>THUMBS UP!!</u> Mr. Ramcharan also received more information bulletins on soil conditioning and preventing soil erosion and companion planting... <u>THUMBS DOWN!!</u> Continues to use environmentally harmful herbicides in his agronomic program

6	Ramcharan	Rajendra	<p><u>THUMBS UP!!</u> Mr. R. Ramcharan also received more information bulletins on soil conditioning and preventing soil erosion and polyculture</p> <p><u>THUMBS DOWN!!</u> Continues to use environmentally harmful herbicides in his agronomic program</p>
7	Haywood	Terrance	<p><u>THUMBS UP!!</u> Mr. Haywood also received more information bulletins on soil conditioning and preventing soil erosion and polyculture</p> <p><u>THUMBS DOWN!!</u> Continues to use environmentally harmful herbicides in his agronomic program</p>
8	Mohammed	Quddus	<p><u>THUMBS UP!!</u> Mr. Mohammed continues to boasts of zero use of inorganic fertilizers and pesticides and continues to achieve high production levels a testament that aiming to maintain the integrity of the environment by adopting good eco friendly farming practices will not sacrifice farm productivity</p> <p>Mr. Mohammed also received more information bulletins on soil conditioning and preventing soil erosion and polyculture</p>

Source: Technical Team visits in November / December 2011

5.5 Environmental Integrity

Table 8 – Caura Farmer’s views on maintaining environmental integrity and a summary of their progress in adopting eco friendly farming practices

	Last Name	First Name	Activities
1	Heera	Krishna	<p><u>THUMBS DOWN!!</u> .From the on set it was always going to be a challenge persuading Mr. Heera that an eco-friendly approach to agriculture was a more sustainable one. He has an established field of papaya at high production levels; which is solely as a result of the use of inorganic chemicals. Therefore it was easier for him to visualize his current yields rather than an organic and sustainable approach which he can benefit from in the future. Despite this, Mr. Heera was always willing to share his experiences and was very open in accessing the technical literature available (Information Bulletins).</p> <p><u>THUMBS UP!</u> Mr. Heera received the information bulletins requested Hopefully a soil test may reveal the beginnings of some of these negative effects. This farmer is working against maintaining environmental integrity.</p>

2	Tannis	Clement	<p><u>THUMBS UP!!</u> Mr. Tannis was always of the opinion that an eco-friendly approach to agriculture was the direction in which he intends to go. He understands its benefits and clearly displayed this during our interactions. He currently utilizes some of the techniques associated with this organic approach (compost, recycling crop waste into the soil) and vows to adopt even more of these techniques learnt from the information bulletins provided.</p>
3	Howard	Vivian	<p><u>THUMBS UP!!</u> At the start of the project Mr. Howard demonstrated a fair understanding of the organic approach to agriculture and the benefits associated with it. Over the four months of interacting with him, his knowledge base broadened to the point where he declared that he would adopt a completely organic approach to agriculture. This was a significant declaration.</p>
4	Balgobin	Kevin	<p><u>THUMBS UP!! / THUMBS DOWN!!</u> Mr. Balgobin is at a cross roads on how his practices contribute towards the maintenance of environmental integrity. He continues to build soil quality but at the same time is counter productive to this activity by using inorganic fertilizers and pesticides. Is willing to tilt towards maintaining environmental integrity, the provision of the telefund inputs² along with the provision of information bulletins should contribute. Generally Mr. Balgobin has demonstrated a good understanding of the benefits associated with an organic and sustainable approach to agriculture during our interactions. His main concern continues to be the cost of some of the organic inputs (fertilizers, fungicides etc.) as compared to the prices of the inorganic ones. Despite this he indicated that he will adopt as much as possible of the organic remedies which he can afford since he understands the long term benefits of its use.</p>
5	Ramcharan	Naresh	<p><u>THUMBS DOWN!!</u> Mr. Ramcharan predominantly is focused on maintaining his farm via mainly using very harmful pesticides and inorganic fertilizers to the flora and fauna. His practices work against maintaining environmental integrity and in the medim and long term would prove costly to himself and the environment.</p>
6	Ramcharan	Rajendra	<p><u>THUMBS UP!!</u> Continues to uses compost, recycles crop residues as green manure. <u>THUMBS DOWN!!</u> Mr. Ramcharan predominantly is focused on maintaining his farm via mainly using very harmful pesticides and inorganic fertilizers to the flora and fauna. His practices work against maintaining environmental integrity and in the medim and long term would prove costly to himself and the environment.</p>
7	Haywood	Terrance	<p><u>THUMBS UP!! / THUMBS DOWN!!</u> Mr. Haywood is at a cross roads on how his practices contribute towards the maintenance of environmental integrity. He continues to build soil quality but at the same time is counter productive to this activity by using inorganic fertilizers and pesticides. Is willing to tilt towards maintaining environmental integrity, the provision of the telefund inputs³ along with the provision of information bulletins should contribute. Hopefully with continued interactions and his commitment to establish a demonstration plot based</p>

² The use of the inputs can assist in building confidence on there use as pest and disease suppressant products

³ The use of the inputs can assist in building confidence on there use as pest and disease suppressant products

			solely on HNV compatible inputs would allow him to develop more confidence in the eco logically friendly approach to farming and fully embrace this culture.
8	Mohammed	Quddus	<p><u>THUMBS UP!!</u></p> <p>Having the highest HNVI score among all participating farmers; during our interactions over the four month period it was easy to understand why this was so. Mr. Mohammed demonstrated a comprehensive understanding of an eco-friendly approach to agriculture and its associated benefits. He continues to boast of high yields without the use of any fertilizers or pesticides. All of his remedies are organic in nature for example, recycling crop waste back into the soil, using a brush cutter to manage his weeds, using companion crops and crop rotation. He has also indicated his willingness to share his knowledge if given the opportunity. Mr. Mohammed is truly on his way in becoming a 'model farmer'.</p>

Source: Technical Team visits in November / December 2011

6 SUMMARY OF THE CAURA VALLEY FARMERS

Despite the limited timeframe afforded to the implementation phase of this project and this project coming to and end in December 2011, the technical team has helped to facilitate some positive activities mainly:

- ✚ Introducing the HNV Index concept to farmers particularly as how it relates to their farming livelihood and their farming environs
- ✚ Facilitating the MFPLMA to conduct soil tests for all the farmers who are part of the implementation phase of the project,
- ✚ Distributed a significant amount of bulletins on eco friendly farming practices
- ✚ Gave good recommendations on how to control various pest and disease problems
- ✚ Functioned as a good listener when the Tumbasson road farmers were thinking about forming a farmers association
- ✚ The facilitation of the project's Technical Advisor interacting with farmers in the Caura valley
- ✚ Distributing TCF HNV compatible inputs for crop production

It was a pity though that the implementation phase of this project will conclude at the end of December 2011, because good solid relationships are now beginning to develop based on interactions over the last 4 – 5 months on transitioning to sustainable farming systems and in most instances the responses remain positive. Farmers would like to see continuance of the program and a deepening of the relationship with the Cropper foundation.

7.0 CONCLUSION

This four month exercise has been a rewarding experience for the technical team. Relationships were developed and nurtured based on both parties namely the farmers and the technical team sharing a deep appreciation of the need for transitioning to more sustainable farm practices among the majority of farmers in the both study areas particularly with TCF intervention. There has been acquisition of new knowledge, changes in attitude and capacity enhancement. These developments have propelled or reinforced their willingness to enhance current practices or adopt new ones. Because of impending closure of this phase of the program it is difficult to plan follow up. Once funding becomes available one can anticipate positive changes during the upcoming production cycle especially as work in the field is currently on going. TCF can work more closely with farmers in developing their farm plans making them more compatible with a HNV approach. In the interim we need to develop some strategy to maintain communication. The Network of Eco-producers and the Tumbasson farmers Association could be of major significance in this regard. The timing is crucial as farmers may now be in planning mode for next season's production which may be guided by the current season's experiences, the relationship with TCF and the eco-centered interactions could now have an influence in shaping future projections.

In addition the team identified some of the major concerns by farmers in both valleys as follows:

- ✚ The higher prices for HNV compatible inputs vs. the non eco friendly inputs.
- ✚ No significant price difference at the farm gate and municipal markets for products produced strictly on HNV compatible inputs vs. products produced using harmful environmentally non friendly inputs.

These two challenges would have to be adequately addressed as part of the process of improving livelihoods for farmers in both study areas.