

# FOOD AND ENTERPRISE DEVELOPMENT PROGRAM FOR LIBERIA (FED)

FIFTH QUARTERLY REPORT: OCTOBER - DECEMBER 2012



This publication was produced for review by the United States Agency for International Development. It was prepared by DAI/FED.

# **FOOD AND ENTERPRISE DEVELOPMENT (FED) PROGRAM FOR LIBERIA**

## **FIFTH QUARTERLY REPORT: OCTOBER - DECEMBER 2012**

<b>Program Title:</b>	<b>Food and Enterprise Development Program for Liberia (FED)</b>
<b>Sponsoring USAID Office:</b>	<b>USAID/Liberia</b>
<b>Contract Number:</b>	<b>669-C-00-11-00047-00</b>
<b>Contractor:</b>	<b>DAI</b>
<b>Date of Publication:</b>	<b>January 15, 2012</b>
<b>Compiled by:</b>	<b>Nelson Kanneh</b>

<b>COVER PHOTO:</b>	Farmer Peter Dahn and his wife harvesting cabbages at Kpein Demo Site, Nimba County.
---------------------	--

### **DISCLAIMER**

The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

## ACRONYM

AEDE	Agency for Economic Development and Empowerment
APDRA	Appaloosa Distance Ride Association
ASRP	Agricultural Sector Recovery Program
AYP	Advance Youth Program
BSTVSE	Bureau of Science, Technology, Vocational and Special Education
BWI	Booker Washington Institute
CAC	County Agriculture Coordinator
CARI	Center for Agriculture Research Institute
CBO	Community Base Organization
COR	Contracting Officer Representative
COSEO	Community Sustainable and Educational/Empowerment Organization
COTR	Contracting Office Technical Representative
CRS	Catholic Relief Service
DAI	Development Alternatives, Inc.
DQA	Data Quality Assessment
ECOWAS	Economic Community of West African States
ED	Enterprise Development
EHELD	Excellence in Higher Education for Liberian Development
EMMP	Environmental Mitigation and Monitoring Plan
FAO	Food and Agriculture Organization
FED	Food and Enterprise Development
FtF	Feed the Future
FY	First Year
GAP	Good Agricultural Practices
GBCCC	Grand Bassa County Community College
GIS	Geographic Information Systems
GPS	Global Positioning Systems
ICT	Information and Communication Technology
IEE	Initial Environmental Examination
IFDC	International Fertilizer Developmental Center
IITA	International Institute of Tropical Agriculture
IQC	Indefinite Quantity Contract
IT	Information Technology
LAUNCH	Liberia Agriculture, Upgrading Nutrition & Child Health
LBBF	Liberian Better Business Forum
LCCC	Lofa County Community College
L-MEP	Liberia Monitoring and Evaluation Program
LoL	Land O'Lakes
LSU	Louisiana State University
LTTA	Long Term Technical Assistant
M&E	Monitoring and Evaluation
MDF	Market Development Fund

MoA	Ministry of Agriculture
MoCI	Ministry of Commerce and Industry
MOE	Ministry of Education
MOU	Memorandum of Understanding
MSME	Micros/Small and Medium Enterprise
MTTA	Medium Term Technical Assistant
NAD	National Agriculture Diploma
NCCC	Nimba County Community College
NGO	Non-Governmental Organization
PERSUAP	Pesticide Evaluation Report and Safer Use Action Plan
PIDS	Performance Indicator Database System
PUA	Peri Urban Agriculture
R&R	Rights & Rice Foundation
RFQ	Request for Quotation
RFTOP	Requests for Task Order Proposal
SBA	Subah Belleh Associates
SEAS	Strengthening Agricultural and Advisory Services
SME	Small Medium Enterprise
SMS	Subject Matter Specialists
STTAs	Short Term Technical Assistants
TVET	Technical Vocational Education and Training
UN	United Nations
USAID	United States Agency for International Development
USDA	United States Department for Agriculture
VES	Vocational Education Specialist
VMHS	Voinjama Multilateral High School
VSAT	Very Small Aperture Terminal
VTNFES	Vocational Training and Non-Formal Education Specialist
VTTS	Vocational Teacher Training specialist
WAD	West African Dwarf
WOFPD	Women Organization for Peace and Development

## Contents

<b>ACRONYM .....</b>	<b>2</b>
<b>Geographic Reach of FED .....</b>	<b>6</b>
<b>Background .....</b>	<b>6</b>
<b>Summary .....</b>	<b>8</b>
<b>COMPONENT ONE: INCREASED AGRICULTURAL PRODUCTIVITY .....</b>	<b>11</b>
<b>Task 1.3: Input Supply Interventions .....</b>	<b>11</b>
Seedling producers' achievements in FY-2012: .....	12
Main Accomplishments During Quarter .....	12
Training of agro-dealers in Margibi and Bong Counties .....	13
Profiling agro-input dealers.....	<b>Error! Bookmark not defined.</b>
Agro-inputs Display by Wience.....	14
<b>Task 1. 4 Agriculture Extension .....</b>	<b>15</b>
<b>Task 1.5 Increased Productions and Profitability of Quality Rice .....</b>	<b>15</b>
<b>Task 1.6 Increased Productions and Profitability of Quality Cassava .....</b>	<b>16</b>
<b>Task 1.7 Peri-urban Vegetable Production .....</b>	<b>20</b>
Mechanization .....	22
<b>Task 1. 8 Goat Interventions .....</b>	<b>25</b>
<b>COMPONENT TWO: STIMULATE PRIVATE ENTERPRISE.....</b>	<b>27</b>
Activity 2.3.A.i Profile Commercial Buyers and Activity, 2.3.A.ii.a – Profile and Select Lead Producers, FBOs, and Enterprises .....	27
Activity 2.3.A.ii.e – Targeted Technical Support .....	27
Activity 2.3.B.vi – Increase Enterprise Registration and Local Government Engagement .....	29
<b>Task 2.4 Use of ICTs in Stimulating Liberian Agri-business.....</b>	<b>30</b>
Mobile Data Collection Training .....	30
Mobile Money Workshop .....	30
Enterprise Development and GPS.....	30
MoA ICT Assessment .....	30
Enterprise Development Activities for the next quarter.....	31
<b>COMPONENT THREE: BUILD LOCAL HUMAN CAPACITY .....</b>	<b>32</b>
Task 3.1 Creating Centers of Excellence .....	32

Lofa County Community College .....	34
Grand Bassa County Community College .....	35
Ministry of Education .....	36
<b>Monitoring and Evaluation .....</b>	<b>41</b>
Table 1: M&E Activities for October-December 2012.....	42
<b>Monitoring and Evaluation .....</b>	<b>43</b>
Field Travel.....	43
Overall Findings.....	43
Indicator Status Table (October – December 2012).....	44
<b>MDF Activities Summary from October - December, 2012.....</b>	<b>45</b>
<b>FED STTA/LTTA October - December 2012 .....</b>	<b>Error! Bookmark not defined.</b>
<b>Project Management and Administration.....</b>	<b>58</b>
<b>Environmental Compliance Monitoring and Reporting.....</b>	<b>59</b>
<b>FED Year 2 Work plan Roll out Workshop .....</b>	<b>61</b>
<b>Appendix I: Success Story .....</b>	<b>62</b>
BWI Compost Curricula Increases Yield.....	62
FED Graduates 57 Agriculture Interns.....	63
Vetiver Thwarts Soil Erosion Problems.....	64
<b>Appendix II: Profiling agro-input dealers.....</b>	<b>Error! Bookmark not defined.</b>
<b>Appendix III: Distribution of extension materials .....</b>	<b>65</b>
<b>Appendix IV: November-December 2012 Agro-dealers’ capacity building.....</b>	<b>Error! Bookmark not defined.</b>
<b>Appendix V: Farm Development Proposal.....</b>	<b>Error! Bookmark not defined.</b>
<b>Appendix VI: National Agriculture Diploma Curriculum .....</b>	<b>Error! Bookmark not defined.</b>



[illegible]

## Background

The Food and Enterprise Development (FED) Program for Liberia is a USAID-funded initiative that began in September 2011. Through implementing a Liberian strategy which incorporates women and youth, FED is helping the government of Liberia and the country achieve food security — in terms of food availability, utilization, and accessibility — by building an indigenous incentive structure that assists agricultural stakeholders to adopt commercial approaches.

This incentive structure is being built upon:

- Improved technology for productivity and profitability;
- Expanded and modernized input supply and extension systems;
- Commercial production, marketing, and processing;
- Enterprise Services; and
- Workforce Development.

FED's activities work with the Ministry of Agriculture (MoA) and the private sector to link communities to agricultural inputs (including improved seeds), extension services, nutritious food, processing services, market information, transportation, credit, and appropriate education, training, and enterprise support services.

Over the life of the five-year FED program, expanded market linkages will lead to income and job growth and major increases in the production, processing, marketing, and nutritional utilization of rice, cassava, vegetables, and goats in Bong, Lofa, Nimba, Grand Bassa, Montserrado, and Margibi counties. These counties are being targeted in the context of regional development corridors that foster intra- and inter-county commerce, simultaneously improving food availability and access for all Liberians.

FED's methodology is market-led, value chain-driven, continuously dedicated to indigenous capacity building, and specifically focused on benefiting Liberia's women and youth. FED's approach aims to be collaborative, catalytic, and driven by the goals and objectives of our partner clients. It will lead to increases in incomes for rural households, new employment opportunities for Liberians, increased access to food and improved household dietary diversity scores for food-insecure Liberians, and the adoption of improved inputs, farming practices, and technologies which boost agricultural productivity.

FED is implemented by six partners including: Development Alternatives, Inc. (DAI), the Cadmus Group, the Center for Development and Population Activities, International Fertilizer Developmental Center (IFDC), Louisiana State University, and Winrock International.



## Summary

### Increased Agriculture Productivity

During this quarter, activities in Bong, Nimba Margibi, Montserrado, Grand Bassa, and Lofa counties, included a series of trainings and field visits. The capacity building included: training of vegetable seedling producers at Booker Washington Institute, training of agro-dealers in Bong, an Integrated Soil Fertility Management (ISFM) training in a number of locations with a total of 355 cassava producers and extension officers from the MoA, and a training of 50 Peri Urban farmers (33 males and 17 females) from the Yarnquellah and Air Town demonstration sites where they were taught how and when to harvest carrots and bitter balls. The training also demonstrated the selection of appropriate plants during harvest for seed saving.

The main objectives of the agro-dealer training session in Bong were to develop the capacity of agro-dealers on agro-input knowledge, handling and use, and to promote the establishment of four sales points in a pilot phase in FY-2013 (two in Bong and two in Nimba counties) through capacity building in investment plan development and the management of small input supply shops.

A rice harvest took place on October 23, 2012 at Women's Organization for Peace and Development (WOFPD) site in Kahie, Kolahun District, Lofa County. During the harvest of the NERICA 2 rice variety, farmers expressed considerable satisfaction with the NERICA 2 rice variety because of its short growing duration. Harvest activities are continuing until the end of January 2013 in all four counties. The data for the rice yield survey was collected, and the results will be reported in the February 2013 monthly report.

Insect damage, iron toxicity, water management, and some nutrient deficiency problems were seen to be the main challenges at the rice demonstration sites. Diopsis, case worm and African rice gall midge were the main insects observed at the demonstration sites in Bong and Nimba.

Fifty one groups have been identified for the 2013 vegetable production in the six counties (Montserrado, Margibi, Bassa, Nimba, Bong and Lofa). Group sites are being cleared and some exotic seeds, such as okra and collards, have been sown both on nurseries and in the field. FED is currently in the process of procuring other local seeds e.g. hot pepper, bitter ball, etc.

An innovative technology for removing the husk from paddy rice was fabricated in a private metal workshop in Monrovia with the support of FED consultant, Mory Thiaw. This rice processing technology is lower in cost, lighter in weight, and more energy efficient than other intermediate-scale rice dehullers. Unlike other dehullers, it does not remove the bran from the paddy rice, making the consumption of the resulting dehulled rice more nutritious. To further address the post-harvest problems faced by farmers, a low cost parboiling drum was fabricated and demonstrated along with the impact rice dehuller in Neebien, Nimba County. During the parboiling exercise, farmers were taught the entire process. They expressed satisfaction and interest because of the low cost and high capacity of the technology.

The Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP) has been approved and FED is in the process of drafting its insects and pests control procedure which will help in controlling pest and insect attacks.

Implementation of the Goat Pass-on Schemes began in three (Nimba, Lofa, and Bong) of the four FED focus counties. Responses to a public solicitation for farmers willing and able to serve as lead farmers in Goat Pass-on

Schemes were evaluated, and based on extensive field site visits and interviews of short-listed candidates, twelve lead farmer associations have been selected (five each in Nimba and Lofa counties, and two in Bong County) for participation in the goat pass on scheme program.

The goal of the Goat Pass-on Scheme and genetic improvement program is to improve returns to goat farmers by addressing genetic, health, and husbandry constraints. An estimated 15-16,000 sheep and goats are imported annually for sale in Liberia as meat. Currently, average carcass weight of the Liberian West African Dwarf goats is 9kg, while the Gambian WAD goats average is 13-14kg. Goats sell at twice the price of beef in supermarkets, importing 20,000 live Gambian goats' equals a minimum of 100 ton extra goat meat per year

### **Stimulate Private Enterprise**

During this quarter, approximately 900–1,000 stakeholders' surveys across the six FED counties of operation were completed by the Subah Belleh Associates (SBA), a local service provider. The total number of interviews conducted exceeded 500. SBA prepared a draft report of their findings by December 7, 2012. A presentation of their findings will be conducted the week of January 21, 2013.

The evaluation of the process for business plans and applications in response to the Enterprise Development Expression of Interest is still under review. Fourteen of the applications are participants that benefited from the FED six-week long mentorship program. An additional 15 concept notes and applications are being reviewed for possible MDF assistance funding.

Rights & Rice Foundation (R&R), an IQC holder, is currently conducting the first round of Organization Strengthening training for nine groups (267 participants, 189 female & 78 male) in Bong, Lofa, Nimba, and Grand Bassa counties. To date, R&R has completed the training for two groups in Bong County and two groups in Grand Bassa. Training with two groups in Nimba County began December 10, 2012 and training for two groups in Lofa County will begin January 6, 2013.

FED, in collaboration with MoCI, has conducted a joint outreach activity to communicate policy reform and fee standardization of the business formulization process and to introduce authorized agents in each of FED's six counties for SMEs and agriculture producer groups. The campaign aired jingles in nine dialects on 15 local county radio stations followed by six town hall meetings and the distribution of flyers detailing the formulization process and fees. The first town hall meeting was conducted in Grand Bassa County on November 28, 2012 with the participation of 180 attendees, MoCI representatives, and FED staff. The campaign continued in Bong on December 4 with 120 attendees and in Nimba on December 6 with 130 attendees, Montserrado on December 13 with 252 attendees and Margibi on December 15 with 88 attendees and wrapped up in Lofa on December 18 with 79 attendees. The overall attendees for the campaign were 887 which constituted 92% of the targeted number 960 (100%).

### **Build Local Human Capacity**

FED ended Phase One of the Internship Program which ran from August – November 2012 with 57 interns completing their on the job training at various institutions of work. The purpose of FED's internship program is to create the opportunity for senior students, graduating seniors, and recent graduates with interest in the agriculture and business sectors to translate their classroom learning into field practice. Students also have the opportunity to gain hands-on practical knowledge and experience as well as the required technical skills for the labor market. In addition, the program hopes to sustain employment and self-employment opportunities through mentorship and specific training, combined with the training at various enterprises and non-governmental institutions.

In Phase One, 57 interns, consisting of 38 agriculture and 19 business students were placed with 20 institutions in the private sector. Of the twenty institutions that provided opportunities for the internship, 13 are local businesses, 6 farming enterprises, and 1 an International Partner, UN Food and Agriculture Organization (FAO).

On November 27, 2012 the Closing ceremony for the FED Internship program was celebrated. In attendance were the 57 internship students, the FED Chief of Party, Jonathan Greenham, Dr. Walter Wiles of the University of Liberia, Morris Gray of Booker Washington Institute, the president of the United Methodist University, and the Internship partner from EHED, James Mulbah. Interns were competitively selected from students attending the University of Liberia, the United Methodist University, Booker Washington Institute and the Nimba County Community College. Dr. Kimmie Weeks, Executive Director of Youth Action International (YAI) gave a motivational speech highlighting his youthful experiences leading to his success with his current organization, YAI.

### **Program Management**

The review of the Environmental Mitigation and Monitoring Plan (EMMP) is near completion and selected site visits were held at FED's PUA unit in Yanquellie and FED's MoA demonstration site in Margibi County. The goal of these field visits was to reinforce FED's position on best management practices for agriculture productivity. Farmers were assessed in their knowledge acquired in managing the impact of agricultural activities from ongoing trainings.

The PMP and Workplan have been under intensive review and discussion during this Quarter, with the input of USAID, including Surendra Bhatta, Ken Hasson, Timothy Ntanda and Laura Arneson.

## COMPONENT ONE: INCREASED AGRICULTURAL PRODUCTIVITY

### *Project Planning*

As part of the annual workplanning process, at the request of the COR, the Component One team developed specific gantt charts for their value chains. These gantt charts outline the activities that will be undertaken to contribute to the Year Two annual workplan.

### **Task 1.3: Input Supply Interventions**

Through FY 2012, FED has been working with 4 trainers of vegetable seedling producers in its PUA activities in Margibi and Montserrado. The four trainers in turn trained 17 vegetable seedling producers (two dropped out), who are currently selling seedlings to vegetable growers in Margibi and Montserrado. The PUA team plans to continue training new seedling producers in FY-2013. It has been suggested that some seedling producers may be interested in expanding their activities to not only provide seedlings, but also perhaps some of the basic agro-inputs that are recommended for vegetable production to their clients, therefore becoming small local agro-dealers.

The first training of trainers session took place at BWI/Kakata on 15-16 November 2012, in collaboration with the Vegetable Specialist and the Peri Urban Agriculture (PUA) team. Four trainers of vegetable seedling



**Photo 1: Local vegetable seedling production at Kakata, November 2012**

producers, who have been working with the PUA team for some time and five seedling producers from the previous season were involved. The training was on how to operate and manage small seedling production units. The seedling producers that were trained with the support of FED are already producing vegetable seedlings and are ready to scale up their seedling production units in 2013.

A second training session took place at Gbarnga/Bong County in the FED office from December 10-11, 2012. Eight agro-dealers, 8 representatives of farmers' cooperative, FED extension staff, four MoA extension personnel and 8 Community Based-extension facilitators were trained in how to strengthen their small input marketing and agri-businesses.

### Seedling producers' achievements in FY-2012:

The Table below summarizes the seedling production and gross income generated from the sale of seedlings

Name	# of seedlings sold (# of seedlings produced)	Income in L\$ (\$US equivalent)
Monica T. Philips	1 148 (1 500)	2 400 LD (\$35)
John G. Baysah	2 000 (4 000)	1 900 LD (\$27)
Joseph B. Sallah	1 200 (NA)	1 850 LD (\$26)
Peter S. Kamara	1 900 (2 600)	1 960 LD (\$28)
Mike Z. Quoitee	Trainer (900)	NA
Albert T. Dixon	Trainer (2 000)	NA
Sam H. Zarme	Trainer (3 000)	3 000 LD (\$43)

The gross income generated from the sales of seedlings ranged from \$26 to \$43 in 2012. The level of income and the seedling production levels (1,500 - 4,000) are still rather low and could result in low motivation to continue.

### Main Challenges with Seedling Production:

Problems with the improved seedling production include: i) a limited knowledge of seedling management; ii) seedling production is labor intensive; iii) youth in the villages are not interested or involved; iv) the cost of labor is high; v) security is a problem; vi) construction materials are scarce; vii) limited capacity for the control of seedling borne diseases; viii) poor seed quality; and ix) poor seedling production capacity.

### Main Accomplishments During the Quarter

- 10 seedling producers, 4 trainers of seedling producers, and 3 FED extension staff from the peri-urban agriculture program were trained in agro-input supply, handling, storage and use at the BWI in Kakata/Margibi County on 15-16 November 2012;
- 12 agro-dealers, 2 FED extension Officers, 4 District Agriculture Officers, 8 Community-based facilitators (under recruitment by FED) and 8 representatives of farmers' cooperatives were trained in input supply management in Bong County (FED Office) on 10-11 December 2012;
- Five investment proposals were submitted by the participants in the input training for review, upgrading and approval by FED;



- 35 bound copies of extension materials (750 pages each) provided by IFDC based on experiences in west African countries and dealing specifically with agro-input knowledge, handling, storage, use and safety measures were distributed to all the participants for use when working with farmers and farmers' associations;
- Wienco put on a display of agro-inputs to help improve the level of knowledge, of agro-inputs and equipment (fertilizer types, mineral amendments, insecticides, fungicides, herbicides, and sprayers);
- Agro-dealers were profiled to gather comprehensive information on those participating in the training program and the specificities of their agro-input businesses

### Training of agro-dealers in Margibi and Bong Counties

Agro-dealers' capacity building is key to the adoption of the technologies promoted for lowland rice, upland rice, cassava, vegetables and small livestock production activities. Agro-dealers are being trained to know about fertilizers and agro-chemicals, the different types, how and when to use them, safety measures, toxicological information on the containers, and guidelines concerning the storage and safe use of fertilizers and agro-chemicals.



**Photo 2 & 3: Nurseries at Kakata, November 2012**

Agro-dealers were trained in establishing sales points at County and District levels, in conducting rapid input demand assessments in target communities, in running small agro-input shops, including record keeping and adequate storage of agro-inputs, and in demonstrating the use of fertilizers and agro-chemicals to the farmers. The intention is that farmers will be linked up to agro-input suppliers for the supply of agro-inputs needed by farmers in FED target Counties, so that the appropriate inputs are available at the community level at the beginning of the cropping season.

Objectives of agro-dealers capacity building involved:

1. Learning about the inputs currently recommended for the promotion of the 4 value chains targeted by FED (quality seeds, fertilizers, agro-chemical for crop pests and disease control);
2. Skills development on how to use them (how to conduct effective small scale site demonstrations);
3. Establishment and management of a small sales points (technical aspects, record keeping);
4. Preparation and use of extension/promotion materials using local materials and local languages;
4. Networking/Team building principles;
5. Working with farmers to achieve FED objectives and sustainability (# of farmers adopting and # of farmers trained by those farmers participating in the demonstrations). The agenda and schedule is presented below:

Agro-dealer Capacity Building Training Workshop			
(Dec. 10, 2012) Day-1	Morning	Content	Responsible
	After noon	Content	Responsible
(Dec. 11, 2012) Day-2	Morning	Fertilizer quality, handling and use	Fofana
		Pesticides quality, handling and use	Nyemba, Wienco
	Afternoon	Review of extension materials	Constant, Doe
(Dec. 11, 2012) Day-2	Morning	How to establish a small input shop	Wienco, Fofana, Constant
	Afternoon	Site visits: local input shops	Galah Toto and team

### Agro-inputs Display by Wienco

Wienco Liberia took part in the agro-dealers' capacity building session and made presentations on input safe use and storage followed by the display of agro-inputs for the participants.



Photo 4 – 7: Display of agro-inputs by Wienco, 2012

## **Task 1. 4 Agriculture Extension**

During this quarter, FED STTA Doe Adovor, had several meetings with the Deputy Minister of Agriculture, Mr. Thomas Gbokie and the Director of Extension, Mr. Edward Perry. During these meetings, they discussed the various gaps in extension delivery in Liberia and the relevance of FED work in helping bridge some of those gaps. The Deputy Minister said due to funding constraints, the ministry has for years struggled to recruit and train national extension staff. As far as the proposed recruitment of 85 new extension staff in FY 2013, Minister Gbokie also noted that funding for that effort has been withheld, however he was still working with the relevant departments to see whether additional recruitment might happen. Ongoing training and refresher programs for current extension staff were also discussed.

On Wednesday November 21<sup>st</sup> STTA, Doe Adovor, met for the second time with the MoA Director of Extension Mr. Perry to update him on progress and discussed some of the challenges within the rice value chain in Liberia, and possible areas of collaboration between MoA and FED. One of the challenges that came up over and over was shortage of staff and lack of technical capacity among the MoA extension staff. The most pressing training needs mentioned within the rice value chain were: farm layout and land preparation, and seed selection.

STTA Doe Adovor collaborated with the FED PUA team to generate extension teaching materials for the PUA module of the MoA/FED extension training program. He also began working on a rice production technical manual which will be completed during his next STTA in early 2013.

## **Task 1.5 Increased Productions and Profitability of Quality Rice**

During the quarter, the rice harvest took place on October 23, 2012 at WOFPD site in Kahie, Kolahum District, Lofa County. During this harvest of the NERICA 2 variety, farmers expressed considerable satisfaction with the NERICA 2 rice variety because of its short growing duration. Harvest activities ended at the end of the quarter in all of the four counties.

Insect damage, iron toxicity, water management and some nutrient deficiency problem were seen to be the main challenges at the demonstration sites. Diopsis, case worm and African rice gall midge were the main insects observed at the sites in Bong and Nimba where insect damage occurred.

An innovative technology for removing the husk from paddy rice was fabricated in a private metal workshop in Monrovia with the support of consultant Mory Thiaw. This rice processing technology is lower in cost, lighter in weight, and more energy efficient than other intermediate-scale rice dehullers. Unlike other dehullers, it does not remove the bran from the paddy rice, making the consumption of the resulting dehulled rice more nutritious. Dehuller testing has exhibited a high dehulling rate (i.e., percentage of dehulled grains to total grains entering the dehuller) from parboiled rice of 95 percent. Hourly capacity was estimated at 100 kg. A report of the results of consumer taste testing is awaited from the Nimba County FED project staff. Results of taste testing in Zanzue in Bong County on the Monrovia-Gbarnga highway suggest that additional pounding to remove the bran may be necessary to make the impact dehuller-processed rice acceptable to consumers. In Foya District, Lofa County, consumers have expressed a preference for brown rice, reporting that it costs more there than polished rice. This preliminary feedback from consumers in various locations suggests that acceptability of the rice produced using the impact dehuller will vary from place to place. Demonstrations and taste testing are scheduled to continue.

To further address the post-harvest problem faced by farmers, a low cost parboiling drum was fabricated and demonstrated along with the impact rice dehuller in Neegeben, Nimba County. During the parboiling, farmers were taught the process. They expressed their satisfaction and interest and commented on the low cost and high capacity of the technology.

During the quarter also the team did a preliminary recruitment of new rice producer groups. To date, 79 farmer groups have been selected; 11 in Grand Bassa, 33 in Nimba, 14 in Lofa, and 21 in Bong counties pending verification.

### **Task 1.6 Increased Productions and Profitability of Quality Cassava**

At the beginning of this quarter ISFM training was conducted in the four main counties (Bong, Grand Bassa, Lofa and Nimba), including classroom sessions and visits to FED-led cassava demonstration plots. The main objectives of the classroom sessions were to interact with cassava producers and county extension workers, share knowledge, and determine knowledge gaps. A total of about 355 cassava producers and extension officers from the MoA and FED participated in the trainings.

Learning targets during the classroom sessions included, but were not limited to, 1) understanding the relevance of proper site and cultivar selection and preparation of healthy planting material for yield improvement, 2) proper land and seedbed preparation and appropriate planting of cassava stem cuttings, 3) recognizing the potential role of proper crop rotation and ISFM in improving soil fertility, 4) understanding the relevance of the proper management of pest, disease and weeds in increasing cassava yield, and 5) the proper handling of cassava tubers in order to reduce post-harvest losses.

The field exercises focused on 1) participatory evaluation of different land and seedbed preparation as illustrated in the FED-led cassava demonstration plots, 2) selection of appropriate and efficient integrated soil, water, and nutrient conservation measures using either contour ridging, mounds and/or cover cropping, and 3) identification and proper selection of pest and disease free planting materials.

Conclusion and lessons learned from the classroom and field training sessions include the following points:

- Building mounds are most appropriate for cassava planting in the lowlands and temporary swamps in order to avoid cassava root rot disease
- Building ridges against the slope significantly reduces soil and water erosion.
- Planting cassava cuttings flat or on mounds is advisable for flat land – but not for erosion control in the slope.
- Planting cassava on mounds or ridges significantly reduces weed infestation.
- Crop rotation using leguminous species in combination with biomass incorporation in ridges and mounds is the most appropriate and efficient organic soil amendment for replenishing soil fertility in the cassava-based cropping systems.
- Participating cassava producers clearly expressed the need to use cassava planting materials that produce leaves and tubers as well (dual purpose cassava varieties).



During the quarter, maintenance work including weeding and soy flour compost application were carried out at the cassava demonstration sites. There were also insects and pest attacks at some of the sites in Nimba, Grand Bassa, and Lofa Counties. Grasshopper has been the main insect attacking the young cassava leaves.

The PERSUAP has been approved and FED is in the process of drafting its insects and pests control procedure which will help in controlling these pests and insects attacks. According to PERSUAP the measure to be employed is Malathion. Malathion is highly effective against orthoptera (e.g., Grasshoppers), which is an important pest and other pesticide options pose significant acute toxicity risk.

Materials for the training of two Monrovia-based metal workshops for the manufacturing of six cassava fiber discharge mills were purchased on November 30, 2012. This technology grinds dried cassava into flour, separating the central cordon fiber from the flour. Unity Metal Constructions and Services, Inc. is the first enterprise trained to manufacture this fiber discharge mill in Liberia.

Progress was made and the first prototype was completed and tested in mid-December 2012. The gasoline model has an output of 150 kg of dried cassava chips per hour – approximately 1 ton/day. It is very light and can be moved from place to place easily. Though minor adjustments need to be made, there are food safety concerns: the hopper and other inner parts of this machine being painted would inadvertently enter into the finished product, thereby posing health risk to consumers. Suggestion for other suitable materials that are in compliant with standard food safety regulations should be explored, even if it involves additional cost.

In keeping with the general workplan of FED, on the Cassava Value Chain, visits to sites in Montserrado County commenced with a team of two FED staff (Chief of Party and Cassava Value Chain Manager) to the New Generation Women Project in Clay Ashland. The team met Ms. Gertrude Cooper (Chairperson) along with members of the New Generation group, and took a brief tour of the initial 38 acres clearing to determine land suitability and mode of operation set out by the group.

The following observations were noted:

- A large portion of the land is very rocky, with a roller-coaster upland and lowland hilly pattern;
- Narrow valley bottoms that are prone to flooding during the rains;
- Marginal vegetation (5-7 years fallow);
- Inadequate labor force to cultivate 75 acres (60 acres cassava; 15 acres vegetables);
- Ideally situated land mass connected by good dirt road (recently graded);
- 700 acres of land available for cultivation – a plus factor for future expansion purpose.

In view of these observations, the New Generation members were advised to scale down this initial phase of the project, make use of the most suitable portion of land near the vegetable site so as to adequately utilize the limited labor force, and also get better returns from their labor, as well as other resources expended to carry out the work.

A follow-up visit on December 13, 2012 was agreed to bring on board the Peri-urban and Enterprise sections to chart a positive way forward.



In fulfillment of a planned trip from the December 11 visit, the Peri-urban Value Chain Specialist and the Cassava Value Chain Manager traveled to the New Generation Women project in Clayashland.

**Observation:**

- Consistent with our findings from the previous visit on the other side of the potential farm site, the soil structure remains the same – shallow topsoil, with underlying rocks. We however found a flat terrain that looked satisfactory for both cassava and vegetables. An on-the-spot physical soil check also confirmed the consistency of our observation.

**Conclusion:** Given the fact that lot of labor has already gone into this area, and not wanting to just abandon the place, we agreed to work in the flat area, but limit FED's participation at this time to just two hectares of demonstration for both cassava and vegetables (one hectare each or so), or for the cassava, up to the amount of mounds erected, and later in the year we will identify some other area on the 700 acres for future expansion. This first phase would just be to introduce modern technology of cassava and vegetables production as well as dissemination of improved planting materials.

We also suggested the cultivation of rice on the remaining portion of the land and maybe, providing them with improved upland rice varieties (NERICA series, with high yields and shorter duration).

The Food and Enterprise Development program, represented by the Vocational Education Specialist and the Cassava Value Chain Manager, visited the Parent Community Agricultural project in collaboration with the Liberia Renaissance Education Complex in Duazhon, Margibi County. The Chief of Party had earlier paid a visit and was encouraged by the initiative undertaken, but due to pressing workload, could not go along this time.

During the meeting, the team met the authorities of the school (Project Manager, Principal, President and Vice President of the PTA) and more than 60 parents and teachers, gathered to deliberate on a way forward in making use of 25 acres of land for school feeding, and also to buttress the agriculture curriculum of the school. This initiative introduces the upcoming generation to the farming world in a positive manner. This was the second month running for such gathering to discuss the concept of a parent community agricultural project. The group unanimously agreed to meet after the holiday season to set a timetable for the commencement of the project.

The FED team informed the body about the need to enter into a memorandum of understanding to spell out each party's obligation in the project, so as to avoid the repeat of negative experiences that occurred in other communities. The community project is designed to work as a group for the purpose of catering to their children's school feeding as well as the upkeep of the school.

The school's curriculum includes agriculture for 4-6 graders. During this farming year, the school cultivated one acre of land into cassava, corn, plantain, and sweet potato. The early crop of corn has already been harvested, whilst the cassava is earmarked for harvest immediately when school resumes after the holidays.

The FED Alternate COR, along with the Cassava Value Chain Manager, and Mr. Kamal of CRS traveled to Kakata, Margibi County to take a look at an integrated farming system approach that could be replicated by FED: a fish farm that also has other livestock and crops grown on the same piece of land. The owner of the farm Mr.

Augustine Moore, welcomed the visiting party and conducted a tour of the farm highlighting the successes and also the challenges he faces.

The farm was established in 2000 with assistance from the Catholic Relief Service (CRS) in the establishment of the initial two ponds and fingerlings. Over the years, Mr. Moore has extended his operation and now owns 20 ponds. Out of 10 farmers trained by CRS, Mr. Moore is currently the only one still continuing his fishery business. If time allows, and they can be located, the nine farmers who abandoned fish farming will be visited to find out the reasons.

The program at the farm also includes growing tree, vegetables and animals, thereby making it an integrated farming venture that could be a model for other farmers. The farmland is approximately 40 hectares out of which about 3.5 hectares is currently being utilized. Mr. Moore intends to cultivate 10 hectares into fish, cassava, rice, and vegetables, whilst at the same time extending the piggery, which serves as a source of manure to fertilize the water and produce a good bloom in the ponds. This farmer has dynamism and is working along with the vocational education Component of FED.

During the period under review, the Cassava Value Chain Manager also interacted with several actors along the value chain. The visit to Duompa with the vocational Education Specialist and the County Manager of Nimba afforded the opportunity to assess the situation for establishing a community cassava nursery in Duompa. Plans are now being put in place to implement this activity. Subsequent visit to this site would be necessary to ascertain readiness, so as to commence the planting on schedule.

**Cassava Germplasm:** The FED team during met with the cassava technicians and staff at CARI to review relevant cassava data and also weigh the possibility of obtaining improved cultivars to incorporate into FED's cassava rapid multiplication system. To this end, copies of data on selected improved varieties were gathered to guide the process. Tour to two of CARI's farm sites showed that available materials are limited, but also revealed that new improved varieties from IITA were recently received and are currently being screened by CARI for adoptability to the local condition. This would be of great benefit to FED for future targets, once data on performance in Liberia has been established. CARI also has established county nurseries in 5 counties: some of which are within FED's mandate zone, and would be of use in the FED program of dissemination through the multi-location cassava nurseries. The CARI team welcomes the proposed teamwork and asked that an MOU between CARI and FED be entered into to enable such collaboration.

**Supply Chain:** The visit also took on a survey for improved high yielding clones to satisfy the proposed target for 2013/2014 farming season. The prospect in Bong seems quite good, and this survey would need to be extended to other counties before a realistic assumption can be drawn, due to the large quantity needed. During this tour in Bong, interaction with an input supplier proved very disappointing – the entity had limited knowledge of the area, does not own farms, but rather engages farmers with seemingly improved cassava varieties that are not properly identified. Given the mishap of the past year's activity in the cassava value chain, where materials purchased were of poor quality and not properly checked, resulting to condemnation by the COP and COR, the supply of cuttings should not be taken as business-as-usual. The supply chain in this connection is quite weak, and would need a lot of work to ensure the acquisition of good clones to address farmers' needs. The risk of contamination in the supply chain for cassava is very high, if not properly managed.

**Cassava processors:** The survey came across cassava processors in the Weinshu Township, in upper Bong County. Two farmers' organizations (Kwapageh & Kukatonon) that were sponsored by CARE and Solidarity respectively are now at a standstill. Both organizations have their own cassava mill and cassava farms separately, but none of them are in production or processing cassava at the moment. Initial inquiry into the problems they face shows the likelihood of members not conversant with the workings of farmers' organization and may need further training. FED could intervene in this area to reinvigorate cassava processing in this area once again. The area is ideally situated between three major markets.

**Extension System:** During the visit to Bong, Grand Bassa, and Nimba counties, it was not possible to work with any of the county extension officers because they were all out on different assignment in various parts of the county. All efforts will be made to tour with the extension personnel on subsequent visits. As it stands, it would seem the present number of extension staff is insufficient and need to increase to cope with the incoming workload. This would hold true even if IPs are used: reason being that the IPs would have to be monitored periodically to ensure that work is being carried out according to the plan in a timely fashion, and it would definitely call for more manpower to have things done systematically.

## Task 1.7 Peri-urban Vegetable Production

### Harvest

Harvest of vegetables continues in the first quarter of the Peri Urban Activities where 50 members from the



**Photo 8: Carrots harvested at Air town demonstration site**



**Photo 9: Air town Peri- Urban groups weighing bitter ball harvested**

Yarnquellah and Air town demonstration sites demonstrated harvesting of carrots and bitter ball. During the harvest demonstration session the 50 farmers (33 males and 17 females) were taught how and when to harvest carrots and bitter balls. The training also demonstrated selection of appropriate plants during harvest for saving seed.

Sweet potatoes were also harvested from FED model site in Kakata, Margibi County. The sweet potatoes harvested were donated to my brother's keeper and Ethel's Orphanage home in Caresbury, Montserrado County



### Identification and site preparation of new groups

51 groups were identified for the 2013 vegetable production in the six counties (Montserrado, Margibi, Bassa, Nimba, Bong and Lofa). Group sites have been cleared and some exotic seeds such as okra and collards are sown both on nurseries and in the field. FED is currently working on procuring other local seeds like hot pepper, bitter ball, corn, etc.



**Photo 10: My Brother's Keeper Orphanage received sweet potatoes from FED**

### Soil amendment practices

Loss of topsoil is a serious issue affecting long term soil fertility in Liberia. The PUA team is actively addressing the issue by introducing contour marking using simple 'A' frames and plumb lines, encouraging bed alignment along contours, and contour stabilization using mixed vetiver / Moringa systems (see photo: 13, and 14 which are all taken of the same field in April [Photo 13], and October 2012 [photo 14]).

To support this activity the PUA component is busy establishing vetiver nurseries and demonstrations of how the plant can be used to control rill and sheet erosion. Mini vetiver nurseries and efficacy demonstrations have now been established at four sites based on the procurement of 2,000 vetiver corms locally earlier in 2012<sup>1</sup>.

### Soil fertility

FED has been active in identifying soil fertility problems and is developing methods to address identified



**Photo 11: Yalafama group clearing site in Gbotai-Bong County**



**Photo 12: Yallakermen nursery constructed at sugar hill – Bong County**

problems. Thin top soils are being addressed by the use of beds. pH amelioration techniques and practices some of which are well known to Liberians include the wider use of compost and biochar and these amendments have been introduced to project beneficiaries where possible (photo 14). Low pH also leads to issues of toxicities and

<sup>1</sup> Through multiplication this has now risen to approximately 2,500 corms

deficiencies of a range of nutrients other than N, P and K and the amendment of soil with biochar is one solution



**Photo 13: Demonstration site at MoA Kakata in April planted with chili using traditional methods**



**Photo 14: The same land as in this laid out in contours planted to mixed vetiver/Moringa with contoured beds**

to this problem.

Close coordination between the PUA team and Component 3 team is underway to ensure that lessons learned flow both ways through the setting up of adaptive research plots at community colleges and the development of details in the ECOWAS agriculture curriculum – particularly as it affects practical training in various crop production techniques including contour marking and bed making.

## **Mechanization**

### **Treadle Irrigation Pumps**

Two metal workshops in Voinjama and Foya were trained in treadle pump fabrication, installation, use, maintenance, and conducting demonstrations during this quarter. The metal workshops with support from FED conducted approximately ten demonstrations. Sesay Metal workshop (Voinjama) was able to sell eight Treadle Pumps in Voinjama City.

A review of the uptake and acceptability of the treadle pumps is currently underway by the M&E unit. There are issues with recharge rates, efficiency and the widespread contamination of the groundwater with E.coli.

Depending on the results of that review, and an estimate of anticipated farmer demand, consideration will be given to the next steps for this program.

### **Hand-Augured Tube Wells**

A total of nine tube wells were sold and installed by Standard Garage and SMART Garage in June and July 2012. Recent monitoring of these wells found that they suffered from recharge rates too low to provide large amounts of water or significantly expand the irrigated surface areas for vegetable production. Low recharge rates (i.e., the rate at which water enters the tube well from the surrounding water table) is due to a number of factors including:

- Lack of tube well use following installation to allow recharge rates to develop;
- Insufficient tube well depth;
- Inadequate tube well diameter;



- Siting in areas with hydrogeological conditions characterized by high clay content with low porosity
- Inappropriate well screen design slowing the entry of water into the tube well
- E-coli have also been found in water samples taken from these tube wells. This condition could be due to one or more of the following:
- Siting in low-lying areas which are more prone to collecting water runoff containing e-coli
- Ubiquitous presence of E.coli in groundwater,
- Shallowness of the wells
- Lack of a cap or apron on the well

The dissemination of this technology will be put on hold until a resolution of both the E.coli issue and a method by which recharge rates can be increased significantly. This will involve methodically exploring each of the factors cited above that may be affecting the recharge rate and possibly testing other tube well types. If the average recharge rate can be increased significantly, then measures for addressing the prevalence of e-coli, including improved siting, well head amendments and education, must also be introduced.

### **Forced-Air Dryer**

Two metal workshops, Old Folks Workshop and United Brothers Innovative Metal Shop, Inc., were trained to fabricate, operate, maintain, and demonstrate forced-air dryers. As the biomass-fired model is considerably less expensive to operate and thus more profitable than the gas-fired model, the original gas-fired dryer was converted to a biomass-fired dryer. Approximately ten demonstrations have been performed by the two trainee workshops. Old Folks Workshop is in the process of selling one of the biomass-fired dryers on credit to COSEO, which is using the technology to dry its established product lines (e.g., pepper and cassava leaves). The President of COSEO has also begun to publicize the dryer to her network of NGO and CBO partners.

Development of the fan-less biomass-fired dryer could expand considerably the possibility of commercial dissemination of the technology to rural areas and small towns where incomes are lower, fuel is more expensive, and workshops are less well equipped. Some redesign work to reduce materials costs by as much as \$200 is still required for the bio-mass fuel fan driven drier. Moreover, the fan-less dryer, a version of the dryer that uses natural ventilation and eliminates the need for a mechanical fan that consumes energy, still requires more work before it is market-ready.

### **Cassava Fiber Discharge Hammer Mills**

In mid-December, Unity Metal Constructions and Services, Inc. received training in the construction, use, maintenance, and demonstration of the cassava fiber discharge hammer mill. Five demonstrations were conducted in Greater Monrovia, Bong and Margibi counties during which time considerable interest was expressed by many of the approximately 200 spectators.

The fiber discharge cassava mill will now be promoted by the one trained workshop, Unity Metal Constructions and Services, Inc.. Assuming demand for the mill is confirmed, another metal workshop could be trained to fabricate, use, and maintain it.

### **Vegetable Seedlings**

Vegetable seedling production started at the end of August with the training of the first 17 producers – three in each county with the exception of Grand Bassa, where only two interested and qualified candidates could be identified. By the end of October, this training had resulted in the following:

- A total of 31,500 vegetable seedlings sold
- More than 140 farmers making some investment into vegetable seedlings

All seedlings produced were not sold. Some were transplanted in the seed gardens developed by each seedling producer. Others were planted for the production of mature crops for consumption or for sale.

On the basis of estimated plant yields and wholesale prices, total future vegetable production (bitter ball, cabbage, eggplant, and pepper) and income from the sales of the vegetable seedlings are estimated at 35 tons and \$32,000, respectively. These figures are disaggregated by crop in the table that follows.

	<b>Pepper</b>	<b>Black Bitter</b>	<b>White Bitter</b>	<b>Cabbage</b>	<b>Eggplant</b>	<b>Totals</b>
Sales (number of seedlings)	10,289	2,759	7,200	4,348	6,945	31,541
Resulting Production (kg)	926	5,391	14,068	2,795	12,501	35,681
Gross Value of Resulting Production	\$1,019	\$4,852	\$12,661	\$2,516	\$11,251	\$32,298

A summary of the achievements of the transitional technology program are found in the table below.

**Summary Achievements of the Transitional Technology Program during the Quarter Ending 12/31/12**

<b>Equipment/Inputs</b>	<b>Equipment/Input Supply Enterprises Trained</b>	<b>Commercial Production</b>	<b>Sales</b>	<b>Estimated Farmer Beneficiaries from Sales</b>
Treadle Pumps	2	15	8	16
Dryers	2	3	1	20
Cassava Mills	1	3	0	0
Impact Rice Dehullers	1	3	0	0
Seedlings	12 (being trained)	31,500	31,500	140
Total	21	31,524	31,509	176

In addition to expanded production capacity in strategic locations and design modifications to improve performance and decrease fabrication costs, an evaluation of the suitability of the various technologies, plus a more rigorous cost benefit analysis is needed to help formulate the plan for next steps by FED.

## Task 1. 8 Goat Interventions



**Photo 15: PPR vaccinators verifying record**

Implementation of the Goat Pass-on Schemes began in three (Nimba, Lofa, and Bong) of the FED focus counties. Responses to public solicitation for farmers willing and able to serve as lead farmers in Goat Pass-on schemes were evaluated, and based on extensive field site visits of short-listed candidates, twelve lead farmer associations have been selected (five in Nimba and Lofa counties, and two in Bong County) for participation in the program.

Of the twelve farmer associations selected, four are women's based producer associations that already have adequate herd numbers and interest in intensification of existing goat herd production practices. Basic herd production intensification training materials are being developed based on the FED lead farmer goat producer needs. Topics such as basic animal health, fencing, animal shelter construction,

mineral and feed supplementation, etc., will be the primary focus of these training programs. In support of anticipated management needs of the upcoming programs, three local livestock extension agents have been identified (one in each county) with the necessary experience and basic training required to backstop these efforts. Plans are underway to expand the Goat Pass-on Schemes into the other FED focus counties early in 2013. FED is also working with FtF to bring in volunteers to assist with this program and with Samaritans Purse to engage the several hundred goat farmers that have graduated from their previous programs, in order to take them to the next level of management.

The Land O'Lakes, USDA project is tasked with a restocking exercise involving some 20,000 goats, while the FED intervention aims to improve productivity of existing flocks of goats through improvement in management (nutrition, breeding, housing, health, marketing, etc.). Land O'Lakes Past importations from Guinea and Mali had not been that successful due to high mortality rates among imported animals. Reasons may include animals that were too old and sold for slaughter and animals which were not adapted to Liberian conditions (health and environment) because of possible introgression of Sahelian goat genes, making animals more susceptible to Liberian diseases, including high internal parasite loads and trypanosomiasis.

The MoA and LoL have agreed that buying Trypanotolerant West Africa Dwarf goats from the Gambia from the catchment areas of the International Trypanotolerance Centre Open Nucleus Breeding Scheme is a good way to restock and improve the genetics of the West African Dwarf (WAD) goats. Over time, 20,000 breeding age females and males are available. An MOU is being drawn up between MoA, LoL, and FED and a visit to Gambia happened in early November to investigate the logistics and feasibility further. FED is working with the USAID regional expert in Senegal, as well as Gambian experts on this activity.

The goal of the Goat Pass-on Scheme and genetic improvement program is to improve returns to goat farmers by addressing genetic, health, and husbandry constraints. An estimated 15-16,000 head of sheep and goats are imported annually. Currently, average carcass weight of the Liberian WAD goats is 9kg, while the Gambian WAD goats average is 13-14kg. Goats sell at twice the price of beef in supermarkets, importing 20,000 live GG's

equals a minimum of 100 ton extra goat meat per year. Currently mortality rates are 40-60% prior to one year of age. West African Dwarf goats kid approximately every six to eight months with a litter size of 1.2 to 1.4. A decrease in mortality from 50-60% to 15% translates into an additional two or more animals raised for each ten born, or approximately 0.5 more animals raised per female per year. The proposed management and health initiatives plus improved access to inputs that reduce mortality rates in goat yearlings could theoretically result in national herd increases of the order of 15-20,000 animals per year.

In mid-December 2012, FED Livestock Extension officers attended training at the MoA together with MoA County Livestock Officers on disease diagnosis methodology and animal quarantine regulations. The training also focused on the most effective methods of obtaining diagnostic samples, blood etc., in the field for sending to the MoA central diagnostic laboratory in Monrovia for analyses. The training served to join the FED Livestock Extension staff with their MoA counterparts, MoA field Livestock Officers in the counties, in joint efforts and methodologies of both animal disease diagnoses and animal sampling procedures in the field.

In addition, FED selected its first Volunteer through the USAID funded, ACDI/VOCA implemented, Farmer to Farmer volunteer assistance program. The Volunteer will perform initial training of Goat Pass-on scheme lead farmers in goat shelter and fencing technologies together with general herd management techniques. The Volunteer is scheduled to arrive in early January to work with the FED Goat Value Chain Specialist in organizing and designing training modules along with executing initial training contacts with selected lead goat producer farmers in the field in Nimba, Lofa, and Bong counties.

## COMPONENT TWO: STIMULATE PRIVATE ENTERPRISE

During this fifth quarter, the Enterprise Development team accomplished the following activities:

### Activity 2.3.A.i Profile Commercial Buyers and Activity, 2.3.A.ii.a – Profile and Select Lead Producers, FBOs, and Enterprises

#### Stakeholder Survey Project

During this quarter, approximately 900–1,000 stakeholders' surveys across the six FED counties of operation was completed by the Subah Belleh Associates (SBA), a local service provider. The total number of interviews conducted exceeded 500. SBA prepared a draft report of their findings by December 7, 2012. A presentation of their findings will be conducted the week of January 21, 2013.

#### Activity 2.3.A.ii.e – Targeted Technical Support

The evaluation of process for business plans and applications in response to the Enterprise Development Expression of Interest is still under review. Fourteen of those applications are participants that benefited from the FED six-week mentorship program. An additional 15 concept notes and applications are being reviewed for possible MDF assistance funding.

#### New Generational Women Baseline Survey

On October 4, 2012, a grant signing ceremony was held between Chevron Liberia Ltd., and the Agency for Economic Development and Empowerment (AEDE) on behalf of New Generational Women. The grant signing ceremony took place in Cooper Town, Clay-Ashland, Montserrado County. During the program, remarks were given on behalf of FED by the Jonathan Greenham chief of party, Richard Weaver, Chevron Liberia, Alex Peal, AEDE, and Richelieu Mitchell of the Cooperative Development Agency. The statement of appreciation was given by Gertrude Cooper on behalf of New Generational Women.



Photo 16: Female farmers preparing lunch

The ED team met with AEDE and New Generational Women to draft operational framework for their project. The ED team also worked with the MDF team to develop a MoU for New Generational Women, which was signed by both FED and New Generational Women. AEDE have developed and submitted a draft operational framework to the FED technical team for inputs.

As part of the New Generational Women project, AEDE conducted a base line survey with 99 households of the Cooper Town community. The baseline information will be used to measure the impact of a year-long cassava



and vegetable project that FED is supporting in collaboration with Chevron. The baseline draft report was submitted on December 21, 2012 and the final report is expected on January 17, 2013.

The assessment that was conducted in collaboration with the AY/USAID project, in Bong, Nimba, Lofa, and Grand Bassa counties by the AY and ED team for the AYP literacy classes has started. Current FED beneficiaries that were selected after the pre-testing was conducted in September are participating in the literacy classes.

The ED team, Chief of Party, as well as technical leads met with Deputy Chief of Party Laura Dillon Binkley, and Manager/Agricultural Extension Agent, David K. Yennego, of the ACDI/VOCA LAUNCH project to discuss how the ED team could collaborate using the Farming as a Business training modules. An agreement from that meeting was reached that ACDI/VOCA will do a draft MoU for review/revision. Upon their final approval, a copy will be sent to the FED/ED team for review and inputs for possible collaboration.

A training assessment was conducted with 46 groups within four of FED's operating counties included Bong, Nimba, Lofa, and Grand Bassa. An RFTOP was developed, and an IQC was sent to the Holders Rights and Rice Foundation and Educare for possible competition. The Rights and Rice Foundation was selected based on the RFTOP selection criteria by the review committee headed by acting A/MDF Director, Shahram Ahmadzadegan and the ED team. Therefore, the Organization Rights and Rice Foundation will conduct the Organizational Strengthening Training for a period of three months, with nine groups selected within the four counties listed above. Under the organizational strengthening training the following topics will be presented: organization development, conflict management, and leadership/good governance.

The groups in the counties were selected in collaboration with the ED and the county team. The ED team worked with the Rights and Rice Foundation to ensure gender leadership training is embedded within their curriculum and delivery system.

### **Organization Strengthening Training**

Rights & Rice Foundation (R&R), an IQC holder, is currently conducting the first round of Organization Strengthening training for nine groups (267 participants, 189 female & 78 male) in Bong, Lofa, Nimba, and Grand Bassa counties. To date, R&R has completed the training for two groups in Bong County and two groups in Grand Bassa. Training with two groups in Nimba County began December 10, 2012 and training for two groups in Lofa County will begin January 6, 2013.

### **Pilot Youth Business Plan Competition**

Twenty-eight out of 43 youth who submitted an executive summary as part of the youth business plan competition have been selected for the second stage of the competition. The 28 youth represent seven business ideas from Montserrado County and four business ideas from Bong County. The youth in Bong County completed the first phase of training December 13, and the Montserrado youth finished their training at the Monrovia FED office on Saturday December 15, 2012.

### **Business Plan Mentorship**

A two-day Business Plan Mentorship workshop was held in the conference room of the FED project from November 27 – 28, bringing together 10 Liberian SMEs for the development of their business plans. The workshop was the final follow up of the Six-Week Business Plan Mentorship program.

### **Cassava Preservation**

From the 1<sup>st</sup> of November to the 10<sup>th</sup>, Mr. David H. Picha, professor of horticulture from the Louisiana State University, worked along with members of the ED team to conduct a cassava preservation method study. He tested four different methods of preserving cassava:

- 150 pm chlorine + botran
- control wash
- paraffin wax
- shrink wrap

Shrink wrap and paraffin wax were found to be the most effective for Liberia, preserving the freshness of cassava for up to 21 days. Currently, the ED team is testing the marketability of preserved cassava, placing cassava at four locations in Monrovia for sale to the public.

### **Future Training**

The ED team released two requests for task order proposals (RFTOP) for Organization Strengthening and Financial Management training for 16 producer groups (216 males, 231 females) in FED's four primary counties on November 30, 2012. The RFTOP is seeking to hire IQC holders to conduct the training for these groups for the period of three months. Bids were turned in on December 13. Training will commence in January, 2013.

## **Activity 2.3.B.vi – Increase Enterprise Registration and Local Government Engagement**

### **Ministry of Commerce and Industry (MoCI) Joint Activities**

FED, in collaboration with MoCI, is conducting a joint outreach activity to communicate policy reform and fee standardization of the business formulization process and to introduce authorized agents in each of FED's six counties for SMEs and agriculture producer groups. The campaign will air radio jingles in 9 dialects on 15 local county radio stations followed by six town hall meetings and the distribution of flyers detailing the formulization process and fees. The first town-hall meeting was conducted in Grand Bassa County on November 28, 2012 with the participation of 180 attendees, MoCI representatives, and FED staff. The campaign was carried out in all FED's counties of operation (Nimba, Bong, Margibi, Montserrado, Lofa, and Grand Bassa). Continuation of this campaign is been carried out through the airing of jingles in English and local vernaculars.

MoCI, in collaboration with the Liberian Better Business Forum (LBBF), will host a three-day conference and trade fair to support 150-200 SMEs in early 2013. The purpose of the conference is to promote activities in the four pillars of the Micros/Small and Medium Enterprise (MSME) division of MoCI: Legal and Regulatory Reforms, Access to Markets, Access to Finance, and Building Skills and Knowledge. The conference will allow the government to take stock of the MSME sector in Liberia, deliver key training workshops to assist them in all stages of development, and examine practical steps that other key players including banks, micro finance institutions, and concessionaires can take to promote sustainable growth leading to employment creation and jobs. FED will participate by providing budgetary support for the event and by sponsoring up to 50 FED SMEs and farming organizations to join the conference and participate in the trade fair.

## Task 2.4 Use of ICTs in Stimulating Liberian Agri-business

### Mobile Data Collection Training

FED staff completed 10-day training in transition management of FED's internal mobile data collection to the M&E/GIS coordinator.

Three interns, including two women, also completed the training to build their skill sets in project management and technology in agriculture. Participants presented on their training and created a sample electronic survey on agriculture. The training was conducted by the FED ICT specialist MTTA, Jacki Carleson, and included presentations by Grameen Foundation, Episurveyor, and USAID LAUNCH. A listserv on mobile data collection in Liberia was also launched. Due to limited capacity and experience in using listservs in Liberia, a Facebook page on mobile data collection in Liberia was also launched as an alternative. This activity was prepared for implementing FED Activity 2.3, a FED agricultural communications system.



**Photo 17: Cross section of interns and FED**

### Mobile Money Workshop

FED hosted a mobile money workshop at county offices from Oct. 23 – Nov. 3, 2012 (Activity 2.3 f Mobile Money Workshop) to familiarize FED staff with mobile money. The workshop was designed by the FED ICT specialist and featured Lonestar representatives. Originally, Lonestar ambassadors were responsible for providing the entire presentation, however, it was decided that FED needed to provide more context of mobile money in agriculture and remove the focus from a single business. FED will continue to provide information on how mobile money can be used to address payment constraints in agriculture, while featuring Lonestar as one single possibility among other options. These workshops lay the groundwork for future mobile money activities with lead producers and agribusinesses. The MoA was also invited to attend.

### Enterprise Development and GPS

FED trained Subah Bella Associates (SBA) enumerators from Nov. 6-7, 2012 on using mobile phones to collect GPS points. This was conducted by the ICT specialist, M&E/GIS officer, and FED intern in cooperation with FED's ED team. SBA is responsible for conducting the Agriculture Stakeholder Profiling survey. Collecting GPS points of stakeholders creates a richer set of data for Activity 2.3 h. Agricultural Business Resource Database.

### MoA ICT Assessment

FED conducted a rapid ICT assessment of MoA's extension system on August 3, 2012 (Activity 2.3 d. MoA Extension Service Assessment and Implementation). Primary findings included 1) MoA extension forms which are not standardized among counties, 2) Computer literacy is a barrier for County Agriculture Coordinators (CACs) using computers to send data to MoA and 3) the newly implemented free calling/texting program has

increased communication within the extension system, but not all members are aware of conference calls. Further recommendations and findings is provided in a separate STTA report.

### **Enterprise Development Activities for the next quarter**

1. Second round of Organizational Strengthening;
2. First Financial Management training and mentorship;
3. Youth Business Plan mentorship and award phase;
4. Farming as a Business Training of Trainers;
5. FED Value Chain Approach workshop;
6. Hiring of Market Linkages Officer, Marketing Officer (pending), and Access to Finance Officer (pending);
7. Buyer/Supplier meeting for gari production in Nimba.

## COMPONENT THREE: BUILD LOCAL HUMAN CAPACITY

### Task 3.1 Creating Centers of Excellence

#### Internship Program

During this quarter, FED ended Phase One of the Internship program which ran from August – November 2012 with 57 interns completing their training at various institutions of work. The purpose of FED's internship program is to create the opportunity for senior students, graduating seniors and recent graduates with interest in the agriculture and business sectors to put their classroom learning into practice. Students also have the opportunity to gain hands-on practical knowledge and experience as well as the required technical skills for the labor market. In addition, the program hopes to sustain employment and self-employment opportunities through mentorship and training at various enterprises and non-governmental Institutions.

Throughout Phase One, all 57 interns, consisting of 38 agriculture and 19 business students have been placed with 20 institutions in the private sector. Of the twenty institutions that provided opportunities for the internship, 13 are local businesses, six farming enterprises and one International Partner, UN Food and Agriculture Organization (FAO).

With a clear and defined purpose to guide the process, the internship program will work at achieving the following objectives by the end of the program:

- Interns will acquire practical working experience or skills outside of classroom work.
- Students will learn to work as part of a team (team work, networking, mentorship etc.)
- Promote the concept of agri-business amongst agriculture and business students
- Building mutual student-employer relationships in a professional environment
- Providing employment opportunities for interns after internship program
- Fostering partnership with relevant staff at selected Universities and Technical schools in order to muster the necessary support for the internship process.

During Phase One of the program, there were series of training workshops held for the interns and topics that were covered included: leadership, goal-setting, interviewing, resume and cover letter writing, agribusiness, FED value chains, project management, and service learning. Students were organized in groups to strategize and present what they learned during the workshops, they were encouraged to start Vocational Subject Leadership Organizations in their own institutions, and to form a camaraderie of interns for future correspondence and mutual career assistance. The first day of the workshop centered mainly on developing the capacity of interns for the job market in respect to interview skills, CV preparation, career goal setting, writing cover letters, etc., while



**Photo 17: Dennis Eaton, Component Two lead, engaged in a life-skill training exercise during the intern workshop.**



the second day was geared toward providing substantive information on food value process and agri-business concepts.

On November 27, 2012 the closing ceremony for the FED Internship program was celebrated. In attendance were the 57 internship students, the FED Chief of Party, Jonathan Greenham, Dr. Walter Wiles of the University of Liberia, Morris Gray of Booker Washington Institute, the president of the United Methodist University and the Internship partner from EHED, James Mulbah. Interns were competitively selected from students attending the University of Liberia, the United Methodist University, Booker Washington Institute and the Nimba County Community College. Dr. Kimmie Weeks, Executive Director of Youth Action International gave a motivational speech highlighting his experiences leading to his success with his current organization. Certificates were issued, T-shirts given, and a hearty lunch followed.



**Photo 18: FED Chief of Party Congratulates Student Interns at the Closing Ceremony, Monrovia**

One intern, stationed at the FED Bong County Office was selected to learn about drip irrigation systems. At the Bong County office the Vocational Training and Non-Formal Education Specialist (VTNFES), who has expertise in drip irrigation systems, had the intern develop a field layout of 100 m<sup>2</sup>. Two men were hired to help dig the layout and pulverize the ten bags charcoal and spread two bags on each of the five 10 x one meter beds and then turn it in with a shovel. After incorporating the bio-char in the beds two bags of compost (purchased from BWI at \$12.00 USD each) were then raked lightly over the top of each bed.

The Bong County Ministry of Agriculture Office has two covered elevated nurseries. FED intern, Nakie placed BWI compost on one of them, mixed it in and then sowed seeds of tomato, hot pepper, flowers: aster and petunia, and onion.



**Photo 19: Connecting the Lead Hose to the Drip Tape lines**

At the end of the day the beds were ready for drip tape installation. The VTNFES worked with the intern of critical installation techniques.

The VTNFES completed his task of working with the drip irrigation intern, Nakie Sur, at FED Bong County Office. In December, the intern seeded and transplanted the five crops: Watermelon, Lablab bean, Tomato, Chili Pepper and Okra. The Super Bucket Drip Irrigation kit began operation and insect barriers (insect netting sewn together to be 6 feet wide and draped over steel rod 8 feet long) placed over the beds.

In the second half of the irrigation system, vegetable crops grown were displayed to the

MoA and other guests the usefulness of an easy and efficient irrigation system suitable for vegetable crop production in the dry season.

Further, a portable chicken pen (chicken tractor) was locally built and provided for the display. This pen can house up to six light breed laying hens (or 5 hens and one rooster). It will assist with soil fertility, weed and insect control as it is moved up and down the three feet wide rows on a daily basis.

## **Lofa County Community College**

During the third week of November, with the rainy season diminished and the roads drying up, the Component Three team paid a visit to Lofa County Community College (LCCC). The two day journey to Voinjama began on the 21<sup>st</sup> of November and ended on the 27<sup>th</sup>.

On Friday, November 23, 2012 the VNTFES, VES, the FED County Manager, Moses Jaygbah, and the M&E Coordinator, Lewis Grimes, visited the LCCC for the scheduled meeting with the Dean of Student Services and his staff. The meeting was held in the office of the President, Dr. James Kollie.

After members of LCCC and FED introduced themselves, the VTNFES and VES informed the Dean and his staff about the purpose of their visit and explained the FED program to them. They told Mr. Sallay that FED will be working mainly with their agriculture department to ascertain that graduates of the department will be able to find a place in the job market as well as be equipped to start their own agro business or be fit to enter a university to earn a BSc. degree in agriculture.

FED will be looking at their library to see how they can help with a good internet system and how they can provide some agricultural text books for the students and teachers. FED will also see how best they can upgrade their internship program and work with the college and the Ministry of Education to develop a relevant curriculum.



**Photo 20: The Entrance to the Lofa County Community College in Voinjama City**

The Dean welcomed the VTNFES and the members of his team and told them that the President, Dr. James Kollie traveled to Monrovia for an urgent meeting at the MoE. LCCC is in its infancy stage and needs assistance. The agriculture department has two instructors and 160 first-year students (141 male and 19 female).

After the meeting with the Dean and his staff, he took the FED Team on a tour of the campus. There are sufficient classroom spaces, but they are not equipped; there are not enough furniture and no office for the instructors. The library space is also inadequate; it can barely accommodate twenty-five students. There is no laboratory facility for the science students. LCCC is located on 70 acres of land given to them by the County. The President of LCCC has built large palaver/peace hut in the center of the campus. The interior of the hut is designed with local bamboo mats and is equipped with electrical lights and outlets.

After touring the LCCC Campus, Some members of the administrative staff took the FED Team on a tour of the Voinjama Multilateral High School (VMHS) Campus to look at their laboratory facilities. We found the

laboratory buildings destroyed. The purpose for our visit was to see how both institutions could collaborate with their science programs if the VMHS had a functioning laboratory. The head of the agricultural department of the VMHS told the Team that they are teaching agriculture to students from grade 9 to 12. They were transplanting pepper to their field and have cabbages and garden eggs on the nurseries ready to be transplanted. The VMHS Agriculture Department also has a functioning piggery program.

Later that day, the VTNFES and VES visited the Lofa County Agricultural Coordinator, Mr. John Dovee, at his office in Voinjama. The CAC welcomed members of the FED Team and informed them that the bad road condition has hampered the agriculture program of the county. He also complained about the lack of processing facilities for the farmers. He has high hopes that FED is going to encourage the Lofa farmers to take agriculture as a business so that Lofa will again take its place as the bread basket of the country.

### **Grand Bassa County Community College**

On Friday, November 16<sup>th</sup> the VES and the FED IT specialist Matthew Zoegar, joined the VTNFES and travelled to Buchanan to meet and stimulate talks with the president of Grand Bassa County Community College, Dr. Levi Zangai. This facility also houses the TVET (post-secondary) vocational program of the Ministry of Education. The Component three's team met with the president in his office. During this meeting the VTNFES explained the interventions that FED is prepared to offer. These include information resources, VSAT system and library resources textbooks, Internship and Student Career services assistance, farm and curricula assistance leading to job-readiness and a student leadership program.

After meeting with the president along with the Dean for Academic Affairs, and two staff of the Department of Agriculture, the president showed the Component Three staff a letter received by Concern International. The letter stated that Concern International had handed over a 30 acre Farmer Resource Center (FRC) located at Compound Two, in District Two, Grand Bassa County which is 54 km away from the city of Buchanan. This facility will enable the GBCCC department of agriculture to offer practical activities as a component to their two-year associate degree program. The FED Component Three team as well as the Component One team with the County Manager, Philip Zoryu, will be paying an evaluative visit to the facility soon to determine the extent of assistance FED can offer the community college.



**Photo 21: Grand Bassa County Community College Agriculture Students**

The GBCC president then gave a tour of the existing facility in Buchanan and the new campus under construction some five kilometers west of the city. At the new construction site, the facility was evaluated for a VSAT internet installation as well as an office space for FED and the Internship Student Services office.

On Monday, November 19<sup>th</sup> the Vocational Teacher Training Specialist, James Cooper, was hired and began activities in at the FED-BWI office where he has set up a work station.



## Ministry of Education

The Ministry of Education's (MoE), Bureau of Science, Technology, Vocational and Special Education (BSTVSE) has requested financial assistance to complete the actions to finalize the National Agriculture diploma curriculum. A responsibility chart (see appendix VI) has been drafted and the MoE, BSTVSE and FED will meet on the 19<sup>th</sup> of November to create a timeline for the activities. A Memorandum of Understanding will follow thus allowing for action and moving forward in order to make the ECOWAS-TVET National Agriculture Diploma a reality for 2013.

### Child Art Competition:

In celebration of World Food Day, held every year on October 16, FED collaborated with Child Art Liberia, a local nongovernmental organization, in a competition called "Agricultural Cooperatives—Key to Feeding the World." Catering to 8-to 18-year-old artists from middle schools in each of FED's six areas of operation, the competition portrayed scenes of kids and families growing food together. The contest was held in concert with other World Food Day events and activities organized by the Ministry of Agriculture and Liberia-based FAO



Photo 22: Cross section of participating students

chapter.

Participating students were given art supplies, including pencils, watercolor, crayons, and pen and ink, taught drawing and painting techniques, and educated on the competition's theme. The artwork for each county was judged on technical skill, creativity, and successful incorporation of the theme. First, second, and third place winners were awarded cash prizes, while all participants were recognized for their contribution. The goal of the competition was to increase awareness of FED activities among youth and families, using creative learning processes to promote the production and consumption of Liberian food.

The final event is yet to be held because of the MoA delay in organizing the 2012 World Food Day celebration. The winners will have their artwork displayed on National Agriculture Day, and the Liberian President and Agriculture Minister will be in attendance.

## **Outstanding activities:**

### **My Brother's Keeper:**

There are two issues at the Orphanage. The well that was drilled is not deep enough to supply sufficient water for the vegetable crops. Also, the chicken coop remains empty. FED recommend providing five hens and some feed to get them started. Planting of the site was delayed due to water issues. However, seeding and transplanting has begun.

### **Ministry of Education's Bureau of Science, Vocational and Special Education:**

A meeting was held with the Honorable deputy minister, Yonton Kesselly and his vocational education advisor, Sayku Dukuly. A time frame for activities will follow and a formal memorandum of understanding. The Vocational Education Specialist, Albert Bass, will take the lead on this activity.

### **Library Acquisitions**

In order to provide for outstanding teaching in the five institutions in which FED operates, textbooks and teacher resources are critically needed. FED has issued a RFQ to local book suppliers as an opportunity to import 30 different topic textbooks that relate to the National Agriculture Diploma (NAD) curriculum of the ECOWAS, TVET office. Three copies of each book will be provided to the five institutions as well as the Ministry of Education's Bureau of Science, Vocational, and Special Education. In addition to the books, adequate storage and display, where needed, will be provided. The Deadline for the RFQ was November 16, 2012.

### **Technology Demonstration**

Component Three is committed to teaching the youth of Liberia unique methods of agricultural production. As such, one intern is working on a drip irrigation demonstration project at the FED Bong County office. Land preparation includes raised beds and soil amendments prior to setting out the drip lines. At twenty tons per hectare recommendations, the 100 square meter area would need 15 bags of charcoal ground to a course powder. FED's technology interventions for cassava grinding can also simplify the grinding process of charcoal.

The rainy season has made it especially difficult for FED to work with the Nimba County Community College (NCCC). FED Component Three staff has tried repeatedly to reach the site in the month of October; however, poor road conditions have hindered the vehicles.

However, the President of NCCC, Rev. Gonway-Gono asked Component Three for the following:

**Farm Development:** The NCCC would like to involve youth, up to age 40, of the departments of agriculture and business management to become involved in all aspects of entrepreneurship training. The college would form a training ground in best practices in local agriculture production and in entering agriculture as a business enterprise.

**Library Facility:** FED has committed to supplying three copies of relevant textbooks for each of the 30 classes (90 books total) in the Ministry of Education's approved ECOWAS, TVET's National Agriculture Diploma.

**Internet Access:** NCCC has requested an adequate internet system to be installed for academic and administration needs. A MoU must be established, whereby NCCC can provide the electrical energy required of an adequate VSAT internet system. With this assured, FED can provide the appropriate satellite internet system.

**Student Leadership:** There are student organizations already established on campus. With the request of NCCC, FED will begin to assist in establishing vocational subject associations along the lines of the United States model



of FFA and skills-USA. The NCCC is requesting help in providing leadership and organizational assistance for both emerging and current programs.



**Photo 23: FED Component Three VES observing the bad road situation**

**Curriculum Development:** Lesson planning, local learning materials and making effective use of practicing vocational subjects is a priority of NCCC. This request follows along the mandates of FED's Component Three focus and will be provided in the MoU to be negotiated.

**Vocational Teacher Training:** NCCC is requesting FED to assist with training teaching staff to be effective vocational and technical teachers. In the words of the college president "The skills training we are proposing requires a postsecondary vocational curriculum that includes learning to learn, critical thinking skills, from war to work skills, and a commitment to continuous learning." These priorities will help form a unique plan to bring NCCC into focus

as a model Center of Excellence for Liberia.

### **Vocational Teacher Education at Two Community Colleges and Booker Washington Institute**

On Monday, December 3, 2012 Dr. Craig Edwards, Professor of Agricultural Education Graduate Coordinator Department of Agricultural Education, Communications and Leadership of the Oklahoma State University joined the FED team as a STTA for a period of two weeks. The following day Mr. Bass, the Vocational Education Specialist (VES), Mr. James Cooper, FED Vocational Teacher Training specialist (VTTS) and Dr. Edwards, departed Monrovia for Kakata to meet the principal and instructors of BWI to discuss their training needs and there after conduct a training workshop with them. The VES and his Team met Mr. Mulbah Jackollie, the principal of BWI, in his office.

After introducing Dr. Edwards and Mr. Cooper to the Principal, Mr. Jackollie introduced Mr. Jacob Swee, the head of the Agriculture Department to the Team. Dr. Edwards informed the Body that he would like to meet with the leadership of BWI to determine workshop topics to be delivered based on their perceptions of the most pressing needs of the teachers and time allocation for the workshop. Mr. Jackollie stressed that he would appreciate Dr. Edwards including classroom management and student/teacher center teaching methodology.

On Wednesday, December 5, 2012 the STTA, Dr. Craig Edwards, facilitated the scheduled four hour professional workshop on teaching and learning in the BWI Library. There were 35 participants (2 females and 33 males). Topics delivered were as follow:

1. Brief introduction & overview; some questioning/probing on prior learning, expectations, and interests.
2. "What is good teaching?" "Why" the Q-A-D teaching method was modeled with, handouts provided.
3. Kolb's Experiential Learning Model ("Cycle"): the Q-A-D teaching method with handouts provided.
4. "Tyler's 4 Questions": the Q-A-D teaching method modeled with handouts provided.

5. Question-Answer-Discussion (Q-A-D) as teaching and learning method; handouts included “Principles for Questioning” & “Using Socratic Questioning in the Classroom”.
6. Assessing student learning: test development. Some discussion occurred on the use of criterion-based rubrics for the evaluation of student learning, especially “authentic assessment” of student performance and the need to integrate business and industry standards when developing rubrics.
7. Elements of lesson Planning include the development and use of measurable learning objectives.
8. Four steps in Introducing a Lesson: “Setting the Table for Learning”.
9. Learning Styles & Multiple intelligences.

Dr. Edwards also presented some supplemental topics into his primary presentations:

1. Forms of teacher evaluation – self, student, peer, & supervisor; some discussion about forming mentoring/peer evaluation program, especially for new inductee teachers was held.
2. Importance of review, re-teaching, and systematic reinforcement to the delivery of high quality instruction were discussed.
3. Additional handouts were provided as the workshop adjourned.
4. The presentation was highly interactive; the older and more experienced teachers could be distinguished from the younger, less experienced teachers.

On Friday, December 7, 2012, the VES and STTA met Dr. Zangai, the President of GBCC in his office. After welcoming the VES and STTA, Dr. Zangai invited Mr. Emmanuel Tokpah, the GBCC Administrative Assistant and Mr. Morris B. Zorbah, the head of the agriculture department to meet the VES and STTA.

After a lengthy discussion the teachers/instructors and administrators agreed on the below listed topics for Dr. Edwards to use for the FED Professional Development Workshop on Teaching and Learning:

1. Modern method of Teaching,
2. Best Method for Teaching Extension,
3. How to Teach a Diverse group of students,
4. Relationship of practical teaching to theoretical teaching,
5. Syllabus development,
6. Lesson Planning Objective,
7. Assessing students’ Learning,
8. Lesson on Teaching Ethics,
9. Establishing a Student Advisory Center.



**Photo 24: Group inspection of one of the sites, Nimba County Community College**

On Sunday, December 9, 2012 the STTA, Dr. Craig Edwards and the Vocational Education Specialist, Mr. Albert N. Bass, departed Monrovia for the Nimba County Community College to meet the President and Instructors of NCCC to discuss the training needs of the College and conduct a professional development workshop on teaching and learning. Below are topics as the immediate training needs for their instructional staffs:

1. Teaching methodology,
2. Classroom management,
3. Agricultural education,
4. Curriculum development,
5. Research methodology and

#### 6. Student leadership development.

After the meeting with the Dean, the VES, STTA, Mr. Daouda Banbara and Mathias Kalivogui of Appaloosa Distance Ride Association (APDRA) and representatives of NCCC visited the various sites to identify the adequate area to be selected for the construction of a fishpond for the College. After the site visit, the group met in the agriculture building where the APDRA Team explained how they develop their fishponds. They said that NCCC has beautiful areas for fishpond development. They will be awaiting a respond from FED for whatever relationship they would like to establish.

Dr. Edwards and Mr. Bass visited the 4-H Club on the campus of the Martha Tubman Elementary School in Sanniquellie. The students were learning measurement by laying out 10 meter square beds. We were highly impressed about the students work on their field.



**Photo 25: The 4-H Club students and their teacher at work in the garden**

The FED Professional Development Workshop on Teaching and Learning commenced by 5:00 P.M. After Dr. Edwards gave a brief introduction and overview of the workshop, the topics. The workshop started with 56 (7 females and 49 males) participants and ended with 50 (7 females and 43 males) participants.

On Thursday, December 13, 2012 the LSU STTA, Dr. Craig Edwards and the Vocational Education Specialist, Mr. Albert N. Bass traveled to Buchanan to conduct the FED Professional Development Workshop on Teaching and Learning with the instructors/teachers of the Grand Bassa Community College. The Monrovia FED Team was joined by the following FED Grand Bassa Team members: Mr. Philip Zoryu, Manager; Mr. Jonathan F. Jones, Enterprise Development Assistant and Mr. Varnie Kollie, M & E Coordinator. The workshop commenced by 9:30 A.M. in one of the classes of the Grand Bassa Community College. The facilitator, Dr. Craig Edwards, STTA from LSU delivered the workshop topics based on the perceptions of the instructors/teachers as discussed on Friday, December 7, 2012.

## **Monitoring and Evaluation**

During this quarter, the M&E team was focused on process improvements, data cleanup, reporting, staffing, training, and monitoring activities.

### **Process Improvement, Data Cleanup & Reporting**

The M&E Team began implementing action points that were outlined in the findings and recommendations from the DQA report from L-MEP. One of such actions was initiating the development of the FED M&E manual. Upon completion, the manual will provide standard sets of protocols, processes and procedures that should enhance an effective data management and reporting system.

FED also currently updating data into the USAID's PIDS system covering the first year of the program. This data was matched to the Indicator Progress Table data which was included in the annual report to USAID. This process required review, verification, and cleanup of data collected earlier in the year to ensure accuracy for both PIDS and the annual report.

FED has also been working closely with L-MEP, the COR, and the USAID Performance Management and Environmental Compliance Advisor in reconsidering targets and revising the PMP and indicator table based on the year two program workplan. The revised PMP and indicator table have been submitted to USAID for approval.

### **Staffing Update**

Interviews are being scheduled to be conducted with suitable candidates to fill additional M&E positions. There will be four additional M&E Coordinators and five M&E Assistants. The M&E Coordinators will work with the current M&E Coordinator at the county level in providing timely, high-quality data and analysis on progress towards achieving results so that project management, implementing partners, and other stakeholders can continuously improve project implementation and achieve expected results. Additionally, given the wide range of the program, both M&E Coordinators will focus on tracking outcomes of project activities as well as indicators pertaining to the quality of the project implementation. The M&E Assistants will focus mainly on data entry.

Robert Resseguie, M&E Manager, ended his STTA assignment in mid-December and has now been approved by USAID for a longer term assignment. He will lead and provide managerial and technical support to the entire M&E Team on the FED Project starting in mid-January 2013.

## Monitoring & Data Collection

Monitoring and data collection activities conducted by the M&E team in the month of October are summarized in the table below:

**Table 1: M&E Activities for October-December 2012**

<b>FED M&amp;E – Monitoring &amp; Data Collection Activities (October-December 2012)</b>		
<b>Month</b>	<b>Counties</b>	<b>Activities</b>
October 2012 – December 2012	Bong	<ul style="list-style-type: none"> <li>- Monitored and provided technical support to the implementation of the Enterprise Development stakeholders profile survey</li> <li>- Carried out data collection with farmers' association to generate data for the annual report.</li> <li>- Monitored the ChildArt World Food Day program activities in support of FED's awareness campaign</li> <li>- Monitor and verified the completion of a three-week computer training program that enhanced the technical entrepreneurial skills for selected farmers in Doumpa</li> <li>- Monitored vegetable dryer training that helped farmers acquire new skills in post-harvest and preservation</li> <li>- Monitored the training exercises and installation of treadle pump and tube well that helps farmers improve their irrigation methods</li> <li>- Gathered plot measurement data to inform program on the total number of hectare that are under improved cultivation to improve agriculture productivity</li> <li>- Collected baseline data in rural Montserrado for the implementation of a cassava and vegetable project that is being carried out under joint partnership between FED and Chevron</li> <li>- Conducted rice crop yield survey to establish baseline data for FED's calculation of % increase in crop yield and gross margin</li> <li>- Monitored the building of centers of excellence for learning and research through structured teacher trainings initiatives at the various community colleges</li> <li>- Monitored the completion of the internship program that afforded students an opportunity to acquire hands-on-work experience and to better prepare them for future employment especially in the agriculture and agriculture related sector</li> </ul>
	Grand Bassa	
	Lofa	
	Margibi	
	Montserrado	
	Nimba	



## Monitoring and Evaluation

The M&E Team also worked with the FED technical teams and participated in technical review meetings to develop strategies for monitoring, analyzing, and reporting on the implementation and progress of FED activities established in the 2013 work plan. Separate interactions with different component leads were conducted to discuss specific monitoring and evaluation plans, indicators, and targets as they relate to their individual activities.

M&E also held discussions with the M&E Director at the Ministry of Agriculture and provided briefings on FEDs activities and plans for 2013. The rationale is to build better communication and synergies with the MoA in terms of monitoring.

The rice crop yield survey data is in the process of being analyzed based on the data sets available, and in line with more careful reading of the definitions, and in consultation with USAID. These numbers will require further updating as the Year 2 Work Plan is finalized and results from the rice harvest are known.

Subah-Belleh will provide final report on the stakeholder profiling survey that was carried out in all six counties by the end of January 2013. Delays were mainly due to the underestimation of the enormity of the task by the contracting firm.

The use of mobile data collection devices was introduced and training activities were rolled out with M&E staff, Extension officers, and Enterprise Development Assistants in Bong, Grand Bassa, Nimba and Lofa counties. To date, M&E Coordinators and Extension Staff are testing out the device by collecting rain gauge data and information on new farmer groups.

## Field Travel

M&E staff made frequent trips to various activity sites as per the following activities below.

### Monrovia and County M&E Coordinators Monitoring Visits:

- County Teams Acquaintance and Introductory visit
- Site Selection verification and monitoring visit
- Rice Crop Yield Survey monitoring visit
- Vegetable Seedling Producers monitoring visit
- Stakeholders Profiling monitoring visit

## Overall Findings

- a. Sales from demonstration sites are ongoing at different levels. Efforts should be geared towards tracking the value of incremental sales especially for the vegetable crops for which harvest are not just a one shot deal (perhaps looking at a revision to the PUA section of the M&E Field Data Collection Manual)
- b. Analysis from the rice crop yield survey will better inform the program of the quantity of rice being produced, the potential that exists to increase production, and the extent to which there is market demand

## Indicator Status Table (October – December 2012)

Please see below progress on the quarter indicators:

Indicator	FY 2013 Target	Quarter 1 Achievement	Cum total FY 2013	Comments
Number of rural households benefiting directly from USG interventions <b>(4.5.2-13)</b>	40,000	360	360	Based on assumption, a total of 85% of those individuals that received assistance are rural household heads
Number of food security private enterprises (for profit), producers organizations, water users associations, women's groups, trade and business associations, and community-based organizations (CBOs) receiving USG assistance <b>(4.5.2-11)</b>	27,725	53	53	This number include those individuals and institutions/associations that receive assistance based on data collected from activities that occur from October-December 2012
Number of public-private partnerships formed as a result of FTF assistance <b>(4.5.2-12)</b>	190	18	18	The figure represent the total number of seedling producers that signed MOU with FED
Number of individuals who have received USG supported short term agricultural sector productivity or food security training <b>(4.5.2-7)</b>	M = 5,432 F = 3,932 <b>Total = 9,364</b>	M =238 F =185 <b>Total = 423</b>	M =238 F =185 <b>Total = 423</b>	

## MDF Activities Summary from October - December, 2012

During this quarter, the MDF approved one new activity under Component One, three new activities under Component Two, and one new activity under Component Three, totaling **\$375,825** in budget estimates. In summary, from the beginning of the program through December 2012, FED has generated and approved **47** activities, totaling **\$1,670,497** in budget estimates. There are another **30** activity concepts covering all three Components, totaling **\$9,527,138.56** in budget estimates that have been proposed and are in the approval process. A table summarizing completed and ongoing activities follows below (please note that completed activities are shaded grey):

### FED Activity Table – APPROVED ACTIVITIES

Activity Name	Num.	Description	Start Date	End Date	Approx. Value (USD)	Location (county, district)	Activity Status
<b>COMPONENT 1</b>							
Rice Production and Processing Demonstration	C1-MDF-01	26 sites/partnerships with farmer associations in training by module (site selection, rice variety selection, land preparation, fertilizer application, seedling production, transplanting, and irrigation, weeding, harvesting, and post-harvest). In addition, labor-saving production technologies (rotary weeders, power tillers) will be demonstrated.	5/21/12	10/31/12	\$ 57,244	Lofa, Nimba, Grand Bassa, Bong	Ongoing
Water Well Drilling	C1-MDF-02	Assess local conditions for the installation of tube wells, including a technique that increases the recharge rates of existing shallow wells, and train the FED project technical trainer and workers from two local enterprises in the manual installation of tube wells.	5/24/12	08/31/12	\$ 2,000	Bong, Montserrado, Nimba, Margibi	Completed
MoA Participation at	C1-TRN-03	Enhance MoA's knowledge of climate change concerns for the cassava sector by funding the	6/18/12	6/22/12	\$ 3,500	Montserrado	Completed

**FOOD AND ENTERPRISE DEVELOPMENT (FED) PROGRAM FOR LIBERIA  
FIFTH QUARTERLY REPORT: OCTOBER – DECEMBER 2012**

Activity Name	Num.	Description	Start Date	End Date	Approx. Value (USD)	Location (county, district)	Activity Status
Scientific Conference of the Global Cassava Partnership in Kampala, Uganda		attendance of their program officer at the Scientific Conference of the Global Cassava Partnership in Kampala, Uganda.					
Training Private sector on Soil Testing processes and procedures	C1-TRN-04	Enhance soil testing services in the private sector by partnering with a company that is currently providing soil testing for engineering services but who would like to expand soil testing to the Ag sector. FED will provide training on how to test soils while the company will provide the soil tests required by the FED program so extension agents can make fertilizer recommendations.	5/28/12	9/30/12	\$ 10,145	Montserrado	Completed
Training and Demonstrations on Integrated Soil Fertility Management/ISFM	C1-MDF-06	Train 1000 farmers on 22 FED cassava demonstration sites, upland rice out-growers, members of 3 cooperatives, 20 extension staff and 12 agro-dealers. The total ISFM demonstration coverage is 150 hectares covering all FED sites (60x50) per plot.	09/24/12	11/30/12	\$ 64,000	Bong, Grand Bassa, Lofa, Nimba	Ongoing
Capacity building for the safe use of authorized agro-chemicals in Bong and Lofa	C1-MDF-08	Collaborate with input dealers in organizing sensitization, awareness creation and demonstrations for the safe use of authorized agro-chemical and equipment. Conduct two demonstrations of innovative tools, inputs (fertilizer, chemicals, etc.) in Lofa and Bong.	7/24/12	8/15/12	\$ 5,000	Lofa, Bong	Completed
Arjay Farms Out-grower Expansion	C1-MDF-11	Work with Arjay Farms in expanding and training additional out-grower staff. In addition, provide Arjay with the necessary tools and training in order to process the significant increase in rice seed.	6/18/12	10/15/13	\$ 111,520	Montserrado	Ongoing

Activity Name	Num.	Description	Start Date	End Date	Approx. Value (USD)	Location (county, district)	Activity Status
Vegetable Seedling Special Study	C1-MDF-13	Identify approximately 30 independent vegetable seedling producers in the focus counties (5 per county). Then conduct mini-survey with 30 producers to collect data on each production sites' setup and location, scope of seedling production and sales, inputs and costs for production, as well as challenges in producing and selling vegetable seedlings. Based on the survey determine the best candidates to be trained as commercial vegetable seedling producers through the FED Vegetable Seedling Program.	6/5/12	7/02/12	\$ 1,475	Bong, Grand Bassa, Lofa, Nimba, Montserrado, Margibi	Completed
Food Consumption Patterns & Expenditure Among Peri-Urban Farmers (FCPE) Special Study	C1-MDF-14	A mini survey of a sub-sample of the FED Baseline Survey of households that was conducted between February and May 2012. The Baseline sampled approximately 85 households involved with FED in the peri-urban areas of Margibi and Montserrado Counties. The specific objective of this survey is to characterize the following: types of food consumed (dietary variety) and types of food sources by household head type, main livelihood of household head and household size; estimate average household food expenditure and share of different food types in total food ; and consumption shocks and coping strategies.	5/21/12	6/29/12	\$ 583	Montserrado, Margibi	Completed
Soy Flour Compost Distribution	C1-MDF-15	Collaborate with OICI on the transfer of 485 MT of spoiled soy flour that was imported by OICI but is unfit for neither human nor animal consumption. FED will work with local partners on using the soy flour for compost on FED and	7/9/12	12/31/12	\$ 50,000	Bong, Grand Bassa, Lofa, Margibi, Montserrado, Nimba	Ongoing



Activity Name	Num.	Description	Start Date	End Date	Approx. Value (USD)	Location (county, district)	Activity Status
		partner sites. A warehouse will be constructed to store the soy flour.					
Completion of National Peste des Petits Ruminant (PPR) Vaccination Campaign	C1-MDF-18	Assist MOA with effective completion of the National PPR vaccination campaigns at the County level. Significant EU/AU/IBAR provided vaccines remain unused due to closure of program.	7/2/12	10/15/12	\$ 132,000	Bong, Grand Bassa, Lofa, Margibi, Montserrado, Nimba	Completed
Biomass-fired Testing and Possible dissemination	C1-MDF-19	The aim of this activity is to test, demonstrate and, depending on the results of the testing and demonstrations, promote the commercialization of biomass-fired vegetable dryer.	11/16/12	12/18/12	\$4,800	Montserrado	Ongoing
Vetiver Expansion Program	C1-MDF-20	Develop plant materials that are effective at stopping soil erosion. Establish small nurseries of Vetiver at the county offices to be eventually planted out at demo sites to assist with soil erosion.	6/29/12	10/31/12	\$ 5,630	Bong, Grand Bassa, Lofa, Montserrado, Nimba	Ongoing
Cassava Demo Site Training and Cultivation – Phase I	C1-MDF-21	22 sites/partnerships with farmer associations to increase farmers' capacity to increase the production of cassava, expand network of out grower farmers in cassava, and build sustainable and profitable cassava farming operations for cassava farmers in the target counties.	6/18/12	10/31/12	\$ 39,700	Lofa, Nimba, Grand Bassa, Bong	Ongoing
Phase I, Youth Nutrition Program	C1-MDF-22	Build Demonstration site to build and increase overall nutrition at orphanage. Train Orphanage leaders and kids in vegetable farming and input supplies and provide technical assistance on goat health.	6/29/12	12/31/12	\$ 32,853	Montserrado	Ongoing
Vegetable seedling production and sales	C1-MDF-24	Motivate farmers to invest in vegetable production by training seedling producers in use	8/15/12	01/31/13	\$ 90,510	Bong, Grand Bassa, Lofa,	Ongoing

Activity Name	Num.	Description	Start Date	End Date	Approx. Value (USD)	Location (county, district)	Activity Status
		and promotion of improved inputs and on how to provide technical information services to farmers.				Margibi, Montserrado, Nimba	
Johnsonville Women Agriculture Project	C1-MDF-25	Improve the water management system through the construction of peripheral canals to collect and control water from the catchment areas and the construction of peripheral bunds.	7/23/12	10/22/12	\$ 3,106	Montserrado	Ongoing
Comprehensive Food Security and Nutrition Survey (CFSNS)	C1-MDF-26	Partner with the Government of Liberia on the 2012 CFSNS goals to provide baseline for food security and nutrition information that will underpin the measurement of progress in the implementation of PRS II and UNDAF 2013-17. The main objective is to ensure availability of timely and appropriate high quality food security and nutrition data to inform policy and programming.	7/16/12	12/14/12	\$ 28,000	Bong, Grand Bassa, Lofa, Margibi, Montserrado, Nimba	Ongoing
One day technical consultative workshop on livestock interventions in Liberia	C1-MDF-29	Assist the MOA in achieving a sound understanding of development interventions in the livestock sector by arranging a meeting to identify donor funded interventions currently under implementation in the livestock sector and facilitating relationship building among participating organizations.	9/6/12	9/6/12	\$ 2,825	Montserrado	Completed
Soy Flour Compost Production Training	C1-TRN-30	Collaborate with Sangay Farm based on their knowledge and experience in compost production to train lead cassava farmers from Bong, Nimba, Grand Bassa and Lofa counties in compost production and its application.	8/16/12	8/30/12	\$ 5,633	Bong, Nimba, Grand Bassa, Lofa	Completed
T-shirt for Cassava, up and lowlands rice, and	C1-MDF-31	Increase awareness of FED programs in targeted communities by production of a FED t-shirt to be	8/21/12	9/30/12	\$ 11,193	Bong, Nimba, Grand Bassa,	Ongoing

Activity Name	Num.	Description	Start Date	End Date	Approx. Value (USD)	Location (county, district)	Activity Status
vegetables demonstration trainees		distributed to those who are participating in FED activities.				Lofa	
Training in treadle pump manufacturing and tube well installation	C1-MDF-32	Train metal workers and other artisans in the production and installation of treadle irrigation pumps and tube wells, which are relatively low cost and highly productive irrigation equipment.	8/16/12	2/28/13	\$ 5,110	Lofa, Margibi, Nimba	Ongoing
Vegetable and Cassava Processing	C1-MDF-34	Train local manufacturers in producing low-cost, efficient cassava and vegetable processing equipment. Provide portable cassava mill and other processing equipment allowing for easy transportation from one location to another.	9/24/12	12/15/12	\$ 8,200	Montserrado, Bong	Ongoing
Impact Rice Dehulling	C1-MDF-40	Introduce low-cost, locally made rice dehulling equipment available to rice producers and consumers, making profitable processing businesses a possibility and improving access to markets.	11/07/12	12/18/12	\$4,200	Montserrado, Bong, Nimba	Ongoing
Three day technical consultative workshop on livestock interventions disease extension support in Liberia	CLIN01-MDF-0045	In order to effectively manage the development of the National Livestock Sector, the MOA needs to instruct all Livestock sector extension staff in issues of animal health and prevention in Liberia. FED has received invitation for its project County Livestock Extension staff to attend a planned workshop in animal disease diagnosis and prevention scheduled for Dec 17-19, 2012.	12/17/2012	12/19/2012	\$2,825	Montserrado	Completed
<b>COMPONENT 2</b>							
Business Management Skills Training	C2-TRN-01	Stimulate agribusiness growth by conducting a business management training that will help attendees to identify their business skill strengths and weakness; develop a stronger	5/23/12	6/8/12	\$ 14,527	Grand Bassa, Montserrado, Nimba	Completed

Activity Name	Num.	Description	Start Date	End Date	Approx. Value (USD)	Location (county, district)	Activity Status
		business plan; learn about the various components of managing a successful agri-business; and present an action plan to develop and manage a profitable agriculture business.					
Formation of National Cassava Sector Coordinating Committee	C2-MDF-02	Facilitate the establishment of a sustainable system for coordination, advocacy and information dissemination within the Cassava sector as agreed in the National Cassava Sector Strategy document.	6/1/12	9/30/12	\$ 10,075	Lofa, Nimba, Grand Bassa, Bong	Ongoing
Enterprise Development Pilot Program	C2-TRN-03	Prepare various producer groups in Nimba to meet the minimum standard requirements as Business Associations (Business registration and establishing bank accounts as well as putting in place good financial system) through a training workshop.	7/2/12	10/31/12	\$ 31,620	Nimba	Completed
Computer literacy training for From God to Man Farmers Association	C2-TRN-04	Provide basic computer training to ten community members in the village of Doumpa. The computer training will enhance the capacity of the farmers' association to efficiently manage the association.	7/12/12	9/12/12	\$ 1,700	Nimba	Completed
Stakeholder Profiles	C2-MDF-05	Provide baseline and profile data on lead producers, agro-input dealers, processors, transport and logistics companies, and buyers (including markets) that support the four value chains: rice, cassava, vegetables, and goats in Bong, Lofa, Nimba, Grand Bassa, Montserrado, and Margibi.	8/6/12	12/31/12	\$ 54,500	Bong, Grand Bassa, Lofa, Margibi, Montserrado, Nimba	Ongoing
Business Skills Training for SMEs	C2-TRN-06	To stimulate the Agriculture sector FED will work with approximately 25 participants	7/18/12	9/7/12	\$ 4,870	Bong	Completed

Activity Name	Num.	Description	Start Date	End Date	Approx. Value (USD)	Location (county, district)	Activity Status
		representing 12 SMEs on the following: key considerations when writing a business plan; applying a simple process to write a business plan effectively; coordination of various company departments and resources in the process of writing the business plan; and drafting of business plan document.					
Mentorship program for Business Plan Development for SMEs	C2-TRN-07	Market Research training, Telephone follow-ups with various groups, Market Analysis & Development of Marketing Plan training, Development of Production/Operational Plan training, Development of Financial Plan training, and finalization of each partner's business plan.	7/25/12	10/31/12	\$ 21,480	Bong, Montserrado	Completed
Welekamah Farmer Based Organization	C2-TRN-08	Build the capacity of Welekamah to operate more effectively as a business through a training workshop which will address the topics of customer service, selling techniques and farming as a business.	1/4/12	1/6/12	\$ 1,770	Bong	Completed
New Generational Women/AEDE/ Chevron	C2-MDF-09	Build the capacity of a predominantly women cooperative group to produce pepper and cassava farms with value addition components to increase incomes and food security for farming families of Upper Clay Ashland in rural Montserrado County. Activities include completion of a Baseline Survey, provision of good governance training, provision of literacy training, provision of agricultural skills training, provision of financial management training, provision of business management and	10/1/12	9/30/13	\$ 13,719	Montserrado	Ongoing



Activity Name	Num.	Description	Start Date	End Date	Approx. Value (USD)	Location (county, district)	Activity Status
		marketing training.					
Enterprise Development Pilot Plan And Gender Concept	C2-TRN-10	Prepare various producer groups in Grand Bassa to meet the minimum standard requirements as Business Associations (Business registration and establishing bank accounts as well as putting in place good financial system) through a training workshop that also addresses problems and constraints that female members face and stresses the importance and benefits of addressing those problems.	8/7/12	8/11/12	\$ 8,020	Grand Bassa	Completed
MSME-FED Partnership Formalization Outreach Program	C2-MDF-13	In support of MOCI, conduct an outreach campaign that will better inform and encourage the public (Farmers Association, Agriculture input dealers and value chain actors) to register their businesses and also inform them about the benefits associated with the registration process.	9/7/12	12/31/12	\$ 69,702	Bong, Grand Bassa, Lofa, Margibi, Montserrado, Nimba	Ongoing
Pilot Youth Business Plan Competition for Institutions	C2-TRN-15	FED will pilot a Business Plan Competition which includes a training component for Seniors and recent graduates of business and agriculture programs at the following institutions: BWI, Cuttington University, University of Liberia, Nimba Community College, and Grand Bassa Community College. Three top winners will be eligible for assistance from FED with implementing their business plan.	10/29/12	12/28/12	\$ 19,592	Bong, Montserrado, Grand Bassa, Nimba, Bong	Ongoing
Organizational Strengthening	C2-TRN-18	After conducting a robust needs survey and assessment of FBOs, FED will provide targeted	10/30/12	2/28/13	\$ 112,001	Bong, Grand Bassa, Lofa,	Ongoing

Activity Name	Num.	Description	Start Date	End Date	Approx. Value (USD)	Location (county, district)	Activity Status
		FBOs with organizational strengthening training to improve organizational and management practices, communication skills, financial management skills, human resource development skills and gender inclusiveness.				Nimba	
Video Workshop	C-2-MDF-19	<p>FED, in partnership with USAID FACET, will provide training on taking and presenting low-cost video. This training will target selected agribusinesses and organizations doing agriculture extension work, as well as MoA and FED staff. Video content will target areas where there are gaps in knowledge in the goat, cassava, rice, and vegetable value chains.</p> <p>By providing this training we will provide additional technical tools and knowledge to strengthen Liberian agribusiness and community groups' ability to address their target audience.</p>	12/03/12	12/08/12	\$19,305	Montserrado	Approved
MSME Conference 2013	CLIN02-MDF-0020	The Government of Liberia with the support of LBBF and IFC will bring together 150-200 MSMEs, banks, MFIs, and civil society for 3 days conference which will be based on the four pillars of the MSME policy: Legal and Regulatory Reforms; Access to Markets; Access to Finance; and Building Skills and Knowledge. The conference will allow the government to take stock of the MSME sector in Liberia, deliver key training workshops to assist them in all stages of development, and	11/06/2012	02/08/2013	\$40,000	Montserrado	Ongoing

Activity Name	Num.	Description	Start Date	End Date	Approx. Value (USD)	Location (county, district)	Activity Status
		examine practical steps that other key players including banks, micro finance institutions, and concessionaires can take to promote sustainable growth leading to employment creation and jobs.					
Second Organization Strengthening Training	CLIN02-TRN-0021	The key program objective for organizational strengthening is to consolidate the organization and strengthen its leadership and governance structure. It also aims at ensuring the direct participation of its members, including networks and associates of Agriculture commercial partners in the sector development and implementation.	12/15/2012	03/15/2013	\$250,000	Bong, Nimba, Grand Bassa, Montserrado, Lofa	Ongoing
Financial Management	CLIN02-TRN-0023	Organizations and individuals assisted by donor projects often abandon the activity when donor funding ends, rather than continuing development of productive enterprises; frequently organizations are initiated for the primary purpose of capturing donor funding. For example, donor projects have stimulated swampland rice cultivation using a model of payment for product with seeds rather than cash. Despite profitability (reported by donors) growers stopped cultivation when the project ended. Observers attribute this to lack of growers' ownership of the activity, lack of personal investment and lack of financial literacy.	12/10/2012	03/10/2013	\$80,000	Grand Bassa, Nimba, Lofa	Ongoing
<b>COMPONENT 3</b>							
Agro-Business	C3-MDF-01	Partner with universities and vocation	6/1/12	11/30/12	\$ 67,028	Montserrado,	Completed

Activity Name	Num.	Description	Start Date	End Date	Approx. Value (USD)	Location (county, district)	Activity Status
Internship Program		schools in establishing a 3 month internship program for selected students and place them in Agro-business organizations.				Nimba	
Staff Training and Curriculum Roundtable discussion at BWI and Nimba	C3-TRN-02	Conduct two-day training for BWI Department of Ag and Admin staff as well as all staff at the Nimba Community College on instructional development and delivery. A curriculum review with all stakeholders will also be conducted.	6/11/12	6/22/12	\$ 2,000	Montserrado, Nimba	Completed
Booker T. Washington Institute (BWI): Building a Center of Excellence	C3-MDF-04	BWI lacks the resources and training to be a Center of Excellence for Liberia. Curriculum has not been reviewed nor improved for several decades. Staffs need to be re-trained, and infrastructure for the Library and Department of Agriculture is poor, with inadequate facilities and equipment for teachers and students. FED will work with BWI on the following: 1) Upgrade BWI to become a Center of Excellence 2) Upgrade curricula and equipment for BWI's agriculture department. 3) Create an environment conducive to learning and to the pursuit of excellence in agriculture.	6/15/12	9/30/12	\$ 120,550	Margibi	Ongoing
FED World Food Day Participation - Child Art Competition	C3-MDF-06	Meaningfully involve youth in agriculture and business development in order to prepare them to participate	9/10/12	12/15/12	\$ 16,935	Bong, Grand Bassa, Lofa, Margibi, Montserrado,	Ongoing

Activity Name	Num.	Description	Start Date	End Date	Approx. Value (USD)	Location (county, district)	Activity Status
		more fully in economic development and food security. This will be done through partnership with Child Art to arrange an art competition among school children on the theme of World Food Day, culminating in a final awarding ceremony at the World Food Day event being organized by the MoA.				Nimba	
Instructor Survey and Vocational Education Instruction	CLIN03-TRN-0010	FED is active in four community colleges and the BWI. In order to know the needs of instructors, an assessment will take place. Based on the assessment vocational instructor education will take place.	12/03/2012	12/16/2012	\$3,000.00	Margibi, Grand Bassa, Nimba	Ongoing



## **Project Management and Administration**

### **Administration and Logistics**

#### ***Achievements***

During this quarter, FED continued to provide effective administration and logistical support to program and administrative staff, while assuring contract compliance. Highlights during this quarter include:

Staff Recruitment, LTТА:

During the period under review, the below staff were recruited to fill vacant FED positions. An accountant was recruited from the FED Internship Program, three Goat officers for three County Offices were hired, one Radio Specialist, one person for Special Studies, one Consultant for Knowledge Management, one person for the Vocational Education team, interns, and an Office Assistant for the Monrovia Office.

#### **Ongoing Recruitment**

Recruitment is currently ongoing for the following positions

- i) Input Supply Officer
- ii) M&E Coordinator/Officer
- iii) Market Linkages Officer
- iv) Access to Finance Officer
- v) Goat Officer
- vi) Nutritionist
- vii) IT Officer

#### **Other activities**

- A meeting was held with the FED insurance company on the improvement of services and the general update on insurance for local staff;
- The first annual leave schedule for the year 2013 have been completed and distributed to staff;
- Human Resource Manager conducted series of the on the importance staff Performance Review trainings with staffs and supervisors in Bong, Nimba, Grand Bassa, Lofa Montserrado, and Margibi counties in the month of November 2012.

## Environmental Compliance Monitoring and Reporting

- The review of the Environmental Mitigation and Monitoring Plan (EMMP) is near completion, and selected site visits were held at FED's PUA unit in Yanquellie and FED's MoA demonstration site in Margibi County. The aim was to reinforce FED's position on best management practices for agriculture productivity. Farmers were assessed in their knowledge acquired in managing the impact of agricultural activities from ongoing trainings.
- While trainings in soil management techniques have been developed, they should be complemented with efforts from IFDC, and inclusive of integrated soil fertility management and Integrated Pest Management.
- Visited sites selected by FED's PUA unit in Yanquellie and FED's-MoA demonstration site in Margibi County. The aim was to reinforce FED's position on best management practices for agriculture productivity. Farmers were assessed in their knowledge acquired in managing the impact of agricultural activities from ongoing trainings. From observation, while trainings in soil management techniques have been developed, they should be complemented with efforts from IFDC, and inclusive of integrated soil fertility management, which is in line with integrated pest management issues.
- The use of cover crops having direct economic value to farmers has been agreed on as an inducement for farmers. It was discussed that cover crops not having a direct benefit to farmers would not be of interest even if to improve soil for the next cropping season.
- Water quality monitoring<sup>4</sup> for water wells in the FED project is now ongoing. Four of five wells have been tested in the Bong County area, with all four showing presence of e-coli. Two of the four have also shown a presence of arsenic, although within an acceptable range. The remaining well will be tested when logistical conditions are favorable.

### Methodology

- Arsenic Test, using EZ Arsenic High Range Test Kit.
- Fecal Coliform Test using MEL/MPN Total Coliform field kit

### Results Table:

No.	County	Community	Buyer	Installer	Result E.coli	Result Arsenic
6	Bong	Barlo Quarter	Fanta Kamara	Smart Garage	P	Less than [.01 mg/l]).
7	Bong	People Street	Kassallicka	Smart Garage	P	Less than [.01 mg/l]).
8	Bong	People Street	Group Bankidi	Smart Garage	P	Less than [.01 mg/l]).
9	Bong	Lele Kpayen	Ayouba Koneh	Smart Garage	P	Less than [.01 mg/l]).

P=Presence of E-coli; Less than [.01 mg/l]) =test of groundwater-sourced water access points for inorganic arsenic at a level not to exceed 10 ppb (10 micrograms/liter [.01 mg/l]).

### **Issues Arising:**

It is clear that the requirements for the IEE<sup>1</sup> were not followed closely which in fact led to the quality of water in the water wells, as the siting of the wells probably contributed to the microbial presence in the wells. All the water points are unsealed and many are without pumps installed, while the capacity of water wells to deliver a continuous flow is impossible due to slow recharge, there is also that suction lift of the treadle pumps which cannot lift water from a depth exceeding 21 ft.

### **Recommendations**

Recharge capacity of these wells does suggest that more technical support should complement any subsequent water wells construction. Moreover, source water protection plan is unenforceable given the initial site conditions. Relocation may be the best option.

### **Planned Activities:**

Quarterly Reporting for USAID is being compiled; the report will in accordance with the EMMP, be prepared and submitted to USAID as a quarterly Environmental Compliance report. This report will be easily cross-referenced with the EMMP and will document, among other issues, the implementation of land preparation BMPs, etc.

### **Challenges**

- Transport problem – due to bad road conditions during the rainy season all FED project staff find it difficult to move around.
- Initial planning of activities has not always included environmental input, this has been addressed for 2013 activities.<sup>2</sup>

---

<sup>2</sup> **Arsenic.** In compliance with Guidance Cable State 98 108651, FED will monitor groundwater-sourced water access points for inorganic arsenic at a level not to exceed 10 ppb (10 micrograms/liter [.01 mg/l]). **Total Coliform.** FED will monitor all new or rehabilitated water access points (groundwater- and surface water-sourced) for no detectable fecal coliform in any 100 ml sample

## **FED Year 2 Work plan Roll out Workshop**

The FY 2013 workplan was written, completed and submitted during the period under review; FED is still waiting for USAID's official approval. The workplan is built on the knowledge and skills of internal and external stakeholders captured during a series of technical consultations at both county and national levels. The inception phase of the workplan went through multiple interactions which further strengthened the quality of its content.

This workplan maps FED's pathway to success during this second implementation year. As the cardinal program planning and implementation tool, it defines the strategy and activities that will achieve the FED goals and objectives as well as resources needed in support of the plan. Additionally, the workplanning process provided a platform for communicating FED's common values and strong understanding of the proposed strategy and underlined the conditions and opportunities to emphasize those intangible and motivational messages which was not entirely expressed in the document, but are foundational to building a robust and unified team.

To ensure this plan remains FED's primary navigational tool in year 2 and is successfully operationalized across all business units and owned by staff irrespective of their role on the program, the workplan was officially rolled-out during a two-day all staff workshop in Monrovia.

As the first all staff gathering since start-up in 2011, the workshop set to achieve the following results:

1. Staff are knowledgeable of and more committed to translating FED's goal and objectives into their day to day activities
2. Staff recognize the importance of integrating county teams more closely into all aspects of FED operations
3. Staff understand the rationale to embed a larger number of high performing partners into FED operations
4. Staff realize that within FED's operational context, success will be a factor of exceeding planned results
5. Staff understand FED's emphasis team work within and between all layers of the project
6. Staff recognize their role in promoting a culture of learning within FED
7. Staffs are knowledgeable of the tools and resources that exist within FED to promote all of the above success factors.

To increase the likelihood of success of this important event, the workshop was structured around a mix of plenary and group discussion sessions and powered by carefully selected team building exercises and mind teasers. It was a memorable experience, founded on well-crafted messages exchanged in a fun and relaxing environment.

## Appendix I: Success Stories



# SUCCESS STORY

## BWI Compost Curricula Increases Yield

### New compost practice is enhancing quality and quantity of crops at BWI

*A student compost pile, almost at its solidified state at the BWI facility in Kakata Town, Margibi County, Liberia.*



Nelson Kanneh Communications-FED

*“We are grateful to USAID-FED for its continuous support and for the experience we have gained from the practical application of compost. We hope other agriculture institutions will follow in BWI’s footsteps and introduce improved compost production in their academic curriculum,” said BWI Compost Instructor, Varlai W. Jackollie.*

In 2011, USAID’s Food and Enterprise Development (FED) project formed a partnership with the Booker T. Washington Institute (BWI) to improve the agriculture curriculum and assist the institution become a Center of Excellence. Toward this goal, FED is providing support in developing a compost curriculum and establishing a linkage with BWI and FED farmers. This initial step by FED has created a market for the BWI’s compost unit, which has created interest amongst local farmers in the county and agriculture students at BWI.

Since 1927, BWI has been contributing technical human resources to Liberia’s reconstruction and development. BWI is largely funded by the government of Liberia through subsidies, and has two parallel training programs, including one that caters to youth across the nation, a regular secondary vocational and technical program, and an accelerated vocational training program for high school graduates. Approximately 25% of BWI students are female, and the Department of Agriculture has a total of 300 regular students and 133 accelerated students.

BWI began the production of compost with the Department of Agriculture and trained BWI’s agriculture staff through a FED-sponsored training for 35 local farmers on how to improve compost using best practices. Additionally, FED utilized BWI staff as a means of creating awareness on compost and its importance to increasing crop yield, quality, and taste.

Compost has become a new phenomenon in the Department of Agriculture, due to Varlai W. Jackollie, BWI compost instructor, who has created interest in studying compost production for his 75 students. Jackollie is demonstrating how to create compost from woodchips, animal manure, green grass, and sawdust, all which require 90 days to solidify in the compost facility at BWI, which is used for teaching, mixing, and processing.

“Since beginning to use organic fertilizer compost in BWI’s plots, crops have grown well and are having better yields than chemical fertilizer crops,” said Jackollie. “This contrast in difference has created a huge interest among farmers and agriculture students to utilize organic compost in their fields.”



## SUCCESS STORY

# FED Graduates 57 Agriculture Interns

**Agricultural students acquired hands-on work experience, preparing them for future employment**



FED staff Dennis Eaton, component three lead, and participating interns.

*"We would like to give a big thank you to FED for organizing this program. It was timely and we learned a lot of new things we didn't know before," said Princess Togba. intern – CARE-Int'l Liberia*

With the goal of creating professional opportunities and skill building in the Liberian agriculture and business sectors, the first phase of the USAID Food and Enterprise Development (FED) internship program ended on November 16, 2012 with a total of 57 interns completing the program. The goal is to prepare students, seniors, and graduates to become future leaders in the agriculture and business sectors. Phase one facilitated students to put their classroom learning into practice, and also built technical skills for agriculture and business careers. This initiative which began in August 2012 will be carried out in successive phases over the five-year duration of the FED program.

In this phase, 57 students, aged 20 to 35, were selected from four universities and technical schools, including the University of Liberia, United Methodist University, Nimba County Community College, and Booker T. Washington Institute (BWI) as part of the pilot phase. They were placed with 20 public institutions, NGOs, INGOs, and farm enterprises across Liberia and made a small stipend, which assisted with transportation costs.

Students were able to gain practical agriculture and business knowledge, including field research methods, practical hands-on field experience, agriculture as a business, data collection surveys, accounting, and administration which enhanced their understanding of agri-business during the internship period. Through the internship, students were able to build professional relationships, leadership and networking skills, which will assist in future employment opportunities. In addition, interns were also provided with professional development trainings, mentorship, and social experiences to prepare them for the Liberian and global labor markets in their respective fields of study.

Training Specialist, Catherine Karmo, gave an overview of the training and the internship in general at the end of the presentation. She said the program will continue as part of the USAID-FED activities in Liberia; "We want to empower more youth who have interest in the agriculture sector of the country by providing them training and job opportunities," she said.

Several of the interns have gained employment at the institutions they were assigned, including FED. These interns were employed based on their high level of commitment and skills exhibited during their internship assignment.

Through the internship program, FED will continue to contribute directly to building local human capacity which will enhance the overall workforce development in Liberia, and the reduction of poverty through the provision of jobs and life skills, especially amongst young and unemployed youths.

# BEFORE & AFTER

## Vetiver Thwarts Soil Erosion Problems

### FED and Ministry of Agriculture Demonstrate Successful Control of Soil Erosion

USAID Food and Enterprise Development (FED) Program for Liberia is working closely with the Ministry of Agriculture (MoA) in Kakata, Margibi County to address the problem of soil erosion throughout the country. It is a serious problem in Liberia because of the high rainfall which causes cultivated soils to be lost to erosion, thus reducing long-term crop productivity.

The method used to prevent erosion is a non-invasive grass called vetiver, which stabilizes the soil while leaving most of the land available for growing crops. Vetiver, often called the 'thin green line' stops soil movement while allowing water to drain freely from cropped land. Vetiver is used widely throughout the world for this purpose.

In collaboration with the MoA, FED plans to expand the availability of vetiver in Liberia so that it can be used by farmers who are interested in keeping their soil from washing away. Several nurseries are beginning to grow vetiver for sale and it should be widely available by March 2013.

The Vetiver System (VS) is dependent on the use of a very unique tropical plant. This plant can be grown over a very wide range of climatic and soil conditions, and if planted correctly can be used virtually anywhere under tropical, semi-tropical, and Mediterranean climates.



Photo Credit: Dermot Cassidy, FED

**BEFORE:** Pepper crop in a field showing signs of sheet erosion.



Photo Credit: Dermot Cassidy, FED

**AFTER:** The same field nine weeks later is showing the effects of contouring and vetiver stabilization in halting soil erosion.

## Appendix II: Distribution of Extension Materials

Extension materials on agro-inputs handling, storage and safe use were distributed to the participants during the capacity building session. The materials will be used for the establishment of sales points and farm visits.

The topics covered by the materials were developed by “**CropLife-Africa Middle East and IFDC**”. They included:

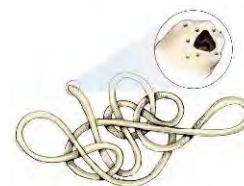
1. Basics of fertilizer use;
2. Basics of agro-chemical use and safety measures;
3. The role of the agro-dealer;
4. Setting up an agro-input sales point

### **Example-1:**

Crop pests include insects, plant diseases, insect-like organisms, weeds, and vertebrates. Eight major pests based on damage caused yearly are:



1. Caterpillars	2. Grasshoppers	3. Locust	4. Rodents
-----------------	-----------------	-----------	------------



5. Birds	6. Snails	7. Weeds	8. Nematodes
----------	-----------	----------	--------------

In the following table an overview is provided of the major pests and their damage to crops.

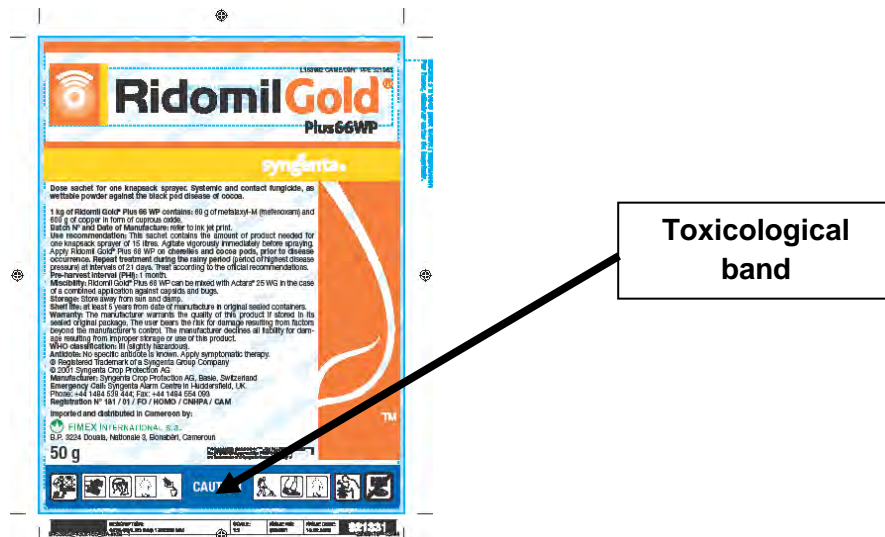
	<b>Pest</b>	<b>Crop and damage</b>	<b>Time of the year</b>
1	Caterpillars	Feed on succulent plant parts such as leaves of cereal and leguminous crops.	July–August.
2	Grasshoppers	Feed on any green crops.	Year round.
3	Locust	Feed on any crops. Move in swarms and destroy crops completely if not controlled.	Seasonal; July-August; they come in colonies unlike the grasshoppers.
4	Rodents	Feed on root and tubers (yam and potatoes) and legumes such as groundnut. They attack stored grain and seeds.	Year round.
5	Birds	Birds like the queller attack grains in the field, especially during the dough stage in rice, wheat and sorghum.	August–October.
6	Snails	Bore holes in leaves by chewing and feed on garden fruits e.g. tomatoes.	July–August.
7	Weeds	Broad leaf weeds and grass compete with all crops for nutrients. There are parasitic weeds such as dodder and strigar spp. that attack maize, sorghum and cowpea.	During the wet season.
8	Nematodes	Feed on the roots, young seedlings and other crops, such as soybean and potatoes by boring.	During the growing season.

**Example-2:**

**Pesticide Knowledge - How to Read the Toxicological Band**

The toxicological band can be found at the bottom of the pesticide label.





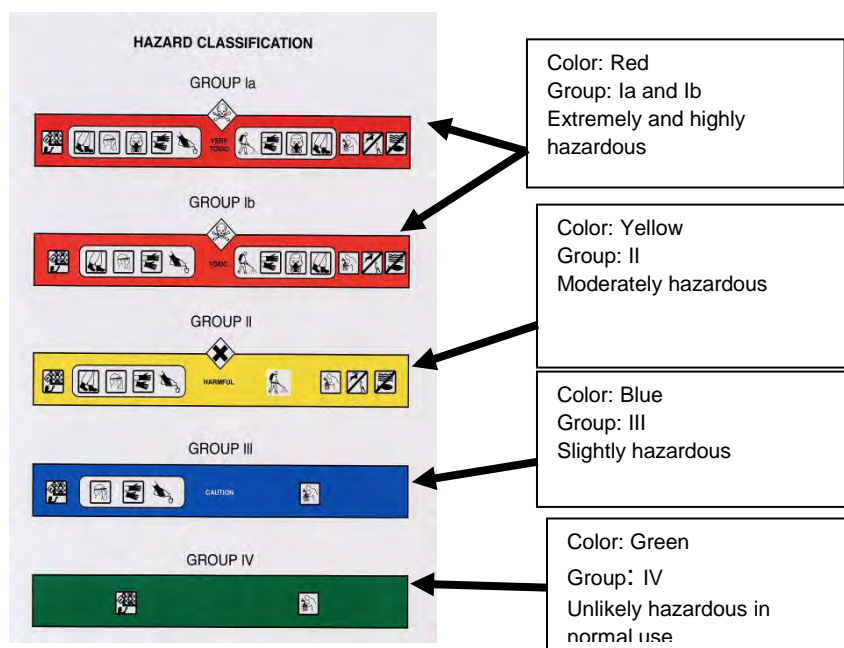
The toxicological band indicates the level of toxicity and instructs how to safely handle the product.

The toxicological band contains two important items:

1. The color band
2. The pictograms

### The color band

The color band indicates the product's level of hazard. There are 5 categories in 4 different colors. The categories and colors are internationally accepted.

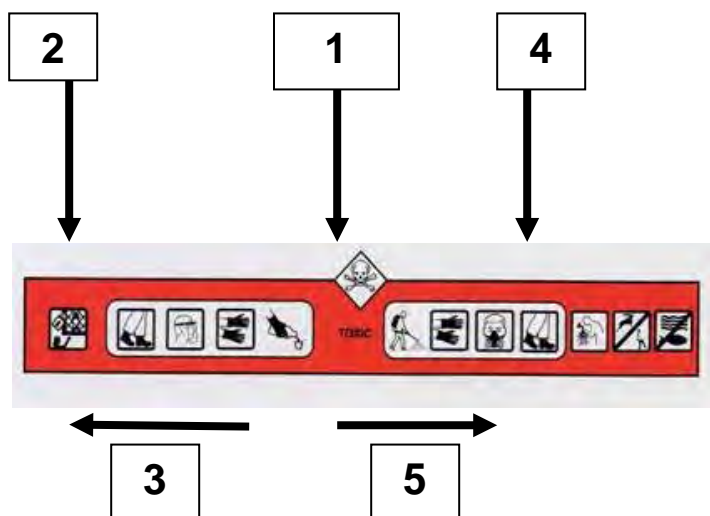




## The pictograms

Pictograms are small drawings that give advice on how to mix, apply, and store the pesticide. They also contain warnings. Pictograms should be read in a specific order:

1. Start in the middle where you will find a pictogram with the level of hazard.
2. Go the left side.
3. The pictograms in the box should be read from right to left.
4. Go the right side.
5. The pictograms in the box should be read from left to right.

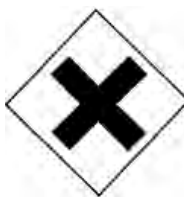


Each pictogram has its own meaning. The most common are:

### Level of hazard



Extremely or highly  
hazardous (red  
color band)



Slightly hazardous  
(yellow color band)

### Storage



Keep product locked  
away so that children and  
animals cannot reach it

### Advice



Wash after use

## Warning



Corrosive



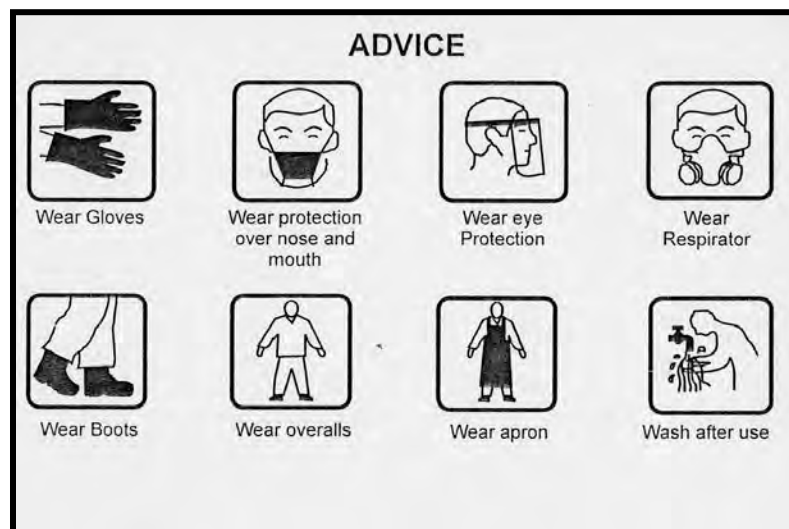
Explosive



Inflammable

## Protection

The following pictograms are always used in combination with the advice pictograms.



### Example-3:

#### Products handling and use

#### What Type of Personal Protective Equipment to Wear?

There are several types of Personal Protective Equipment (PPE) to wear to protect different parts of the body:



**Gloves:** To protect the hands. It is best to wear long-sleeve gloves.



**Boots:** To protect the feet. It is best to wear heavy-duty rubber.



**Overalls:** To protect the legs, arms, and body. It is best to wear heavy-weave cotton or specialist coveralls.



**Apron:** To protect the front of the body. It is best to wear aprons made of PVC, rubber, or polyethylene (liquids cannot get through).



**Hat:** To protect the head and forehead. Be aware that the ears and the forehead are not protected. You can wrap a cloth around your head to protect those parts as well.



**Hood:** To protect the neck and ears.



**Goggles:** To protect the eyes



**Mask:** To protect the nose and mouth.  
Not recommended for spraying.



**Face shield:** To protect the eyes and face. It is cooler to wear than goggles.



**Respirator:** To protect the nose and mouth.

#### When to wear what?

**Always check the label to learn the appropriate PPE to wear in certain situations.**

In general, the following guidelines should be followed:

Situation	Recommended
All situations	Gloves, boots, and overalls.
Preparations	Gloves, boots, overalls, and face shield or goggles. Apron for liquids. Mask or respirator for powder.
Application	Gloves, boots, overalls, face shield or goggles, and hood. Mask or respirator for powder.
Spraying	Gloves, boots, overalls, face shield or goggles, hood and, for highly hazardous materials, respirator.
Inspecting or attending to unopened containers	Gloves, boots, and overalls.
Moving unopened containers	Boots, overalls, gloves, face shield or goggles, and apron.
Handling opened containers	Boots, overalls, gloves, face shield or dust mask or respirator, and apron

The more toxic a product, the more protective clothing is required.