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FOOD AND ENTERPRISE DEVELOPMENT PROGRAM FOR LIBERIA (FED)

ANNUAL REPORT: OCTOBER 2011- SEPTEMBER 2012



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COVER PHOTO: Subsistence farmers, Annie and John, with their children at the FED Doumpa project site.

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ACRONYMS

AEDE	Agricultural, Environmental and Development Economics
AY	Advancing Youth
BRAC	Bangladesh Rehabilitation Assistance Committee
BWI	Booker T. Washington Institute
DAI	Development Alternatives, Inc.
DCOP	Deputy Chief of Party
DQA	Data Quality Assessment
ECOWAS	Economic Community of West African States
ED	Enterprise Development
EDP	Enterprise Development Plan
EU	European Union
FACET	Fostering Agriculture Competitiveness Employing Information Communication Technologies
FED	Food and Enterprise Development
GBCC	Grand Bassa Community College
GEMS	Government and Economic Management Support
GIS	Geographic Information System
ICT	Information and Communication Technology
IFC	International Finance Cooperation
IFDC	International, International Fertilizer Developmental Center
INGOs	International Non-Government Organizations
IQC	Indefinite Quantity Contract
IRP	International Resource Person
ISFM	Integrated Soil Fertility Management
IT	Internet Technology
LDHS	Liberia Demographic and Health Survey
L-MEP	Liberia Monitoring and Evaluation Program
LTTAs	Long Term Technical Assistants
MDF	Market Development Fund
MoA	Ministry of Agriculture
MoCI	Ministry of Commerce and Industry
MoHSW	Ministry of Health Social Welfare
MSME	Medium, Small Medium Enterprise
NCCC	Nimba County Community College
NGOs	Non-Government Organizations
PIDS	Performance Indicator Data System
NIC	National Investment Commission
PMP	Project management Plan
PPR	Peste Des Petits Ruminants
RFP	Request for Proposal
SME	Small Medium Enterprise
STTA	Short Term Technical Assistant
TAMIS	Technical and Administrative Management Information System
TVET	Technical Education and Vocational Training
UDP	Urea Deep Placement
UMU	United Methodist University
USAID	United States Agency for International Development
VES	Vocational Education Specialist
VTNFES	Vocational Technical Non Formal Education Specialist

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**FOOD AND ENTERPRISE DEVELOPMENT (FED) PROGRAM FOR LIBERIA
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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 will help 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 a range of agricultural stakeholders to adopt commercial approaches.

This incentive structure will be 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 will work with the Ministry of Agriculture (MoA) and the private sector to link communities to agricultural inputs (including improved seeds), extension services, nutritious food products, processing services, market information, transportation, credit, and appropriate education, training, and enterprise services.

Over the life of the five-year FED program, expanded market linkages will lead to substantial 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 operates through three main components:

- **Component One: Increased Agricultural Productivity:** Works on agricultural technologies and techniques, such as improved varieties and seed, fertilizer use, mechanization, improved extension, Integrated Pest Management (IPM), and other improvements to production, post-harvest, processing and marketing of the four value chain products to improve incomes and nutrition.
- **Component Two: Stimulate Private Enterprise:** Strengthening agribusinesses, improving their access to inputs, finance, and markets, training and working with individuals and groups of entrepreneurs, improving their skills in business management, marketing, and use of modern technologies to add value and increase profits.
- **Component Three: Build Local Human Capacity:** Works with the vocational agriculture schools and other related institutions on workforce development, improving the skill sets of the next generation engaged in agribusiness, including farmers, enterprise employees, businessmen, and women.

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 seven partners including: Development Alternatives, Inc. (DAI), Winrock International, International Fertilizer Developmental Center (IFDC), Samaritan's Purse, Louisiana State University, The Cadmus Group, and the Center for Development and Population Activities.

Annual Highlights:

This annual report for The Food and Enterprise Development (FED) project, part of USAID Liberia's Feed the Future initiative, covers the period from September 30, 2011, through September 30, 2012, and focuses on successes, accomplishments, and highlights under the USAID-approved first year work plan and activities designed around the targets in the approved Performance Management Plan (PMP).

Highlights of the Year 1 work plan included:

- FED and MoA extension staff trained in improved rice production techniques and introduced technologies that will reduce production and processing labor bottlenecks and will increase yields.
- Introduction of new technologies, including rotary rice weeders, power tillers/levers, impact rice de-hullers, and rice dryers.
- One-day consultative workshop in Monrovia with the MoA, MoF, and MFIs to develop guidelines for an agro-input supply action plan for Liberia.
- SMEs training in the cassava value chain with the National Cassava Sector at the Royal Hotel in Sinkor, Monrovia with a total of 24 participants (10 women, 14 men).
- Business management skills training workshop for SMEs and producer groups in Monrovia with a total of 26 participants trained (9 women, 17 men).
- Business Skills Training Seminar for Liberian Farmer Associations in Grand Bassa and Nimba counties with a total of 62 participants (30 women, 32 men).
- A three-day teacher's training workshop for the VES and youth VES for 52 teachers (11 women, 41 men) and a stakeholder's meeting for 32 teachers (2 women, 17 men) at BWI and the Nimba County Community College from June 14 to 20, 2012.
- Three FED extension agents trained on crop planning, input procurement, and testing of soil water to determine available nutrients in the soil, with similar training provided to two of the rainy season vegetable groups from Mount Barclay and Cocoa Factory communities which benefited 40 farmers (31 females, and 9 males).
- Basic training in lowland rice and upland vegetable farming for a total of 342 farmers (177 women, 165 men) for the Doumpa Community Agriculture Project. The transplanting of vegetables from nursery has been completed and the transplanting of lowland rice is currently at 80% completion.
- Rice production and processing demonstration training in Bong, Lofa, Nimba, and Grand Bassa counties with 772 participants from June 13-22, 2012.
- Training in rice production best practices and provision of food for both layout and de-stumping, tools, seeds (NERICA-L 19, FKR 19), and fertilizers for the Rise and Shine Farmer Group in May 2012.
- Launch of the 2012 National Peste des Petits Ruminants (PPR) vaccination campaign, in collaboration with the MoA, BRAC, USDA Land O'Lakes, and Samaritan's Purse. The vaccine was administered to goats and sheep across Liberia in Lofa, Bong, Nimba, Montserrado, Grand

Bassa, and Margibi counties during the month of September, targeting over 100,000 sheep and goats, affecting 226,836 households.

- FED conducted a groundbreaking ceremony on July 7, 2012, with My Brother's Keeper orphanage, located in Careysburg, Montserrado County for a demonstration vegetable plot. The orphans participated in the digging of vegetable beds, which included bitterball, peppers, cabbage, eggplant, potato, collards, and sweet potato greens.
- FED lead the way with mobile data collection, allowing data to automatically be geo-tagged in real time. FED interviewed approximately 1,000 households using mobile technology, employing both mobile and geospatial technology for the majority of data collection efforts. Three interns, including two women, were included in a ten-day training to transition management of FED's internal mobile data collection to the M&E/GIS coordinator.
- The BWI Department of Agriculture HOD, led a workshop on curriculum development, using his own course on compost making, following the ECOWA TVET curriculum model. This will serve as the model for the post-secondary National Agricultural Diploma Curriculum.
- FED launched its pilot phase of the internship program on July 31, 2012. To date, 58 students, age 20 to 35, have been selected from four universities and technical schools, and placed in 20 public institutions, NGOs, INGOs, and farm enterprises across Liberia.

Overview of the Context:

The civil war that afflicted Liberia for 14 years damaged the country's economy, devastated the country's infrastructure and human capacity, and heavily affected the agriculture sector. Still a majority of Liberians depend on agriculture for their livelihood, as it accounts for almost half of the GDP in the post-war period. With funding from USAID, FED is working with a variety of change agents, and partners ranging from communities, individuals, farmer organizations, enterprises, and donors for all levels of government. The collaborative goal is to restore and strengthen Liberia's agriculture productivity, through increasing yields, diminishing post-harvest losses, and restoring the country's sustainable environmental management practices. The goal of FED is to diminish the country's reliance on food imports to meet domestic requirements.

Across the country, food insecurity is widespread, and children are especially vulnerable due to poor nutrition options. By collaborating with multiple partners, building on their investments, emphasizing Liberian efforts and catalyzing the impact on their commitments, FED's agriculture and enterprise development program is supporting locally-driven sustainable agribusiness development in the key value chains of rice, cassava, vegetables, and goats.

The FED approach includes an initial focus along the growth corridors within the six FED counties of Nimba, Lofa, Bong, Montserrado, Margibi, and Grand Bassa, clustering FED interventions and tackling the key constraints to accelerate success, defined as food security, increased income, and improved nutrition for as many people as possible. To accomplish this goal, FED is testing and demonstrating technology in the field to find sustainable approaches, make any adaptations required, and help reduce the risks from adopting innovations.

FED is learning from local partners, building local capacity, and collecting and sharing knowledge in a variety of ways. FED is also encouraging successful commercial production with tailored activities that help rural households improve their food security and nutrition with the aim of moving all the value chains to more efficient and economic levels of production and profitability.

COMPONENT ONE: INCREASED AGRICULTURAL PRODUCTIVITY

Component 1 comprises five sub-components or tasks/activities:

- Increased production and profitability of quality rice.
- Increased production and profitability of quality cassava.
- Increased production and profitability of vegetables.
- Goat interventions.
- Input supply system interventions/extension services.

In general, these sub-components consist of three main activities:

- Awareness-raising.
- Capacity building of farmers and input suppliers.
- Catalyzing commercial linkages between input suppliers and farmers, and between farmers and markets.

Awareness-raising: Many of FED's Year 1 activities have included raising awareness. In general, they have been undertaken to inform private and public-sector actors of opportunities to enhance productivity and increase profitability of agricultural production, processing, and marketing activities.

Such interventions have included:

- Contact with farming community leaders to arrange for meetings with farmers in order to recruit partners and explain the roles and responsibilities of FED and the farmer groups selected.
- Establishment of agricultural plots for the demonstration of improved rice, cassava, and vegetable production techniques and technologies, and for training of new and established farmers of these commodities and students from BWI and the community college in Nimba County.
- Demonstrating the importance of vaccinating goats against PPR.
- Demonstrating the utility of soil analyses to extension staff and small farmers.
- Demonstration of modern transitional technologies (e.g., treadle pumps, tube wells, power tillers, and rotary weeders).
- Informing farmers of the availability of irrigation equipment by radio paid for by the equipment manufacturers themselves.



Capacity Building: Capacity building has targeted a number of different actors, including small farmers, input and equipment suppliers, and MoA staff. Farmers have been introduced to quality inputs and improved techniques and technologies critical to increased yields. At the end of Year 1, training of a metal workshop in the construction of vegetable dryers began, which will benefit small-scale vegetable processors, FED's first support to the processing side of the value chain. Several of the main capacity building activities have included:

- Instruction in integrated soil fertility management techniques, including alley and cover cropping, use of biochar, composting using generally available and specifically produced ingredients, vetiver for contour planting to reduce sheet and rill erosion, and crop rotation.
- Training of local metal workshops in manufacturing and marketing of irrigation and drying equipment.
- Instruction in the improved cassava production methods, including planting on mounds or ridges.
- Training in lowland rice production, including the establishment of water management controls (bunds, weirs, canals, and leveling), use of improved seed and fertilizer, seedling production and transplanting, mechanized tilling, and weeding using rotary weeders.

The application of these inputs, techniques, and technologies will be significantly expanded in Year 2 through both project-organized trainings and through imbedded services provided by private-sector actors.

Catalyzing Commercial Linkages: Input Suppliers and Farmers/Farmers and Markets

Input and equipment suppliers have also had their capacity to produce, market, and distribute. This has occurred in the case of irrigation equipment manufacturers and vegetable seedling producers who informed farmers of the advantages of these technologies and trained farmers in equipment use and maintenance and in the transplanting and care of vegetable seedlings, respectively.

In Year 2, as surplus production emerges, FED will promote market linkages between producer groups eager to expand commercial production and buyers already connected to markets.

Achievements in Year 1:

- Training of approximately 1,500 small farmers in improved rice, cassava, and vegetable production practices.
- Vaccination of over 100,000 goats.
- Commercial production of improved technologies - treadle irrigation pumps, shallow tube wells, and vegetable seedlings.
- Introduction of integrated soil fertility management practices.



Problems Encountered in Year 1:

- Use of imported vegetable seeds, most of which were of a crop species adapted and/or bred in the subtropics and temperate regions and are unsuited to Liberian conditions.
- Limited availability of surface water for irrigation during the second half of the dry season starting in February.
- Poor lowland rice scheme water management, leading to less than optimal rice production conditions.
- Insufficient upland rice and cassava soil management, contributing to the slash and burn mentality of farmers.
- Use of unhealthy cassava cuttings obtained locally.

Proposed Solutions:

- Local production of good quality seed from local strains of open pollinated vegetables of adapted crops.
- Promotion of cover and alley crops, in particular those with food value, to control erosion and add nutrients to the soil.
- Promotion of soil amelioration techniques and practices, including expanded use of compost and biochar and possibly rock phosphates imported in partnership with local input suppliers.
- Train FED, MoA, and NGO extension staffs and lead farmers to identify vegetable pests and diseases and to treat them with PERSUAP-approved remedies, some of which might be low-cost homemade solutions.

Rice solutions include improved water management, timely transplanting, use of integrated soil fertility management, and the introduction of labor-saving technologies for working the land (power tillers and rotary weeders) and post-harvest processing equipment (par boilers and dehullers).

Cassava will use clean planting material, planting on ridges or mounds along the contour of slopes, use of integrated soil fertility management techniques, and introduction of cassava processing technologies (graters and grinders).

Task 1.3 Increasing Productions and Profitability of Quality Rice in Liberia



During Year 1, the rice value chain worked with 27 farmer groups in the project's four primary counties (Bong, Lofa, Nimba, and Grand Bassa). Before the organization of the groups, the eight FED extension officers from the four primary counties, along with four Bong County district extension officers from the MoA received four days of training in rice production best practices, basic GIS measurement, and basic power tiller operation.



During Year 1, the 27 farmer groups received training in improved practices for rice production from site selection, to weeding, and water management. Other practices (e.g., harvesting, threshing, storage, and milling) will be addressed during the first quarter of Year 2 when the crop is harvested and processed. A total of 691 farmers were trained and cultivated a total of 26.91 hectares at the 27 demonstration sites (see Table 1 for a summary of Year 1 rice achievements and targets). As these sites will not be harvested until late October and November 2012, the impact of improved practices and varieties on yields is not yet known.

Figure 1: Rice Targets and Achievements Year 1

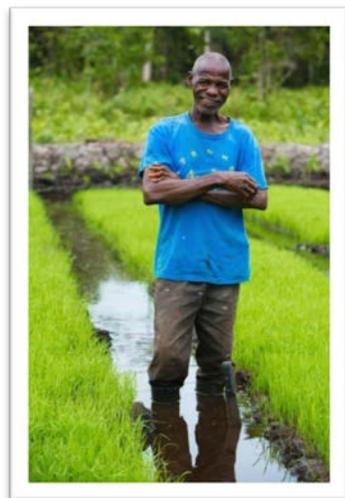
Targets	Year 1 Targets	Year 1 Achievements
Number of demonstration sites	NA	27
Number of beneficiaries	3,750 (Lofa County)	691
Number of hectares	300 (Lofa County)	27

Table 2: Rice Demonstration Sites

COUNTY	DISTRICT	VILLAGE	MALES	FEMALES	TOTAL	TYPE OF RICE	TOTAL HECTARES
LOFA	Foya	Kpandu	18	7	25	Lowland	1.27
		Foya	7	18	25	Lowland	3
	Kolahun	Kahai	9	16	25	Upland	0.99
		Kahenjala	13	12	25	Lowland	3
	Voinjama	Samie Ta	10	11	21	Upland	0.91
		Kuluka	15	10	25	Lowland	0.6
		Karsor	9	16	25	Lowland	0.6
		Kolliemai	21	4	25	Lowland	2
	Sub Total			102	94	196	
NIMBA	Zoe-Geh	Nyempa	17	8	25	Lowland	0.6
		Kpaglay	15	10	25	Lowland	0.7
		Payee	17	8	25	Lowland	0.7
	Sanniqueleh Mahn	Sanniqueleh	18	7	25	Lowland	0.7
		Whynor	20	5	25	Lowland	0.7
		Gbeasilla	20	5	25	Upland	1.2
	Saclapea Mahn	Buah	17	8	25	Lowland	0.6
		Karnwee	16	9	25	Lowland	0.6
	Bain - Gar	Neingbain	3	22	25	Upland	1.2
	Sub Total			143	82	225	
GRAND BASSA	Compound # 3	Gardou Town	24	8	32	Lowland	1.1
		Yarmah Town	22	9	31	Lowland	1.2
		Blayegbah	15	10	25	Lowland	0.6
	Compound # 2	Kourta Town	19	6	25	Lowland	0.6

		Kpelleh Town	17	15	32	Lowland	0.6
Sub Total			97	48	145		4.1
BONG	Jorquelleh	Duita	18	7	25	Lowland	0.6
	Salala	Totota	10	15	25	Lowland	0.6
		Maimu	4	21	25	Lowland	0.6
	Yeaquelleh	Zeansue	11	14	25	Lowland	0.6
		Donfah	13	12	25	Lowland	0.6
Sub Total			56	69	125		3
Grand Total			398	293	691		26.47

As in the case of the peri-urban agriculture and cassava value chain programs, the purpose of rice production training was to demonstrate both traditional and improved production methods, including the use of improved seed, mechanical tilling, line planting, improved water management, rotary weeding, etc. Farmers will distinguish between the two methods, and if they choose based on the economics of the demonstrated practices, they will transfer the improved methods to their own upland and lowland fields.



Improved Rice Seed

Two improved varieties - NERICA L 19 and FKR 19 - were selected for lowland areas to be tested against the best local varieties as designated by the farmers. At upland sites, NERICA 2 was chosen to be tested against a best local variety selected by the farmers. Assuming the use of other improved production practices, in particular better water management, use of the Nerica lowland varieties could increase yields by at least some 600 kg/ha over traditional yields. At harvest time in November, samples will be taken from each site to estimate yields for the rice demonstration plots.

Improved rice seed is not widely available in the FED project area. A handful of seed producers in Montserrado and Margibi counties produce and commercialize the bulk of the improved varieties. FED will develop alternative decentralized capacity to produce and sell such varieties and has begun to consider which local producers might be best placed to address this need.

Soil Management

As part of the technology package demonstrated to farmers in Year 1, chemical fertilizer (NPK 15 15 15) was applied to all of the lowland and upland rice sites and urea to most. As in the case of the other measures, it is still too early to know the impact of these inputs on productivity. However, it is now clear based on soil analyses carried out by the newly commissioned soil chemistry laboratory at Boima

Engineering that the pH is low. This reduces the effectiveness of chemical fertilizers by at least half. Amelioration techniques and practices are currently being considered, including direct pH amendment, supply of micronutrients, and amendments (e.g., compost and biochar).

In addition, given the serious loss of topsoil negatively affecting long-term soil fertility, erosion control measures using mixed vetiver/Moringa systems will also be demonstrated. The rice value chain program will benefit from the work being carried out by the FED peri-urban agriculture program, which has begun to establish vetiver nurseries and demonstrations of how the plant is used to control rill and sheet erosion. Cover crops and UDP will be demonstrated in lowland areas.

Water Management

According to a study commissioned by the World Bank and the Government of Japan, rice is one of the highest potential crops in Africa. In some places, yields have increased from 1.2 MT/ha to 1.8 MT/ha with the proper technology package, with room to increase still more based on the results achieved in many Asian countries and some sub-Saharan African countries. Even with improved rice varieties, however, yields have remained much lower than expected due in no small part to poor water management (i.e., lack of bunding, leveling, and straight-line planting) in most SSA countries.

FED's lowland sites varied greatly with regard to water management due to the diverse qualifications of the extension agents who were charged with overseeing the development of these sites. Some sites suffered from an overabundance of water, while others from insufficient water. In Year 2, this outcome will be addressed by partnering with a short-term irrigation engineer and four irrigation technicians to design and supervise the laying out of the lowland rice schemes.



Improved Practices

In Year 1, FED demonstrated a number of important improved practices, in addition to the ones already described. They included straight-line planting and weeding with an adapted version of a rotary weeder from Madagascar. At upland sites, dibbling was demonstrated in place of broadcast seeding. Straight-line planting and dibbling are more labor-intensive than traditional broadcast seeding or, in the case of

lowland rice production, random transplanting. However, farmers were attracted to the rotary weeder as a way of reducing labor times associated with straight-line planting. Nigerian studies have shown that more than one-quarter of labor costs are associated with weeding.

Labor Constraints Presented by Manual Tilling and Post-Harvest Processing

The labor intensive nature of manual tilling of lowland sites and post-harvest dehulling increase the cost of rice production and reduce its attractiveness to farmers. Power tillers were demonstrated to farmers and were found to have appeal given their capacity to reduce labor time and expand production. The greater capacity of mechanical tilling with power tillers makes possible expanded surface areas and improved tilling quality, resulting in greater production through both increased surface areas and yields. Instead of approximately 28 person-days per hectare, a power tiller can till the same hectare in two person-days. As lowland rice production expands, there may be a growing demand for mechanical tilling, if the investment costs and returns justify their use over manual labor. In Year 2, lower cost, and more productive power tillers will be demonstrated to farmers, and depending on the demand, FED will support the establishment of a private power tiller service.



Task 1.6 Increasing Production and Profitability of Quality Cassava

Cassava plays a huge role for average Liberian farmers, especially women who carry the burden of providing alternative food supplement for household food consumption. The availability of improved varieties (Bassa Girl, Yellow roots, Mana-Gbalu, Tropical Manihot esculanta (TME) and Carricass 1, 2, and 3) are some of the main challenges in cassava production activities. Additionally, farmers across Liberia have had little or no training in cassava production.

In FY 2012, FED focused its cassava value chain development efforts on the testing and introduction of improved varieties from CARI and improved techniques (mound planting, ridges, and flat) In all, 22 demonstration sites were established with new varieties (CARICA 1, 2 & 3, Bassa Girl, IITA-25). These activities succeeded in bringing improved varieties and cultural practices to an estimated 32.6 hectares and 552 participating farmers (see Table 1 for a summary of Year 1 cassava achievements and targets). As these cassava demonstration sites will not be harvested until Spring 2013, the impact of the new varieties and techniques on yields compared to local varieties and local planting method is not yet known.

Table 1: Cassava Year 1 Target and Achievements

Targets	Year 1 Targets	Year 1 Achievements
Number of beneficiaries	300HHs	552HHs
Number of hectares	44	32.6

The field trials of the improved and new varieties were conducted in 22 communities in the FED primary counties of Bong, Nimba, Lofa, and Grand Bassa. Twenty-two lead farmers and five hundred and thirty cassava farmers received training in improved cassava planting method. The training was provided by GREENSTAR, a local consultancy group specialized in improved cassava production. The training agenda included cuttings selection, preparation and handling, nursery preparation for multiplication and mini-setting, nursery management, layout for field planting, soil preparation and field planting. It is envisioned that farmers at the end of the trials will select the varieties of their choice based on the yield potential and utilize them on their individual farms. They will then work with the lead farmers with support from FED to set up a network of clean cutting producers both at the district and village level that other farmers purchase for their farms.

Task 1.7 Increasing Productions and Profitability of Quality Vegetables

In Year 1, FED focused its vegetable value chain development efforts on demonstration sites in 20 locations, testing techniques and improved cultural practices. Seven demonstration and adaptive research sites were established in the 2011-2012 dry season and 13 in the 2012 rainy season, introducing new cultural practices including raised beds, rotations, cover crops, and composting. These activities produced some lessons learned, including the importance of timely input supply, clear and timely scheduling of seasonal tasks, in particular time of



planting, the importance of selecting appropriate crop species and varieties for the climate, difficulties in seed procurement, pest and disease pressure, and of timely pest and disease control. Metal workers were trained in the production of treadle pumps and tube wells, and nursery operators in vegetable seedling production.

Table 1.5 below summarizes the Year 1 peri-urban agriculture (PUA) achievements. Activities commenced in early December 2011, with community sensitization and mobilization. Unfortunately, field work did not begin until mid-February following the hiring of the extension staff and procurement of the inputs. During the 2011-2012 dry season, 153 farmers (35 men, 97 women) in the seven groups were trained in improved methods of okra, bitter ball, watermelon, and pepper production. Rainy season production commenced on June 2012, with 13 groups identified and 304 farmers (185 women, 119 men) were trained in vegetable production. The groups identified cultivated a total of eight hectares of land with assorted vegetables, including watermelon, carrots, chilli pepper, bitter ball, mustard, onions, eggplant, and collards.

Table 1.5: Vegetable Year 1 Targets and Achievements

Targets	Year 1 Targets	Year 1 Achievements
Number of demonstration sites	NA	20
Number of beneficiaries	200	442*
Number of hectares	NA	8 (approx.)

*Approximately 509 beneficiaries of the metal workshop workers, well drillers, and vegetable seedling producers trained by FED were also counted.



The propose of the training was to compare traditional methods of production to that of improved methods through demonstration trails with improved seeds, methods of planting, fertilizer application, and appropriate spacing, so that farmers can clearly see the difference between the two methods and subsequently adopt the improved methods of production on their own fields. One 20 meter by 20 meter demonstration plot was developed at each demonstration site in training the 304 farmers.

Laying out of a demonstration plot at one of the 13 sites in Yarnquelleh.

Crop Species and Cultivars

There has been a significant amount of seed importations of exotic crop species and cultivars into Liberia in recent years. Most of these have been of crop species adapted and/or bred in the subtropics and temperate regions and are totally unsuited to Liberian conditions. Through an early intervention, FED has been narrowing the focus of crops that are adapted to the climate and soils, and are acceptable to local cuisine. Attention has been centered on corn, bitterball, African okra and chili. Trials were carried out with tropically adapted chili cultivars from the AVRDC in Taiwan and some are showing promise for further evaluation.

Seed Availability and Quality

Seed availability and quality is a serious constraint in PUA, and immediate measures have been taken to address this. It is now standard for growers to test seed batches for viability and vigor and to use freshly harvested seed. In a follow-up action, strains of open pollinated crops of adapted crop species that are showing promise are being selected for wider dissemination. Planned follow-on actions will be the production of commercial lots during the 2012-2013 dry season when good quality can be assured.

Sheet and Rill Erosion

Loss of topsoil is a serious issue in long-term soil fertility in Liberia. PUA 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.

To support this activity the PUA component is establishing vetiver nurseries and demonstrations of how the plant is 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 2000 vetiver corms earlier in 2012¹. A particular issue in Liberia is that long-term soil improvement measures can be difficult to promote as they have no direct short term economic value. However, it has been shown that acceptance is enhanced when contour stabilization uses alley tree crops such as Moringa that can provide direct food and medicinal value within a growing season. This is an important point as nonfood crops aimed at improving longer term soil fertility are not necessarily easily accepted by farmers who may have no long-term access to any given piece of land.

FED has been very active in identifying soil fertility problems and is developing methods to address them. Thin top soils are being addressed by the use of beds. Soil analysis of PUA demonstration plots at the newly commissioned soil chemistry laboratory at Boima Engineering show that pH is low and acts to reduce the effectiveness of chemical fertilizers. In the ranges observed, the pH is reducing the effectiveness of applied chemical fertilizers between 50% -



75% 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, including through project-trained vegetable seedling producers. Low pH levels also lead to issues of toxicities and deficiencies of a range of nutrients other than N, P, and K. Pot trials have commenced to look at the range of possible interventions including direct pH amendment, supply of micronutrients and amendments, including compost and biochar.

Bitterball at Airtime, Margibi County showing the effects of biochar amended soil.

Pests and Diseases of Peri-urban Crops

As a supplementary exercise to the PERSUAP, the range of the most common pests and diseases of horticultural crops in Liberia was identified and compiled as part of a range of crop protection documents. Many of those identified were for the first time ever and ensured a meaningful PERSUAP. In particular Broad Mite, previously misidentified as a virus related disorder, was a serious constraint to dry season

¹ Through multiplication this has now risen to approximately 2,500 corms

chili production. FED has put in place a range of cultural and conventional crop protection measures that are likely to significantly improve yields. As part of the pest identification exercise, trapping for the full spectrum of fruit flies in Liberia was carried out for the first time (the only species recorded to date was *ceritatis capitata*, which now has been largely displaced by new invasive species – a list of which has been forwarded to the MoA and is confidential). The pest and disease spectrum, together with many identified beneficial organisms strongly point the way to long-term crop protection management for peri-urban fruit and vegetable farmers.

Pest and disease pressures were very high during Year 1. Major production constraints were also caused by flea beetles in okra, cutworms (*Agrotis* spp.), and damping off in addition to those listed above. The recent approval of the FED PERSUAP should considerably ease the situation going forward.

Plant Spacing

To date there is very limited information on optimum vegetable plant spacing in Liberia. In fact the recommendations in many countries are for plant densities of 20 to 50 percent higher densities than is currently practiced by many Liberian farmers. Observations in the demonstration plots indicate that plants are capable of being planted at even higher densities given that they are not vigorous enough to grow into each other due to other constraints such as low pH and associated imbalanced nutrition. Data is still being



collected from the demonstration sites as harvests are, at best, at their mid-points, but early indications are that further yield improvements are possible through plant densification.

National Crop Protection Policy

Through engagement with the various crop protection structures at the MoA, FED has identified various issues relating to plant material and seed imports. The lack of a formal plant health policy and legislation seriously hampers the effectiveness of the MoA in this regard and requires addressing.

Nursery Production of Vegetable Seedlings

Training was provided to the owners of 17 decentralized seedling nurseries located in the six project counties. Assorted vegetable seeds and fertilizer were provided to the groups and individual seedling producers and seedlings produced on elevated nurseries. The individual seedling producer trainees supplied the elevated nursery materials, including the bamboo, the thatch, and the charcoal soil, and most of the labor used in constructing the beds. Vegetable seedling sales started in late September, and by September 30, about ten percent of the total under production, or 3,500 seedlings, had been sold, with individual farmers purchasing between 40 and several hundred each. Half of the total seedling production had been sold by October 15. These same nursery operations have also begun to produce vegetable seed, which will be sold to small farmers located in the market areas of these enterprises. Compost is also being produced. Vetiver, moringa, and possibly fruit tree seedlings will be added at a later date.

The entire vegetable training considered demonstrations from the selection of sites to harvesting for farmers to fully understand the different activities in the improve methods of production.

In addition to the layout of demonstration plots and nurseries construction, seeds were sown out in the nurseries and transplanted to the fields in August 2012. N, P, K fertilizer was applied in the trial fields before transplanting the seedlings into the fields and top dressing of urea fertilizers were applied later in the crop growth based on recommended rates developed and the STTA soil scientist. As part of the rainy season vegetables training, fields were maintained, weeded, and field gapping carried out where necessary. In early September some of the groups carried out the first batch of harvesting at the demonstration plots. Groups that have started harvesting are those at Kpor, Whorn, Airtown, and Yarquelleh where impact data is in the process of being collected and evaluated.



Irrigation Equipment

Adequate irrigation is critical to successful dry season vegetable production. A FED STTA and staff technicians trained five private-sector metal workshops located in Gbarnga, Ganta, Foya, and Voinjama in the manufacture of the treadle irrigation pump, a technology that lifts and distributes five to six times the amount of water that can be distributed by hand. Two of the five workshops were also trained in the installation of shallow tube wells. Only twenty-two pumps and nine tube wells were sold in Year 1. At the end of September, FED-trained manufacturers were preparing for the start of the dry season.

Vegetable Drying Equipment

At the end of September, STTA Eric Nzokou began training a metal workshop (Old Folks Workshop) in Monrovia to fabricate a forced-air dryer. This processing technology will increase drying capacity and improve the quality of dried produce, resulting in increased incomes for processors and users, if used as a service unit.



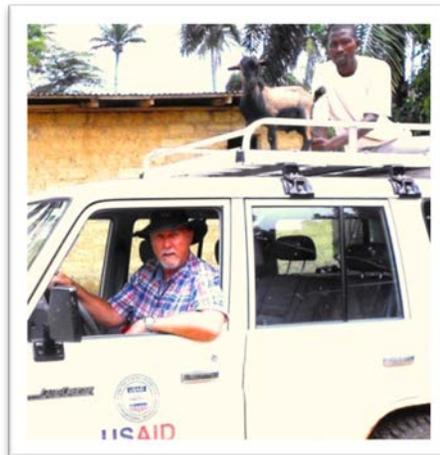
Training students at BWI in Kakata in how to do contour marking, how to align beds along contours, and contour stabilization using moringa and vetiver.

Working Across Components

Interaction has already started with the FED component three to ensure that lessons learned flow both ways through the setting up of adaptive research plots at community colleges and the development of some details in the ECOWAS agriculture curriculum – particularly as it affects practical training in various crop production techniques.

Task 1.8 Goat Value Chain Accomplishments

In early FY 2012, FED organized a joint review/field assessment of constraints to the livestock sector with Land O'Lakes (LOL) and MoA personnel. The joint field assessment team focused on primary border entry posts, reviewing livestock imports and sanitary/phyto-sanitary inspection and quarantine capacities, along with livestock slaughter and meat marketing facilities across the country. Following these assessments, FED assisted the MoA in organizing and executing a technical consultative workshop focused on the review of all current livestock interventions in Liberia which included the MoA, FED, NGOs, USDA, LOL, FAO, donors, and various critical regional organizations.



The joint livestock sector assessments and consultative reviews completed in 2012 resulted in a revised FED goat sub-sector value chain Strategy to be implemented in FED's Year 2, aimed at addressing critical gaps. The goal is to focus the unique comparative advantage of each USG-funded development partner (USDA/LOL/USAID/DAI) on addressing the most critical constraints in the sector as a whole. With the LOL program focusing on upgrading critical slaughter facilities and cross-border animal

disease surveillance and quarantine capacities, the FED strategy will focus on increasing production and survival rates of indigenous sheep and goats through improved management practices in conjunction with animal health services. Overall, targets of the strategy include increased productivity and reduced mortality rates, while strengthening the national MoA capacity for animal disease vaccination and endemic disease diagnosis and surveillance.



The 2012 National PPR Vaccination Campaign was designated by the MoA and FED goat sector value chain strategy as a top priority for implementation in FY 2012. Failure to vaccinate animals against PPR in 2012 would have

put the entire existing national herd of sheep and goats in Liberia at risk. The campaign focused on the six primary counties in Liberia in which the largest goat populations reside and was executed by the local NGO BRAC, who has the most experience in livestock sector development efforts in Liberia. Over 100,000 goats were vaccinated in the six target counties, together with practical hands-on training of MoA national and county level staff in methods of designing and executing such livestock vaccination campaigns on a national level.

Joint review assessments with FED and LOL revealed impressive instances of relatively successful private-sector led "community" restocking efforts being conducted outside of the classic NGO restocking efforts seen under current restocking programs in the country. Although somewhat limited, these are instances where a neighbor farmer and/or CBO, having several goats for example, is in a position and is willing to lend several female animals to an adjacent neighbor, while sharing one or two bucks, for the period of time necessary for kidding to occur. At the end of kidding and weaning cycles, the animals are either returned to the owners and/or kids are passed on to other neighbors willing and interested in acquiring animals in the community. In those cases where this has occurred, extremely successful rates of animal restocking has been achieved with relatively insignificant mortality rates occurring when

compared to the larger NGO restocking campaigns importing animals from neighboring countries and counties within Liberia. Although relatively limited in occurrence around the country, these Community Goat Pass-on Schemes represent outstanding examples of sustainable restocking strategies and approaches which are potentially achievable. FED, in partnership with USDA LOL livestock program personnel, intends to expand the Community Goat Pass-on Scheme methodology within the four target counties of Nimba, Lofa, Bong, and Grand Bassa. A total of 12 lead farmers in three counties were identified in 2012 to begin the implementation of the Community Goat Pass-on schemes in 2013.

COMPONENT TWO: STIMULATE PRIVATE ENTERPRISE

In Year 1 of activity, the ED team facilitated meetings with organizations and individuals engaged in activities related to FED's work in enterprise development. These meetings, conducted with SPARK, FAO, Solidarities, 10,000 Women, ASCO, and the Ministry of Gender, facilitated a broader understanding of local capacity of enterprises and support resources, challenges, and opportunities.



The ED team also drafted a proposed organizational structure for private-sector development, drafted job descriptions for three local staff positions, and scopes of work for nine STTA assignments to be in the field January through March, in order to accelerate implementation. In addition, the ED team conducted mentoring with the FED women in business officer.

The ED team held a series of meetings with business development training and advisory service providers in Monrovia to assess local resources from which FED can

draw for firm-level support, enterprise service training, and capacity building. This included for FED staff and partners at MoCI, MoA, SPARK, FAO, ASCO Solidarities, 10,000 Women, the Ministry of Gender, NGOs within FED counties, as well as teachers at technical institutes. Meetings comprised LEED, The Marketplace, Business Start-up Center (BSC) at the University of Liberia, Women's Campaign International (WCI), and the Liberian Business Association. The goal was to assess supply-side challenges and gauge level of interest in collaborating with FED to improve access to credit and capital resources. Meetings included LEAP, Eco-bank, and USADF.

Staffing and Strategy

For most of Year 1, the Component Two Team was not staffed with permanent leadership or with an adequate number of team members. This was due to a delay in the arrival of the component two lead, and then to his untimely death two weeks later. This was followed by difficulties in recruiting equitable and experienced candidates to fill the position. During this process, several STTAs resulted in preliminary, much needed reports and information, as well as the implementation of some pilot training. These included the Access to Finance Assessment, the Cassava Value Chain Study, research on local business service providers, and pilot business management and business plan writing training. However, the absence of a component two team lead resulted in the lack of a clear strategy for the implementation of activities within the Year 1 work plan. These included how beneficiaries would be selected, how FED would implement training activities utilizing local service providers, or how FED would gather data to inform investment decisions. This basic foundation had to be developed after the arrival of the interim ED specialist in order to move forward. In addition, the breadth of objectives covered by this component – policy, access to finance, basic business skills training and mentorship programs to enhance capacity of

local business service providers – all across the six program counties – with engagement/collaboration of farmers, farm-based organizations, small and medium enterprises, GoL ministries and donor agencies - requires more than the Monrovia-based ED team.

Lack of Basic Information

The delay in recruiting new leadership for component two hindered putting in place adequate local staffing and a robust implementation strategy, impeded the process of gathering basic information needed to inform investments such as the identification of commercial buyers, lead producers, input suppliers, and processors (major value chain stakeholders), and postponed market analysis and feasibility studies informing strategy planning for FED's four value chain. Reports and information provided by other donor agencies were not specific enough to accommodate FED's objectives.

In addition, some farming groups who received assistance in growing additional crops for revenue/income generation were in need of business-skills training to assist them effectively market their surpluses.

Proposed Solutions to New or Ongoing Problems:

- 1) An interim ED specialist was hired on a short-term basis to jump-start component two activities in the fourth quarter of Year 1.
- 2) The ED team established and is piloting processes for identifying FED beneficiaries through expressions of interest and a qualifying process which includes criteria for working with FED and beneficiary assessment forms.
- 3) Four ED assistants were hired to work in the four major counties, alongside county managers and extension staff, in order to implement and integrate all component two activities.
- 4) Four local business service providers were hired under the IQC process to deliver an initial set of business training services to FED beneficiaries as needed.
- 5) A Request for Task Order Proposal (RFTOP) was handed to two groups (Rights and Rice and EDUCARE) to compete for the training of nine groups, for a total of 267 participants within FED's four primary counties.
- 6) IQCs for business training providers were issued to identify and select a group of local providers for a variety of business training topics. Four IQCs were issued, including rural modules (very basic business concepts, basic financial management and record keeping, enterprise development plan, conflict management, organizational development, including illiterate modules), SME modules (more advanced concepts on financial management and record keeping, business plan writing, and computer training), village savings, loan association modules, and literacy and basic math skills modules.
- 7) The ED team hired a local marketing and research firm (Subah Belleh Associates) to identify and interview commercial buyers, lead producers, lead agro-input dealers, processors, and transportation and logistics companies, thereby providing baseline data on demographics including GPS location, buying and selling preferences, challenges, and past donor interventions known as the Stakeholders Profiling Survey.
- 8) In Year 2, a permanent Business Enabling Environment Specialist (BEES), formerly the interim ED specialist, will be hired to lead all Component Two activities.
- 9) In Year 2, two additional local staff members will be added to the Monrovia-based team who will cover access to marketing and finance activities.
- 10) For Year 2, the ED team has earmarked value chain and market sector studies as a primary goal to be accomplished within the first two quarters. Some individual STTAs have already been identified to design and/or conduct these studies. In addition, FED will partner with local

entities and other donor agencies (such as the National Cassava Coordinating Committee, the Liberian Market Association, and the European Union Mission) to conduct studies.

- 11) In Year 2, there will be more combined implementation and technical meetings between the component leaders which will include technical evaluation committees guided by the MDF manager and team. Interventions by the three components with farmers and farming groups will be integrated so that the sequencing of training, expert assistance, and agricultural activities is appropriate and timely.

Other Lessons Learned from Year 1 Activities:

1. A training curriculum needs to be tailored to the target group (farmer vs. SME), development skill level (illiterate vs. literate), and to the specific need of the group or SME.
2. Local service providers need guidance and mentorship in applying for USG assistance.
3. The six-week mentorship program which followed the business plan writing training was the most effective mechanism utilized to ensure full participation and high output of beneficiaries. Even with this in place, it is apparent that beneficiaries attempting to write such plans that are intended to be “bankable” will still need intense advising.

SME Development

The ED team conducted a three-day business plan workshop at the end of July. The ED team now has conducted the full six-week follow up and mentorship plan with participants from two previous business plan workshops. During the month of September 2012, 14 of 16 groups from the mentorship workshop completed business plans for presentation to FED. This training was attended by 30 participants, 27 men and three women, representing 16 SMEs. Successful business plans will be eligible to apply for assistance from FED utilizing the MDF.

Training Intervention Strategy: An initial assessment of a target group or entity (FBO or SME) will be conducted by the ED assistant and/or the ED Monrovia team to determine training and intervention needs. A tailored intervention plan will be developed with those groups who meet determined criteria. The intent is that FED will train, mentor, and follow up with a group as they develop, with both parties contributing as a prerequisite to continue the partnership. Those FBOs already receiving agricultural training will take priority over new groups that are not currently involved with FED (per county manager request).



Met and Assessed Prospective SME and MDF Partners

The ED specialist and ED team met with the prospective SME MDF partners listed below. As a follow up, the ED specialist developed an initial intake form to be used to assess business ideas and generate basic profitability, break-even analysis, and cash flows in lieu of a full business plan to get the MDF started. All participants will be asked to attend a formal business plan training to fully develop these plans.

- Green Farm: Providing pharmaceuticals for goats in the counties.
- Boima Engineering: Private soil testing lab.

Business Skills Training

FED Program Specialist, Albert Bass commenced the period with a workshop for an agricultural group in Gbarnga, Bong County. This group has a membership of 80 (69 women, 11 men). The workshop ran from January 4-6, 2012, and the purpose was to introduce participants to formalized methods of commercializing farming in order to derive maximum financial benefits from their produce and labor. The workshop was held at the newly renovated office complex at the premises of the CARI called 101 building.

The workshop covered three modules:

1. Module One: Concept of Farming as a Business
2. Module Two: Selling Techniques
3. Module Three: Customer Service

In February, the ED team worked with the Community Sustainable and Economic Empowerment Organization (COSEO) to complete the Enterprise Development Plan form. COSEO is comprised predominantly of women, with a membership of 25 people total (20 women, 5 men).

There was a meeting held with the executive director and the accountant of the ODAFARA team and the way forward was discussed as well as their draft proposed activities for the development of 5.58 acres (2.232 hectares) of lowland in Duompa Township, Nimba County.

From February 8–10, 2012, a successful four-day participatory Enterprise Development Training Workshop was held for the Bonpain's Women Group in Duompa, Nimba County. The workshop brought farmers and gardeners together to plant a variety of crops, including rice, eddoes, plantains, cassava, potatoes, pepper, bitter ball, and okra. The purpose of the workshop was to introduce participants to the enterprise aspect of transitioning from subsistence agriculture farming to commercializing methods of agriculture farming into business, productivity, and to shift the focus from supply driven production to demand driven production. This process forms part of the USAID Feed the Future Initiative, as FED intends to assist the enterprise with technical assistance in order to overcome constraints and meet its objectives. The three modules covered during the workshop were:

- Farming as a business
- Selling techniques
- Customer services

There were 30 participants: (29 women, 1 man) from the Bonpain women's group. The participants were excited about the new approach and thanked the facilitators for the training.

A two-day business skills training for farmer associations was conducted in Gbarnga, Bong County, from April 2-3, 2012. This workshop was designed for individual farmers, farmer groups and associations, and women's groups who are already working in agriculture production and looking at managing profitable agriculture enterprises. At this training, there were eight groups represented from five districts within Bong County and one group from Voinjama District, Lofa County.

A business skills training for local farmer associations was also held in Grand Bassa County for 32 farmers from eight groups from two districts. These farmers are mainly involved in cassava and vegetable productions. The training was held from May 28 - June 1, 2012, and a similar training was held June 4 - 8, 2012, in Nimba County with the participation of 31 farmers from 16 groups, from FED's six districts.

Enterprise Development Plan Pilot Training: The ED specialist worked with the ED Monrovia team members and MDF team to develop a plan, agenda, and budget for a pilot training utilizing the Enterprise Development Plan model. The concept was introduced to the COP and county managers. The first phase of the pilot training will be held in Nimba County from July 5-6, 2012, with 12 farming associations groups who participated in basic business training provided by the training specialist STTA from June 4-8, 2012.

Business Management Training

A two-day Business Management Skills Training for SMEs working in the cassava value chain was held jointly from April 4-5, 2012, with the national cassava sector at the Royal Hotel in Sinkor, Monrovia. The workshop was conducted by the M/SME training specialist, and the late Mark Nolan, FED ED specialist.

This workshop covered the following:

- Overview of a business plan.
- Analyzing the market and developing a marketing plan.
- Developing the operations plan.
- Developing the financial plan.
- Writing the business plan.

As part of this technical support, the ED team in collaboration with the STTA/trainer, organized the second phase of the Business Management Skills training workshop for SMEs and producer groups in Monrovia from May 24-26, 2012, at the Liberian Chamber of Commerce. During the second phase training, 24 SMEs/producer groups were trained and the training continued in Buchanan, Grand Bassa County, and Ganta, Nimba County, beginning May 28, 2012, in Grand Bassa County with farmers and producer groups at a lower level.



Discussions were held on separate dates with Ame Atsu David, from the national cassava sector and Tupin K. Morgan, managing director of Linking Farmers to Markets. Those discussions were geared toward gathering information on the cassava value chain within the different markets around Monrovia.

Cassava Value Chain Consultant, Duke Burruss, and Kristin Oplanick worked with the ED section to conduct cassava field assessments. They held meetings and had discussions with the president of the Liberia Marketing Association (LMA) and superintendents at the different market sites. The objectives of these field visits were to gather information on:

- Growers
- Processors

Profile Commercial Buyers

As part of the above mentioned activity, the Component Two Team visited four counties (Lofa, Nimba, Bassa, and Bong) to identify and assess producer groups along the four value chains. During the visits, 24

producer groups were identified and assessed across the four value chains in Lofa, Nimba, Bassa, and Bong counties.

A TAMIS module for the stakeholder profile database was created by STTA Sudarshini and tested by the ED team in July. An RFP to gather the remaining profiles from approximately 900 – 1,000 stakeholders across the country was released on August 7, and bids were accepted on August 27. A local service provider was contracted the week of September.

Database of stakeholders: The ED specialist and ED team worked along with the M&E team to develop a questionnaire to be used to profile commercial buyers, agro-input dealers, processors, and transportation and logistics companies. The M&E team hired enumerators to gather initial profile data. Profile data on lead producers (FBOs) will be gathered by component 1 and 2 members as they begin working with FBOs. The information will be stored in a database in TAMIS and will be used to link stakeholders along the value chain, identify partners for MDF projects, and track FED interventions with these groups and that information will be updated on an ongoing basis by extension officers, ED assistants, and the ED team in Monrovia. A local organization, Subah Belleh and Associates, was hired to conduct stakeholder profiling under component two.

Enabling the Policy Environment for Private-sector Growth

In the first quarter, an STTA for policy reform met with stakeholders including government, importers, farmers, NGOs, and other donor-supported projects. The purpose of his up-country trip to Bong and



Nimba counties was to learn about the extent of sector dialogue and the potential to address policy issues, and how feeder road improvement decisions are made by local actors. The extent to which MoF and MoC officials target farmers and agricultural businesses for registration and taxation purposes was also included.

The STTA participated in meetings of several existing dialogue forums including rice and cassava, the Agriculture Coordinating Committee led by MoA, and a multi-stakeholder workshop of non-state actors.

Through his research he has identified an initial set of enabling environment barriers including:

Customs, including levying of excessively high duty rates and bias against medicinal/pharmaceutical products used to treat animals.

- Product quality/fake products entering Liberia.
- Poor state of feeder roads.
- Lack of food safety standards.
- Access to land.
- Lack of a national seed policy.
- Investment incentives which are biased against livestock.

In the third quarter, an STTA assessed how Liberia's land tenure arrangements might affect adoption by FED partner farmers of new agricultural practices and technologies. Of particular interest was whether farmers had sufficient security of tenure to merit investments that generate benefits over the longer-term.

Additional topics of interest included how farmers gain access to land under customary and statutory systems, how people establish long-term land rights in customary areas, land acquisition strategies employed by women farmers, and the status of efforts to reform the tenure system, led by the Land Commission. Most attention was given to agricultural land tenure arrangements under customary systems, though key issues affecting statutory tenure, including the title deeds that prevail in Monrovia and along the coast, were also examined.

In carrying out the review, the STTA met with farmers, traditional leaders, and local officials in Bong and Lofa counties, and a number of Government of Liberia officials in Monrovia, including the chairman and other senior staff of the Land Commission. Additionally, he met with USAID mission personnel to discuss USAID-funded projects working on tenure reform, and with Liberian academics and other persons knowledgeable of Liberia's land tenure issues.

Conclusions included that with care, land tenure should not be a constraint to the pursuit of FED's objectives of increasing agricultural production. Security of land held under customary tenure is sufficiently strong for most farmers to accommodate long-term investments in agriculture. Lawry's report provides a checklist that FED staff can use to help assess the agricultural tenure status of farmers the project is considering supporting. The report also recommends FED incorporate tenure measures into surveys of a subsample of the M&E sample. Additional recommendations included area-based studies and studies on special topics, such as land acquisition strategies used by women vegetable producers. Data collected and lessons learned should be shared in a systematic fashion with the Land Commission and USAID projects supporting the Land Commission, including LPIS and LCRP. The insights FED gains on agricultural tenure issues can help inform the development of future land policy.

Access to Finance

During the third quarter, the ED team conducted an Access to Finance study, with the purpose to assess the current availability of finance, particularly from financial institutions, to serve FED project clients, as well as to assess the bankability of clients and their potential to access credit. Based on these investigations, the target is to develop an action plan that FED can undertake to increase the availability of finance.

In addition to reviewing other meeting notes and reports, the work in this study comprised interviews with banks and MFIs that are considered to have some interest in agricultural and agri-business finance, in order to determine their current status and activities, and to investigate potential for joint work. The study team also visited several project clients, including farmers, processors, and a farmer cooperative.

The banks and MFIs that are the most likely candidates for joint work in finance include:

Access Bank: A commercial bank that operates as an MFI and is expanding into agricultural lending (part of a Nigeria-based multi-bank network, IFC is an investor).

Afriland Bank: A commercial bank that is particularly focused on rural and agricultural finance, and is already directly dealing with farmers and agribusinesses. It has a workable model for developing local village savings and loan associations that could serve project smallholder clients, and is the first VSLA to be active in July 2012 (part of a multi-bank network started in Cameroon).

BRAC: Includes both an MFI with 30 branches in all counties where FED works which has already reached 24,000 micro clients and 1,000 small-business clients, and an NGO that offers agricultural extension services.

Other potential MFI partners include LEAD, Liberty Finance, and LEAP, although the latter two are in the process of restructuring. LEAD has experimented in agricultural lending, but in general the MFIs have made traditional microcredit loans, which call for weekly, bi-weekly, or monthly payments, and are not tied to agricultural cycles.

A major issue in Liberia is the attitude by borrowers of all sizes that loans are hand-outs and do not want to be repaid, a legacy of post-war assistance. This behavior, as well as the generally weak condition of the economy, means that the banks and MFIs are dealing with large loan portfolios. At present there generally seems to be little borrower bankability. This can be developed by increasing the profitability of borrowers, ensuring that they have operating experience, maintaining records of performance, and particularly have the willingness to repay loans.

During the third quarter, an STTA targeted information collection and planning for facilitating access to finance. Meetings were held with additional financial institutions and prospective projects that may eventually qualify for bank finance. A presentation was made to FED staff on access to finance findings. Meetings were also held with IFC concerning its planned Investment Forum on Leasing to be held in June, which will include presentations on agricultural leasing and micro leasing (typically financial leases of less than USD \$10,000). FED is making arrangements for the presentation on agricultural leasing to also be presented to all staff at FED in order to familiarize them with the capacity of financial leasing to provide credit for equipment acquisition. (Note: a financial lease is comparable to a bank term loan. The substantial difference is that the title of the equipment or vehicle being financed remains with the lessor during the financing period rather than the user of the equipment purchased with a bank loan.)

The immediate activity in the coming months in access to finance will be to support the development of VSLAs among farmer groups in the regions where FED is working. However, this will include provision of financial support to CARE and other NGOs using standardized policies and procedures. FED may also look at using existing VSLAs as entry points to new farmer groups in the value chains. Information on costs of facilitation is being obtained so that FED can facilitate MDFs or an RFP to source services.

FED will also start providing agricultural information to financial institutions, to further educate on advances in the value chains, and to build a transparent, strong relationship. Access to finance is expected to be a long-term activity, and no credit is expected to be immediately facilitated.

ICT

The use of ICTs in global agriculture is accelerating. Yet, within the Liberian agriculture sector, ICT remains limited because of challenges in technology adoption, cost, and human resources. FED's ICT strategy builds on emerging opportunities and needs within Liberia. Year 1 ICT activities focused on building relationships with ICT providers, exposing FED staff to emerging technology, strengthening IT systems, and improving data collection with electronic tools.

Key accomplishments included:

- Assessing technology needs and providing internet and technology services to BWI.
- Supplying PCs to the MoA.
- Building FED IT systems.
- Training FED staff on the use of GPS in agriculture.
- Implementing an electronic data collection system.
- Building spatial information on Liberia.

ICT is not a final product, but is rather integrated into FED components to amplify the reach and impact of Year 2 activities. ICT will be considered more heavily over the lifetime of the project as FED builds the capacity of its staff and partners. During Year 2, FED's strategy will focus on developing content and management for ICT-supported initiatives. When appropriate, FED will first pilot tools within FED's system and focus on scale up in Year 3.

Capacity Building

ICT activities during Year 1 focused on building the ICT skills and capacity of FED staff and partners. When possible, FED staff and STTAs were paired with Liberian counterparts.

Highlights of Year 1 included:

- BWI students and IT personnel shadowed FED IT staff while they provided internet and technology services to BWI. Participants learned skills in managing computer labs, testing cabling, and setting up a server.
- The FED GIS/M&E officer and student interns completed a course on mobile data collection to equip them with the skills needed to lead FED's mobile M&E and extension initiatives. To strengthen the local ICT community, participants met with local and global experts.
- FED M&E and extension staff completed GPS training and began collecting GPS data on demonstration and training sites.

Overview of Year 1 ICT Activities:

Mobiles for Data Collection

USAID's Office of Innovation and Development Alliances has identified mobile data collection as a key area for building mission capacity. Collecting and sharing information with mobile phones reduces data entry time, can improve accuracy, and enables media such as pictures, videos, and GPS data. FED is at the forefront of mobile data collection, having piloted two technology solutions during M&E surveys, shared lessons learned with local and global leaders, and built local staff capacity to manage mobile data collection. FED staff is currently rolling out these tools to FED county offices.



Radio

Radio continues to be the most commonly accessible communications medium to reach farmers in Liberia. In Year 1, FED staff met with media organizations to assess potential partnership opportunities with radio stations. Key findings included that 1) to promote improved practices and link buyers and sellers, radio shows need to be interactive, 2) key messages and content need to be developed before airing shows, 3) radio stations do not have the appropriate business models to link buyers and sellers. These findings have resulted in the creation of an RFP for a media partner that will be fulfilled in Year 2 and a proposal for a radio business consultant STTA.

Mobile Money

Following the tremendous success of mPesa in Kenya and achievements in Haiti and Afghanistan, mobile money has become a strategic area of focus for USAID and the development community. In Liberia, mobile money has the potential to overcome payment challenges in the agriculture sector. FED staff attended a mobile money workshop and Lonestar registration to build understanding of mobile money. This training is being rolled out to county offices to include county MoA staff.

GIS

Geographic Information Systems (GIS) assist FED in monitoring activities and demonstrating impact. FED's M&E/GIS officer was trained in GIS and integrated GIS into FED M&E activities. The GIS officer and ICT STTA conducted trainings with FED extension and M&E staff on the use of GPS in agriculture. Relationships were built with LMEP and LISGIS and have resulted in incorporation of their data into FED's data system.

ICT Systems

FED supplied PCs to the MoA to provide an additional tool to strengthen the MoA extension system. To put the proper training and systems in place, a follow-up technology assessment was performed by the ICT specialist STTA. FED staff also assessed the technology needs of BWI and provided internet and technology services.



Review of Staff and STTA Responsibilities:

- *ICT Manager: Matthew Zoegar* (November 2011 – present). Primary responsibilities include management of ICT systems both in county offices and Monrovia. Secondary responsibilities have included ICT support of FED partners including MoA and BWI.
- *ICT Specialist: Gama Roberts* (November 2011 – May 2012). Primary activities included developing a Year 1 ICT strategy, building FED data on markets, facilitating relationships with MNO and media organizations, and organizing an ICT in agriculture exposition at Cuttington University's Agriculture Fair. In June 2012, Jaclyn Carlsen, senior ICT specialist, DAI (STTA, June – December 2012) took on the ICT specialist role. Primary activities included developing a Year 2 ICT strategy, implementing FED's mobile data collection system, hosting workshops on mobile money, training on GPS, performing MoA technology assessment, and supporting M&E.
- *Geographic Information Systems (GIS) Specialist: Manuela Rayner* (STTA, July 2012). Activities included building the GIS skills of the FED M&E/GIS specialist.
- *Mobile Data Collection Specialist: Jaclyn Carlsen* (STTA, January – February 2012). Activities included transitioning the FED baseline survey from paper to mobile data collection.
- *IT Specialist: Cecile Hippos*, principal systems administrator, DAI (STTA, February – March, August 2012). Assisted in setting up FED office servers and training on server administration.
- *Ana-Maria Ungureanu*: (STTA, August 2012) Assisted in setting up BWI and training on server administration.

Summary Results:

There are a total of nine trainings held under the ED component two, with a total of 301 participants (142 women, 159 men).

COMPONENT THREE: BUILDING LOCAL HUMAN CAPACITY

Challenges:

The component three staff, which is composed of the VTNFES, and the VES, the national counterpart, have been very active developing relationships with partners in the government and in the private sector, which focus on pre-service vocational training institutions. In this regard, the BWI Institute is preeminent. The other focus of component three, includes the four county community colleges of Bong, Grand Bassa, Lofa, and Nimba.

In addition to the five pre-service educational institutions, there is the need to form partnerships and working relationships with the ministries of agriculture, education, youth and sport, and commerce and industry. These links have been initiated and MoUs are forth coming. Additionally, there is a need to partner with the community, especially the existing organizations that work in tandem with the goals and objectives of FED, as well as the private-business partners who have a stake in the education of the development of an adequate workforce.

The challenges to date have been in dealing with the poor infrastructure of the country, i.e., roads and energy, as well as the capacity to implement modern and appropriate technology. As these issues become solved, it is easier to move forward. The roads are being improved and energy (i.e. electrical) is also slowly being installed. Other needs include building up all the required links in the agricultural supply value chains so that prices will fall as much as the provision of needed tools and equipment and supplies are more cost effective and easier to obtain.

Accomplishments:

To date the following has been achieved:

- *FED office established at the BWI Institute, and signing of MoU.*

In light of the MoU between FED and BWI, an office was established for FED activities in Margibi County and at the BWI Institute. The component three priority is to reinvigorate BWI as a center of educational excellence. In the MoU, a request for updated internet service as well as assistance with agricultural and business-related equipment and resources was stipulated. These have been provided and BWI is well on its way to improving its educational offering through their carefully selected student body and the community as a whole.



Newly completed science building at the BWI Institute

- *BWI faculty and library capacity assessment with interventions proposed.*

The capacity of the library to be a center of excellence is currently minimal at best. After a thorough assessment of the volumes available, a request is in the works to supply much needed subject and resource books in agriculture for the new curricula needs. In addition to supplying hard copy text and reference books, the library has also been connected to the internet satellite system and students, instructors, and community members are able to find information on the web.

- *National Agriculture Diploma curriculum developed and proposed on the basis of the National Post-Secondary ECOWAS and the TVET program.*

A national ECOWAS workshop was conducted from July 16-25, 2012, at the BWI Institute. The purpose of this intervention was to create a national TVET curriculum in all vocational programs for Liberian community colleges. A result of this workshop was the development of a curriculum that meets the agricultural and entrepreneurship needs of the vocational colleges and the developmental needs of the country.

The VTNFES and the VES have spent many hours fine-tuning a National Agriculture Diploma curriculum that meets the workforce needs of Liberia. In a stakeholder meeting held on August 22, 2012, the MoA and several private-sector employers approved the curriculum with minor revisions. Appendix A has an abridged version of this curriculum.

- *Vocational Teacher Education workshops provided at the BWI Institute and Nimba County Community College.*

In June 2012, Bradley Leger conducted vocational teacher training workshops and introduced vocational student leadership organizations. In Nimba County Community College all instructors were introduced to the following four topics:

- Approaches to teaching/teacher as decision maker.
- Fundamentals and types of planning.
- Differentiating instruction for diverse learners (including gender issues).
- Agriculture Youth Leadership Development model, which include similarities with Liberia, needs of Liberian youth, and youth organizations which currently exist in their schools.

BWI instructors were also introduced to these topics at a separate workshop.

- *Leadership training initiated at the BWI campus.*

On August 7, 2012, the Department of Agriculture at BWI requested assistance in preparing for the coming academic year, starting September 10, 2012. In this two-session briefing, instructors of BWI were introduced to the basics of a leadership curriculum related to vocational students. Participants were encouraged to begin subject focused student-led clubs within their institution. Follow up is ongoing.

- *Establishment of a stakeholder committee at BWI which will become the advisory committee for the Department of Agriculture for ongoing program approval.*

A stakeholder meeting for vocational agriculture at BWI was initiated on June 14, 2012, to discuss how to make the BWI Institute a Center of Excellence, as well as how the stakeholders can participate. A follow-up meeting took place on August 22, 2012, in which the newly proposed

ECOWAS TVET curriculum was presented. Ratification of an edited curriculum followed. Firestone and the ministries of agriculture and youth and sport, as well as the Grand Bassa County Community College representatives contributed to the discussion. This group will now make up the advisory committee for the Department of Agriculture at BWI.

- *Relationships established and cooperatively working with the Ministry of Education's Bureau of Science Vocation, and Special Education and the Department of Higher Education.*

Due to the nature of community colleges establishing degree programs, it is essential that the FED program link with the Department of Higher Education within the Ministry of Education, as well as the bureau of science, vocation, and special education. FED is now perched to cooperatively launch the ECOWAS TVET program as well as articulate the community college curricula with the degree issuing institutions. This will allow for graduates to either enter the workforce directly or continue on to a full bachelor degree program.

- *Relationships established at community colleges and cooperatively working with the community colleges in Grand Bassa, Nimba, Lofa, and Bong counties.*

During the first year of the FED program, many introductions and visits were made with the various educational institutions in the six county program implementation regions. Nimba and Grand Bassa counties are prepared to move forward immediately. Lofa and Bong counties will be established for intervention during the next Year 2 phase.



Students at Nimba County Community College hall

- *Internship program initiated with five participating institutions: BWI, NCCC, UL, MU, and CU.*

In June 2012, the concept for initiating an internship program was solidified. Contracts and guidelines for the internship program were established, and the launch of the program for 60 interns was held at UL on August 7, 2012. Six institutions were selected and the three-month program is currently underway.

Highlights:

ECOWAS TVET Curriculum

The interest in a West African regional vocational and technical diploma has been welcomed by both industry and the ministries in Liberia. A curriculum leading to a National Agriculture Diploma has been formulated and is currently in the agenda for adoption.

Internship Program Established

To further the objective of capacity building among Liberian youth, phase one of the FED Internship Program was launched by the Minister of Agriculture, Dr. Florence Chenoweth on July 31, 2012. Chenoweth emphasized the need for students to be role-models in their communities, institutions, and

homes, in order to inspire others to join the agriculture sector and help create economic growth for Liberia.

In this first phase, 60 agriculture students and recent graduates, age 20 to 35, were selected to participate as interns from seven universities and technical schools from across the country. The purpose of the program is to create opportunities for the interns to apply what they have learned in the classroom to Liberia's agriculture sector. The goal is for students to gain practical knowledge and experience, as well as required technical skills for marketable fields. In addition, the program hopes to provide employment opportunities through mentorship and training at various Liberian enterprises and public institutions. The interns will be assigned to 15 international and local agriculture organizations in the country for a three-month period, starting August-November 2012.

Successes:

BWI as a Center of Excellence

The BWI Institute has become an example of linking an agricultural education program with a business enterprise. The FED intervention to jump-start the practical activity into an enterprise came to fruition when BWI Head of Agriculture Department, Jacob Swee, requested assistance with the compost making operation. Presently, the introduction of commercial bagging materials as well as a donation of discarded protein-rich soy flour (for a nitrogen boost) hallowed BWI to enter the commercial sales of its high-quality compost. Several NGOs and private enterprises are purchasing and using the valuable, non-chemical soil amendment.

ECOWAS National Agriculture Diploma Initial Acceptance

The Ministry of Education's Bureau of Science, Vocation, and Special Education's invitation of the ECOWAS TVET regional diploma program has allowed the community colleges to choose a two-year regional diploma course which allows graduates to have equal credentials among all 15 West African countries. FED's component three will continue to encourage and assist the bureau and the cooperating colleges to implement this program in Year 2 of the FED program.

**NATIONAL AGRICULTURE DIPLOMA
PROPOSED CURRICULUM TABLE
for TVET Community Colleges in Liberia
(An ECOWAS TVET Program)
September 2012**

Year 1 Semester I

COURSE CODE	COURSE	THEORY HRS/WK	PRACTICAL HRS/WK	TOTAL HRS/WK
NAD111	Principles of Animal Production	2	2	4.0
NAD112	Communication in English 1	2	0	2.0
NAD113	Elements of Agricultural Economics	2	0	2.0
NAD114	Principles of Crop Production	2	2	4.0
NAD115	Practical Mathematics and Problem Solving I	2	1	3.0

NAD116	Computer Applications I	1	2	3.0
NAD117	Introduction to Farm Woodland Management	1	1	2.0
NAD118	Introduction to Soil Science	2	2	4.0
	Total	14	10	24.0

Year 1 Semester II

COURSE CODE	COURSE	THEORY	PRACTICAL	TOTAL
NAD121	Annual Crops	2	2	4.0
NAD122	Crop Protection	1	1	2.0
NAD123	Sheep, Goat, and Swine Production	2	2	4.0
NAD124	Statistics, Data Collection, Analysis, and Reporting	2	1	3.0
NAD125	Industrial Crop Production I	2	2	4.0
NAD126	Principles of Irrigation and Drainage	1	1	2.0
NAD127	Computer Applications II	1	2	3.0
NAD128	Communication in English II	2	0	2.0
	Total	13	11	24.0

Year 2 Semester I

COURSE CODE	COURSE	THEORY	PRACTICAL	TOTAL
NAD231	Pasture and Forage Production	2	2	4.0
NAD232	Agro-Climatology	1	1	2.0
NAD233	Introduction to Entrepreneurship	1	1	2.0
NAD234	Leadership	2	2	4.0
NAD235	Industrial Crop Production II	2	2	4.0
NAD236	Soil Fertility and Crop Nutrition	2	2	4.0
NAD237	Farm Soil Management	2	2	4.0
	Total	12	12	24.0

Year 2 Semester II

COURSE CODE	COURSE	THEORY	PRACTICAL	TOTAL
NAD241	Farm Power and Mechanization	2	2	4.0

NAD242	Genetics and Breeding	1	1	2.0
NAD243	Practice of Entrepreneurship	1	2	3.0
NAD244	Beef and Dairy Production	2	2	4.0
NAD245	Poultry Production	2	2	4.0
NAD246	Basic Fisheries Technology	2	1	3.0
NAD247	Agricultural Extension and Rural Sociology	2	0	2.0
NAD248	Farm Management	2	0	2.0
	Total	14	10	24.0

Year 3 Semester I

COURSE CODE	COURSE	Hours	Duration	
NAD351	Field Training	26 hours/wk	18 weeks	
NAD352	Graduation Project	26 hours/wk	18 weeks	

ENVIRONMENTAL COMPLIANCE/ENVIRONMENT STATUS REPORT

Background/Introduction

Environmental compliance is a cross-cutting aspect of FED activities. Positioned to address impact mitigation of FED's activities; it supports the four value chains, and provides technical assistance on project environmental management and on oversight responsibility for the implementation of the FED Environmental Monitoring and Mitigation Plan (EMMP).

Value Chains

Due to environmental concerns, the use of pesticides was not allowed during these activities as the procurement was disallowed until such time that a Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP) would be completed pursuant to 22CFR Regulation 216.3 (b). Nonetheless, using appropriate soil fertility management practices is expected to reduce any use of fertilizers while the introduction of integrated pest management would reduce heavy reliance on pesticides.

The PERSUAP has, however, been approved and will take effect in the next fiscal period of FED's activities.

Rice Value Chain

A total of 26 sites, with farmer association training by module, have included site and rice variety selection, land preparation, knowledge on fertilizer application, seedling production, transplanting, irrigation, weeding, harvesting, and post-harvest. Farmers' ability to understand water conservation, and irrigation management has been critical to FED's work with flooding and reduction on water-quality pollution.



Cassava Value Chain

Training undertook 22 sites to increase farmers' capacity in the production of cassava, expand the network of farmers in cassava, and build sustainable and profitable cassava farming operations for farmers in the target counties. Compliance issues in this training have been focused on employing soil fertility management techniques which includes controlling soil erosion for reducing nutrient depletion as well as improving aspects of pest control. The use of integrated pest management remains high for FED's environmental compliance.



Vegetables

The use of treadle pump and training related aspects have been ongoing. A new technology appraisal form will have to be completed under this value chain when a new technology is introduced. The use of new technology must certify safety conditions, fuel and energy use, waste management implications (solid and liquid), air quality, etc.



Goats Value Chain

The launching of the 2012 National PPR Vaccination Campaign took place at BRAC’s demonstration center in Kingsville, Montserrado County on September 5, 2012. During the campaign, FED solicited for proper handling, storage, and disposal of medical waste in line with available best environmental practices.

Water Quality

Water quality testing was delayed during this period due to arrangements at the Ministry of Health for testing of a water sample. FED brought in field kits for testing of arsenic and coliforms, and will maintain a water-quality assurance plan.

Personal Protective Equipment (PPE)

No evidence of PPE in any of the field offices of Montserrado, Margibi, Bong, Grand Bassa, Nimba, and Lofa counties. Training in the use of power tillers, and demonstration in the use of agrochemicals have, however, convened at some point in the project. The IEE requires that “FED must make available to project staff and partners an adequate supply of PPE for training and demonstration purposes.”

Financial Institutions Training

A compliance monitoring was carried out at a three-day workshop hosted by the enterprise development component for farmers. It has become evident that environmental issues will have to be constantly presented as comments at these workshops, serving as a reminder to staff and stakeholders. Training of SMEs was carried out, however, with no specific focus in environmental management presented.

Environmental compliance issues will be regularly inserted into training sessions as part of compliance under the FED program. The idea will be to encourage businesses to take responsibility for their actions.

Environmental Trainings

Training in use of fertilizers and pesticides must conform to best practices as outlined in the Africa Bureau Fertilizer fact sheets. Presentations were monitored for agreement with best practices. Presentations on Integrated Soil Fertility Management by Dr. Rhodes, and Dr. Fofana, both IFDC STTAs formed part of the effort toward increasing agricultural productivity while being environmentally conscious.



As part of the work plan for Year 2 planning session held at the Corina Hotel, Monrovia, stakeholders discussed the future of FED’s work for the upcoming year. Presentation of the PERSUAP to stakeholders, i.e., MoA, and other partners, was crucial for environmental awareness in furtherance of FEDs environmental dimension.

Other Environmental Considerations

The IEE concluded that the inclusion of pharmaceuticals and goat vaccines are especially important in support of the nationwide goat vaccination campaign.

Irrigation works at the Johnsonville Women Agricultural Project is ongoing, as reduction of flooding is key to operating at this site. Water management will form part of the environmental focus of FED in reducing toxicity, controlling waterborne disease, as well as supporting farmers to maintain water conveyance systems.

Major Accomplishments

- Release of the Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP), which identifies types of pests and their actions to crops and the safe ways of combating their impacts.
- The adoption of best management practices in the use of fertilizers.
- The implementation of an Environmental Monitoring and Mitigation Plan (EMMP) with determinations from an Initial Environmental Examination (IEE).
- Providing water quality monitoring in respect to pollution control.
- Promotion of integrated pest management towards reduction on air and land pollution, as well as improved soil fertility management with erosional control applications for farmers.

Constraints

Translating environmental compliance practices at the field level is greatly hampered by the low access to computers for extension officers. Extension officers should better document their activities from training for audit purposes.

The project is not in any way being aided by the M&E, while reporting for compliance monitoring is a wide spreading undertaking.

Not much awareness is been generated amongst workforce about issues of environmental awareness whereas the problem is further exacerbated by the limited travel priority of this cross-cutting segment.

Lessons Learned

The implementation of irrigation projects call for more technical expertise in the control of water and design for water requirements as well as irrigation concepts. Providing software support to line staff could greatly enhance the design capacity.



Recommendations

Extension officers should have more training in environmental awareness with aspects of integrated pest control and soil fertility management techniques being heavily drawn on.

More environmental awareness can be further enhanced by regular compliance monitoring and through the incorporation of environmental messages and findings into activity lead trainings.

TECHNICAL FIELD COORDINATION

During the period under review, FED established five field offices in Gbarnga-Bong, Ganta-Nimba, Voinjama-Lofa, Grand Bassa, and Kakata-Margibi counties. The Monrovia office served only as the financial and administrative support center for the field locations. Four of the county offices are located with FED county partners, the MoA, and the BWI Institute in Bong, Lofa, Grand Bassa, and Margibi counties, respectively.



The majority of the staff are field based and the Monrovia-based technical staff make extensive field travel ensuring that field activities are implemented as planned. The county offices are staffed with a technical program coordinator, a county manager, two extension officers per county, M&E coordinators, enterprise development officers, administrative assistants, and cleaners. Additional staff will be recruited as the need arises for specific programs in the various counties.

The technical program coordinator based in Monrovia conducts frequent travel to the field under the direct supervision of the FED COP in order to provide supervision for planning, directing, and overseeing all field related activities, and all field staff and ensuring that contract deliverables were achieved. FED also coordinated with another donor and the Government of Liberia programs in the target counties.

The county managers in the four priority counties of Bong, Lofa, Nimba and Grand Bassa provided day to day supervision of the field-based staff and guided the activities that support the value chain commodities and component work.

In an effort to coordinate with the Government of Liberia county level agriculture programs, FED organized (in some cases) and attended the Agriculture Coordination Committee meetings in Montserrado (Monrovia-MoA), Margibi, Lofa, Nimba, Grand Bassa, and Bong counties. Stakeholder meetings attended also included the National Cassava Sector Coordinating Committee meeting and the Economic Revitalization (Pillar II) meeting, Rice Sector Technical Working Group Meeting, Livestock Technical Working Group Meeting, and the Peri-Urban Technical Working Group Meeting.

PROJECT MANAGEMENT AND ADMINISTRATION

Summary of Activities:

During the first year of the FED project, the HR office has mainly been involved with recruitment and training of staff. The office has successfully recruited key personal for the five main project county offices, and the two sub-offices. Other HR activities have included orientation trainings for both local and STTA FED staff and ethics and compliance training for local staff.

FED's HR has also been involved with the Ministry of Planning and Economic Affairs for the issuance of accreditation certificate, the Ministry of Labor for the attestation of local staff contracts, and the Bureau of Immigration and Naturalization on the processing of entry visas, resident, and re-entry permits.

HR supports other departments regularly with the placement of advertisements, workshop preparations, and the processing of other documents.

Staff:

The FED project has a total number of 85 permanent staff, which includes expatriate, local, and Winrock International staff members.

During the first year, FED recruited a total of 76 local staff members, categorized by county, five of which are associated with Winrock International.

Total Staff:

Head Office: Monrovia: 42, *County Field Offices:* Bong County: 9, Nimba County: 8, Lofa County: 8, Grand Bassa: 9

Additionally, there are six interns currently assigned with the FED project.

Training:

The FED HR office conducted staff orientation training, DAI ethic and compliance training, and TAMIS and LOTUS notes trainings.

Currently, 80% of local staff have completed their ethics and compliance training and the remaining staff are expected to complete training during an upcoming workshop. Also, new staff are completing training in the TAMIS system in conjunction with the IT department and the HR team. This includes training in completing a daily timesheet, processing travel and vehicle requests, and with the IT system.

Staff also benefited from a two-day basic TAMIS administration and IT user's training. The trainings were conducted by Cecile Hipos and Sudharshini Dharmawardar.

Currently Ongoing:

The HR Department is currently recruiting personnel for the following positions: goat officers, vocational officers, vocational education advisor, input supplies specialist, peri-urban extension officer, M&E coordinators, and M&E assistants.

We have received approval for training and awareness for staff on the PMP. This training is scheduled for October 22-26, and 29-31, 2012. The training is scheduled to be held at the FED field offices and the Monrovia office.

FED STTA Chart	Position	Partner	Date in	Date Out	Summary
Gwendolyn Appel	MDF Specialist	DAI	January 28	February 11	Creation of MDF Manual and initial set up of MDF systems in TAMIS.
			June 19	June 28	MDF management and compliance training for staff in Monrovia and county offices.
Gwendolyn Armstrong	Operations Specialist	DAI	June 1	June 16	Operations support to complete manuals, train staff in communications and computer courses.
Tony Babb	Rice Value Chain Specialist	DAI	April 16	May 31	Rice upgrading report and strategy for year 2 developed.
Jessica Benton Cooney	Communications Specialist	DAI	July 10	July 26	Communications support to FED program, working in conjunction with FED Communications Manager
			August 16	Mid-December, 2012	Communications support to FED program, working in conjunction with FED Communications Manager
Melanie Bittle	ED Specialist	DAI	June 18	Sept 30, 2012	Oversee Component Two programs and team
Duke Burrus	Value Chain Specialist Cassava	DAI	March 28	April 24	Develop initial cassava upgrading strategy
			July 9	July 25	Work with Component One team to begin implementing cassava upgrading programs
Jaclyn Carlsen	ICT Specialist	DAI	Feb 1	Feb 29	Use ICT for FED baseline study
			June 11	Dec 15, 2012	Serve as ICT specialist looking at various ways ICT can assist FED's programs (GIS, mobile money, tablets, etc.)
Seongeun Chun	M&E Specialist	DAI	January 9	August 31	Oversee M&E team and all M&E deliverables
Matt Curtis	Soil Fertility Specialist	DAI	April 24	May 26	Conduct initial tests of soil in priority counties
			June 19	July 18	Follow-up on initial work and also help to establish soil testing lab
			August 23	August 31	Final follow up STTA to complete soil testing and ensure everything is in place for the soil lab

Sudharshini Dharmawardane	TAMIS Specialist	DAI	February 2	February 29	TAMIs support and training to FED
Lief Doerring	PTL	DAI	November 1, 2011	November 24, 2011	Workplan and management support
Max Goldensohn	Sr. Policy Advisor	DAI	April 5	April 30	Development of policy matrix
			November 8, 2011	December 17, 2011	Follow-up on policy work
Raymond Greer	M&E Advisor	DAI	April 2	May 12	Assist with analysis for various special studies
Phil Greiner	Business Manager	DAI	October 4, 2011	November 12, 2011	FED start-up support
Jonathan Hill	FAS Specialist	DAI	June 17	July 7	Implementation of Financial Accounting System
Ces Hipos		DAI	July 25	August 8	Configuration of county offices and IT configuration of county offices.
			January 22	February 24	Set up, install, and configure hardware and software to provide a functional Local Area Network with all of the necessary network services.
Agatha Johnson	SME Training Specialist	DAI	March 24	April 10	SME training for Component 2
			May 19	May 31	SME training for Component 2
			July 11	October 2012	SME training for Component 2
Ann Kinsley	Recruiter	DAI	November 4	November 24	Start-up hiring support for FED
Kathleen Kurz	Nutrition Advisor	DAI	February 3	February 28	Serve as Sr. Nutrition Advisor to get support design and development of nutrition programs

			September 8, 2012	September 28, 2012	Contribute to Year 2 workplanning.
David Land	Livestock Advisor	DAI	July 20	July 30	Design framework for national livestock policy
Steven Lawry	Land Tenure Advisor	DAI	May 2	May 28	Conduct land tenure assessment to better understand tenure issues FED's partner faces and how best to address them
Olivia Mak	Operations Specialist	DAI	February 8	April 27	Support to many of FED's operational teams
Dennis McCarthy	Livestock Advisor	DAI	February 16	May 3	Oversee and implement livestock strategy
			May 29	October 12	Oversee and implement livestock strategy
Casey McHugh	M&E Coordinator	DAI	January 17	April 4	Coordinate logistics for FED's special studies
			April 23	July 20	Coordinate logistics for FED's special studies
Mary Miller	Access to Finance Specialist	DAI	March 14	March 30	Work with component two team to identify options/barriers for FED's stakeholders to access finance
			March 3	March 26	Work with component two team to identify options/barriers for FED's stakeholders to access finance
Manuela Rayner	GIS Specialist	DAI	July 3	July 30	GIS training and support to FED's GIS Specialist
Gama Roberts	ICT Specialist	DAI	January 18	Jan 30	Development and oversight of FED's ICT initiatives

			April 22	April 30	Development and oversight of FED's ICT initiatives
			November 7, 2011	Dec 5, 2011	Development and oversight of FED's ICT initiatives
Vahe Sahakyan	FAS Specialist	DAI	June 11	June 27	Field Accounting System implementation and training
Adina Saperstein	Enterprise Development Specialist	DAI	Nov 27, 2011	Dec 19, 2011	Assistance with C2 inputs into the first FED workplan
Bagie Sherchand	Value Chain Specialist	DAI	November 15, 2011	December 15, 2011	Assistance with C1 inputs into the first FED workplan
Jessica Stretz	MDF Manager	DAI	April 19	August 9	Oversight and management of the MDF
	Start Up Specialist		October 12, 2011	October 29, 2011	Operational start-up support to FED
Malcolm Toland	BEE Specialist	DAI	February 13	March 30	Lead advisor for BEE issues facing FED
Ana Maria Ungureanu	IT Coordinator	DAI	August 14	August 27	IT support for configuration of BWI
Rhona Walusimbi	M&E Specialist	DAI	May 15	June 20	Oversight of M&E team
Charles Weschler	Operations Specialist	DAI	March 12	April 12	Oversee finance and operations of FED while DCOP is on leave
			June 11	June 30	Drawing on institutional knowledge of project's finances dating to project's start provide reference support as the project transitions from the old field expense system to the fully live FAS ground truthing

					and providing practical input to the technical staff installing the software. Provide additional finance and administration support during the transition and training period.
			September 15, 2012	October 12, 2012	Oversee finance and operations of FED while DCOP is on leave
Mahawa Wheeler	Capacity Building Advisor	DAI	April 10	May 15	Capacity Building support to FED's team and partners
			July 2	Sep 30, 2012	Capacity Building support to FED team and partners
Alia Afshar-Gandhi	Project Team Leader	DAI	February 14	February 20	Initial management visit on FED to meet team and USAID
			June 8	June 21	Assistance with MDF, county office challenges, and overall management support
			September 8, 2012	September 22, 2012	Year 2 workplanning STTA
Kwaku Agyemang	Livestock Policy Guidelines Advisor	DAI	September 26, 2012	October 27, 2012	Develop a draft of national policy guidelines governing both livestock research and extension together with guidelines governing the importation of livestock into Liberia.
Shahram Ahmadzadegan	Acting Market Development Fund and M&E Manager	DAI	September 6, 2012	November 2, 2012	Work with FED technical staff to facilitate and accelerate access to utilizing the FED Market Development Fund. Oversee the development and implementation of reporting procedures and

					guidelines in compliance with USAID requirements and best practices.
Patrick Hall	Environmental Compliance Advisor	CADMUS	November 28, 2011	December 14, 2011	Complete FED's IEE and provide guidance and inputs to the Year 1 workplanning.
			March 28	April 11	Conduct training for Fed staff and key partners in USAID Environmental Procedures, deliver short course of Reg. 216 and environmental monitoring and reporting. Identify broader FED environmental management training objectives, establish FED Year One environmental capacity building milestones.
Christin Hutchinson	Home Office Administrative Support	Winrock	December 12, 2011	December 16, 2011	To assist in Winrock start-up activities.
Kevin Price	Start Up Specialist	Winrock	December 12, 2011	December 14, 2011	To assist in Winrock start-up activities.
Ed Perry	Technical Advisor	Winrock	November 6	November 18	To provide technical input to FED's first annual work plan to launch component implementation and meet component objectives.
Dermot Cassidy	Peri-Urban Agriculture Specialist	Winrock	September 19, 2012	Nov 30, 2012	Support the development and commercialization of high value vegetable crops produced primarily by smallholder farmers in the hinterland of Monrovia and certain secondary towns in the FED target area in Liberia.
			March 2012	May 2012	

Lassane Zongo	Treadle Pump Manufacturer Trainer	Winrock	January 7	February 6	Select a FED Manufacturer trainer, and the first treadle pump manufacturer and train them in the fabrication of the treadle pump.
Jonathan Hubchen	Technical Advisor	LSU	November 7	November 21	To provide technical input to FED's first annual workplan to launch component implementation and meet component objectives.
Daniel Waterman	Private Sector Agricultural Input Specialist	IFDC	November 20	December 2	To assist as a technical advisor for workplanning
Susan Van Keulen-Cantella	Agricultural Extension Specialist	IFDC	November 7	November 22	To assist as a technical advisor for work planning.
Rama Vellanki	Short-Term Post Harvest Rice Specialist	LSU	September 22, 2012	October 21, 2012	Work with the FED team and the Ministry of Agriculture toward the goals of minimizing post-harvest losses and of providing high quality clean rice to the market.
Bradley Leger	Youth Vocational Education Specialist	LSU	June 1	June 25	Work with the Vocational Agriculture Specialist and the Capacity Development Specialist, the Agribusiness Specialist and the Enterprise Development Specialist in the coordination with the ministries of Education and Agriculture to contribute to the development of programs focused on youth.
Eric Wailes	Rice Policy Advisor	LSU	March 3	March 19	Work with the ministries of Agriculture and Commerce and USAID/Liberia to develop a draft

					upgrading strategy for the rice value chain.
Carl Motsenbocker	Peri-Urban Horticulture Specialist	LSU	June 9	July 1	Identify two vegetable crops and their cultivars that are best suited to the climate and market conditions in Montserrado and Margibi; determine the production practices and inputs that will promote highest yields and incomes; create technical guidelines for selected vegetables.
	Program Director		September, 2012	September, 16, 2012	Contribute to year 2 workplanning for Component 1 and Component 3
Edward Rhodes	Soil and Fertility Specialist	LSU	July 2	July 24	Work with the Vocational Agriculture Specialist to contribute to the development of a revised soil and soil management curriculum at BWI for adoption and use in the other vocational agriculture colleges, with the M&E specialist on development of on-far trials and demonstrations, and with IFDC on soil fertility management.
Roger Cozens	Agriculture Technical Advisor	Samaritan's Purse	November 7, 2011	December 4, 2011	To assist as a technical advisor for Year 1 workplanning.
Isaak Asare	Capacity Building Specialist	IFDC	May 11	May 24	Improving Access to quality inputs and testing and introducing new technologies through an improved extension training system in the target areas.
			June 22	July 6	
			July 25	August 10	
Constant Dangbegnon	NRM Extension Advisor	IFDC	May 11	May 24	Improving Access to quality inputs and testing and

			June 22	July 6	introducing new technologies through an improved extension training system in the target areas.
			August 24	Sept 7	
Bidjokazo Fofana	ISFM/UDP Specialist	IFDC	May 11	May 24	Improving Access to quality inputs and testing and introducing new technologies through an improved extension training system in the target areas.
			June 22	July 6	
			August 24	Sept 7	
Rebecca Sewall	Senior Gender Advisor	CEDPA	September 16, 2012	September 29, 2012	Provide input to year 2 workplanning on gender integration crosscutting.
			January 23, 2012	February 11, 2012	Provide technical expertise to FED's first annual work planning and the Gender Integration Plan to ensure that a gender mainstreaming is consciously and systematically integrated in to FED activities across all three components.

MARKET DEVELOPMENT FUND

Overview

The activities designed and implemented by the FED program are funded through a procurement mechanism called the MDF. FED technical staff who develop project concepts collaborate closely with the MDF (and M&E) in designing their activities to ensure they consider the appropriate subcontracting mechanisms and follow USAID rules for competition, procurement, and partner selection.



MDF Staff Update

In April 2012, FED hired Jessica Stretz, for a four-month STTA as acting MDF manager to focus on building the MDF and overseeing its day-to-day operations and management. The MDF manager meets with potential partners and collaborates with technical staff across components to ensure disbursement and management of the funds. The manager is supported by a staff of three, including one MDF specialist and two MDF procurement coordinators.

A one-day MDF training was held on June 25, 2012, for FED staff. The training provided an overview of MDF, TAMIS, and procurement. The training was facilitated by

STTAs Gwen Appel, MDF operations specialist, and Stretz.

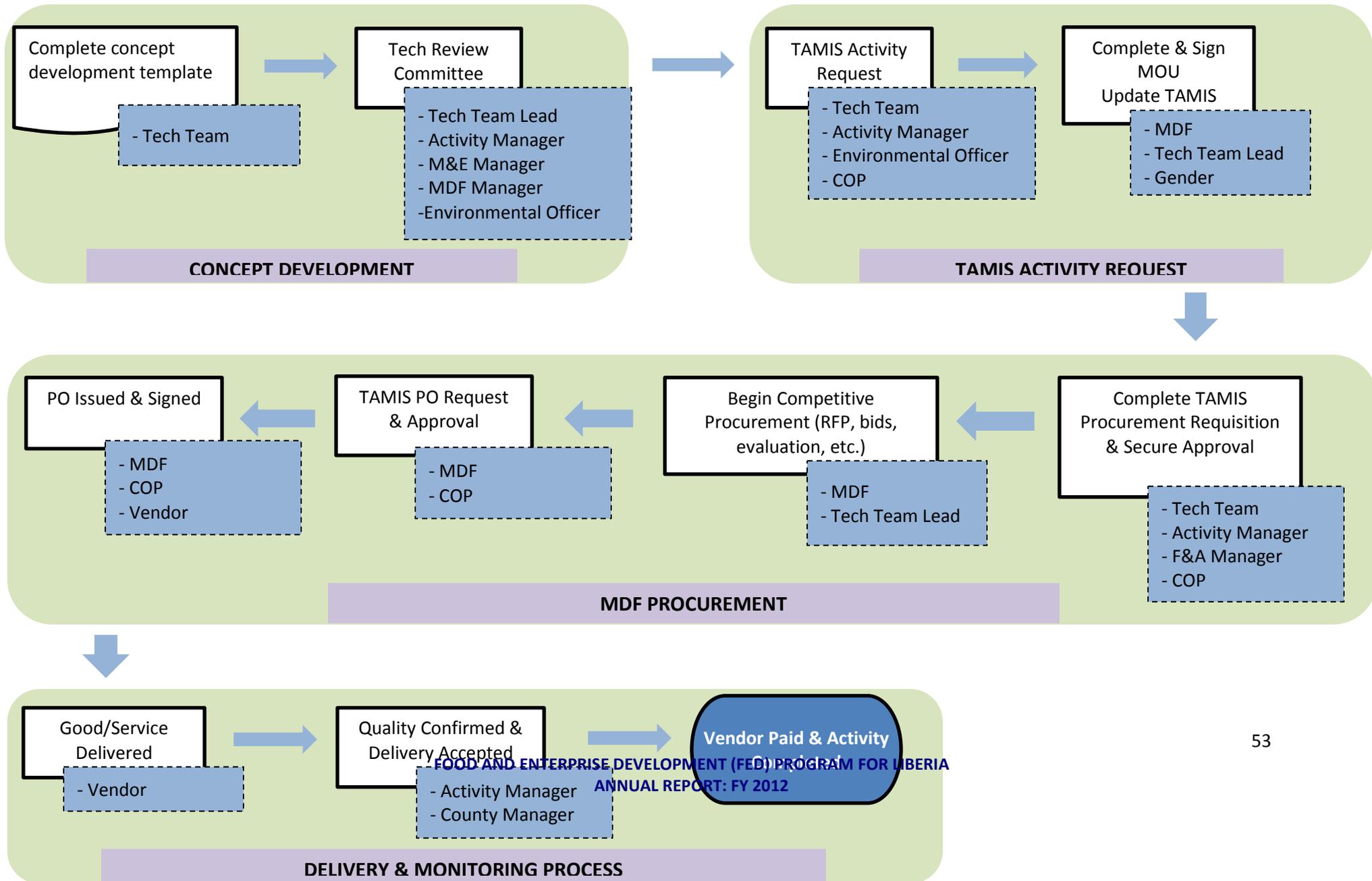
In September 2012, FED brought in a third STTA, Shahram Ahmadzadegan, to serve as acting MDF manager to focus on strengthening the MDF activity and procurement workflow process and oversee its day-to-day operations. FED expects to scale up activities in Year 2 of the program, therefore the activity development process needs to be fine-tuned and prepared to handle an increase in activities. This includes training of all FED staff on this fine-tuned workflow.

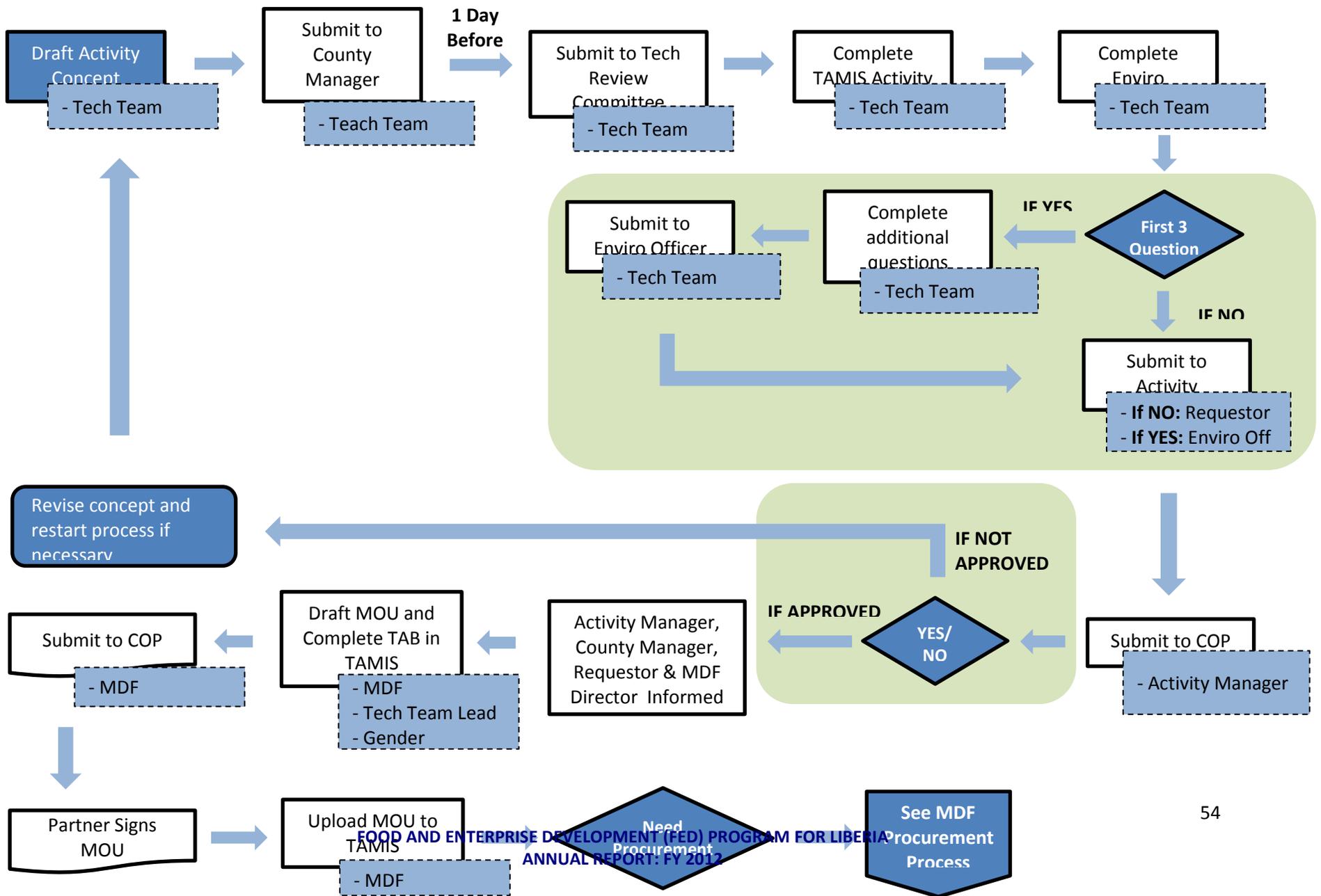
MDF Activity Workflow Process

As part of this process, at the end of the fourth quarter, FED created a Technical Evaluation Committee, chaired by the MDF director, to whom activity concepts are presented for review, feedback, and approval. Committee members include the COP, component leads, one M&E and MDF staff member, environmental officer, senior technical coordinator, and gender advisor. New activities cannot be pursued unless approved by this committee, therefore streamlining the activity development process by minimizing changes and the iterative process.

This MDF activity workflow is summarized in the three charts below:

MDF ACTIVITY PROCESS OVERVIEW





MDF Activities Summary

During the first year of the program, the MDF has generated and approved 38 activities, totaling \$1,098,570 in budget estimates. There are another 17 activity concepts, totaling \$1,714,372 in budget estimates that have been proposed and are in the approval process. A table summarizing completed, approved, and live activities follows below:

FED Activity Table – COMPLETED, APPROVED and LIVE ACTIVITIES

Activity Name	Numb	Description	Start Date	End Date	Approx. Value (USD)	Location (county, district)	Activity Status
COMPONENT 1							
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, irrigation, weeding, harvesting, post-harvest). In addition, labor-saving production technologies (rotary weeders, power tillers) will be demonstrated.	5/21/12	10/31/12		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		Bong, Montserrado, Nimba, Margibi	Ongoing
MoA Participation at Scientific Conference of the Global Cassava Partnership in Kampala,	C1-TRN-03	Enhanced MoA's knowledge of climate change concerns for the cassava sector by funding the attendance of their program officer at the Scientific Conference of the Global Cassava	6/18/12	6/22/12		Montserrado	Completed

Uganda		Partnership in Kampala, Uganda.					
Training Private-sector on Soil Testing Processes and Procedures	C1-TRN-04	Enhanced 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 Agriculture 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		Montserrado	Completed
Training and Demonstrations on Integrated Soil Fertility Management/ISFM	C1-MDF-06	Trained 1,000 farmers on 22 FED cassava demonstration sites, upland rice outgrowers, members of three 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		Bong, Grand Bassa, Lofa, Nimba	Ongoing
Capacity Building for the Safe Use of Authorized Agro-chemicals in Bong and Lofa counties	C1-MDF-08	Collaborated with input dealers in organizing sensitization, awareness creation, and demonstrations for the safe use of authorized agro-chemical and equipment. Conducted two demonstrations of innovative tools, and inputs (fertilizer, chemicals, etc.) in Lofa and Bong counties	7/24/12	8/15/12		Lofa, Bong	Completed
Arjay Farms Outgrower Expansion	C1-MDF-11	Work with Arjay Farms in expanding and training additional outgrower 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		Montserrado	Ongoing
Vegetable Seedling Special Study	C1-MDF-13	Identified approximately 30 independent vegetable seedling producers in the focus counties (5 per county). Conducted mini-	6/5/12	6/30/12		Bong, Grand Bassa, Lofa, Nimba,	Completed

		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.				Montserrado, Margibi	
Food Consumption Patterns & Expenditure Among Peri-Urban Farmers (FCPE) Special Study	C1-MDF-14	Conducted a mini survey of a sub-sample of the FED Baseline Survey of households between February and May 2012. The baseline survey sampled approximately 85 households involved with FED in the peri-urban areas of Margibi and Montserrado counties. The specific objective of this survey was 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		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 partner sites.	7/9/12	10/31/12		Bong, Grand Bassa, Lofa, Margibi, Montserrado, Nimba	Ongoing
Completion of National Peste des Petits Ruminant (PPR)	C1-MDF-18	Assist MoA with effective completion of the National PPR Vaccination Campaign at the county level. Significant EU/AU/IBAR provided	7/2/12	10/15/12		Bong, Grand Bassa, Lofa, Margibi,	Ongoing

Vaccination Campaign		vaccines remain unused due to closure of program.				Montserrado, Nimba	
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 demonstration sites to assist with soil erosion.	6/29/12	10/31/12		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 farmer’s 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		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 children in vegetable farming and input supplies and provide technical assistance on goat health.	6/29/12	12/31/12		Montserrado	Ongoing
Vegetable Seedling Production and Sales	C1-MDF-24	Motivate farmers to invest in vegetable production by training seedling producers in use and promotion of improved inputs and on how to provide technical information services to farmers.	8/15/12	10/01/12		Bong, Grand Bassa, Lofa, Margibi, Montserrado, Nimba	Ongoing
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		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 food security and nutrition information that will	7/16/12	12/14/12		Bong, Grand Bassa, Lofa, Margibi,	Ongoing

		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.				Montserrado, Nimba	
One-day Technical Consultative Workshop on Livestock Interventions in Liberia	C1-MDF-29	Assisted 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		Montserrado	Completed
Soy Flour Compost Production Training	C1-TRN-30	Collaborated 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		Bong, Nimba, Grand Bassa, Lofa	Completed
T-shirt for Cassava, Up and Lowlands Rice, and Vegetables Demonstration Trainees	C1-MDF-31	Increase awareness of FED programs in targeted communities by production of a FED T-shirt to be distributed to those who are participating in FED activities.	8/21/12	9/30/12		Bong, Nimba, Grand Bassa, Lofa	Ongoing
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	2/23/13		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		Montserrado, Bong	Ongoing

COMPONENT 2							
Business Management Skills Training	C2-TRN-01	Stimulated agribusiness growth by conducting a business-management training that helped attendees identify their business skill strengths and weakness, developed a stronger business plan, learned about the various component of managing a successful agri-business, and presented an action plan to develop and manage a profitable agriculture business.	5/23/12	6/8/12		Grand Bassa, Montserrado, Nimba	Completed
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		Lofa, Nimba, Grand Bassa, Bong	Ongoing
Enterprise Development Pilot Program	C2-TRN-03	Prepared 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		Nimba	Completed
Computer Literacy Training for From God to Man Farmers Association	C2-TRN-04	Provided basic computer training to ten community members in the village of Doumpa. The computer training will enhance the capacity of the farmer's association to efficiently manage the association	7/12/12	9/12/12		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 counties.	8/6/12	9/30/12		Bong, Grand Bassa, Lofa, Margibi, Montserrado, Nimba	Ongoing

Business Skills Training for SMEs	C2-TRN-06	Stimulated the Agriculture sector through working with approximately 25 participants 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.	7/18/12	9/7/12		Bong	Completed
Mentorship program for Business Plan Development for SMEs	C2-TRN-07	Completed 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		Bong, Montserrado	Completed
Welekamah Farmer Based Organization	C2-TRN-08	Built the capacity of Welekamah to operate more effectively as a business through a training workshop addressed the topics of customer service, selling techniques, and farming as a business.	1/4/12	1/6/12		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		Montserrado	Ongoing

		marketing training.					
Enterprise Development Pilot Plan and Gender Concept	C2-TRN-10	Prepared various producer groups in Grand Bassa County 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		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 (farmer's 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		Bong, Grand Bassa, Lofa, Margibi, Montserrado, Nimba	Ongoing
COMPONENT 3							
Agro-Business Internship Program	C3-MDF-01	Partner with universities and vocation schools in establishing a three-month internship program for selected students and place them in Agro-business organizations.	6/1/12	11/30/12		Montserrado, Nimba	Ongoing
Staff Training and Curriculum Roundtable discussion at BWI and Nimba	C3-TRN-02	Conducted a two-day training for BWI Department of Agriculture and Administration staff as well as all staff at the Nimba Community College on instructional development and delivery. A curriculum review with all stakeholders was conducted.	6/11/12	6/22/12		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	6/15/12	9/30/12		Margibi	Ongoing

		<p>decades. Staff 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:</p> <ol style="list-style-type: none"> 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. 					
FED World Food Day Participation - Child Art Competition	C3-MDF-06	<p>Meaningfully involve youth in agriculture and business development in order to prepare them to participate 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.</p>	9/10/12	12/15/12		Bong, Grand Bassa, Lofa, Margibi, Montserrado, Nimba	Ongoing

Annex:

MONITORING AND EVALUATION

Overview

Fiscal Year 2012 was a significant year for building the foundation of FED's Monitoring and Evaluation (M&E) activities in terms of developing, assessing, and strengthening data management and collection processes, tools and systems, M&E staff hires and trainings, baseline data collection, and PMP development. Throughout this process, FED also collaborated closely with L-MEP, USAID's mechanism for conducting Data Quality Assessments (DQAs), which is a participatory process that incorporates M&E capacity building.

Performance Monitoring Plan (PMP)

Despite the absence of finalized Feed the Future (FtF) targets, which sets the Mission's framework for the FED program in Liberia, FED drafted and submitted the project's PMP in the first quarter of 2012. This not only meets the program's contractual requirement, but creates a basic evaluation structure to inform project activity design and implementation. In March of 2012, FED re-drafted and re-submitted the PMP based on input received from L-MEP. At the end of FY 2012, FED began revising the PMP for Year 2 of the program, and will finalize it based on the DQA completed by L-MEP and after the Year 2 work plan is finalized and approved by USAID.



FED M&E team collecting data in Lofa County.

The project indicators outlined in the PMP have been the main drivers for the activities FED has implemented in the first year of the program. FED requires all activity managers on staff to identify the related indicators for their proposed activities and to ensure their implementation captures the data needed to measure our performance against those indicators.

Indicator Progress Report

Please note that for some of the indicators, FED is not able to report any data for two reasons: 1) one set of indicators will not have any results as survey data is yet available and 2) another set of indicators has no results as it is too early in the implementation cycle. Either the indicator-related activity just started at the end of the first fiscal year or it has not started yet so results are not available. We expect to have results for most indicators in Year 2 of the FED program. For indicator 3A (*Number of local organizations certified/qualified to receive direct USAID funding*), given the amount of capacity building required to qualify a local organization for this indicator, we do not expect any results until at the earliest the third year of the FED program.

Those indicators that fall in the first category of reasons outlined above (i.e. waiting on survey completion) include:

- 1A (Gross margin per unit of land or animal of selected product)
- 1B (Percentage increase in crop yields)
- 1C (Number of enterprises participating in USG assisted value chains)
- 2A (Value of incremental sales, collected at farm level, attributed to FtF)

FED has arranged for additional surveys to be conducted in fiscal year two to collect data that can be used to either report results for these indicators or establish baselines against which data from the second year can be measured (specifically for indicator 2A). Although the survey for indicators 1A and 1B were planned for Year 1, the consultant identified was unable to begin the survey due to scheduling conflicts.

The remainder of the indicators that have no results fall in the second category (i.e. too early in the implementation cycle) and include:

- 1D (Number of microenterprises linked to larger-scale firms as a result of USG assistance)
- 1.3.1 (Number of households using improved food storage methods)
- 1.3.2 (Number of households using improved food processing technologies)
- 1.3.3 (Number of individuals trained on nutrition messages within agricultural programs)
- 2C (Number of jobs attributed to FtF implementation)
- 2.1.1 (Number of new laws and policies implemented to support private enterprise growth)
- 2.1.2 (Number of amendments to laws/regulations/policies implemented)
- 2.1.3 (Number of policy/regulation dialogue platforms created and effectively utilized)
- 2.2.1 (Number of targeted enterprises accessing business development services through USG assistance)
- 2.2.2 (Value of agricultural and rural loans)

Please note that targets are based on the August 2012 version of the PMP. These targets will change based on the new work plan for Year 2 and a resubmitted PMP.

Below is an Indicator Progress Report Table, summarizing FED's results for FY 2012:

FED Indicator Progress Report for Program Year One (October 2011 - September 2012)										
No.	Indicator	TARGET		Quarters				Cumulative Actual (Annual)	% Achieved (Annual)	% Achieved (LOP)
		LOP	FY	Q1 (Oct-Dec, 2011)	Q2 (Jan-Mar, 2012)	Q3 (Apr-Jun, 2012)	Q4 (Jul-Sept, 2012)			
			2012	Actual	Actual	Actual	Actual			
1A	Gross margin per unit of land or animal of selected product	25%	5%	0	0	0	0	0	0%	0%
1B	Percentage increase in crop yields	20%	5%	0	0	0	0	0	0%	0%
1C	Number of enterprises participating in USG assisted value chains	580	49	0	0	0	0	0	0%	0%
1D	Number of microenterprises linked to larger-scale firms as a result of USG assistance	150	6	0	0	0	0	0	0%	0%
1E	Number of rural households benefitting directly from USG interventions	54,000	2,200	0	0	0	610	610	28%	1%
1.1.1	Number of farmers and others who have applied new technologies and management practices as a result of USG assistance	54,000	2,200	0	0	0	71	71	3%	0%
1.1.2	Number of hectares under improved technologies or management practices as a result of USG assistance	20,000	500	0	0	0	28.5	28.5	6%	0%
1.2.1	Number of private enterprises, producer organizations, women's groups, trade and business associations and community-based organizations (CBOs) receiving USG assistance	880	115	0	9	64	18	91	79%	10%
1.2.2	Number of private enterprises, producer organizations, women's groups, trade and business associations and community-based organizations (CBOs) that applied new technology or management practices as a result of USG assistance	880	115	0	0	0	1	1	1%	0%
1.3.1	Number of households using improved food storage methods	10,000	50	0	0	0	0	0	0%	0%
1.3.2	Number of households using improved food processing technologies	10,000	50	0	0	0	0	0	0%	0%
1.3.3	Number of individuals trained on nutrition messages within agricultural programs	2,500	100	0	0	0	0	0	0%	0%
2A	Value of incremental sales (collected at farm level) attributed to FtF *			0	0	0	0	0		0
2B	Value of new private-sector involvement in the agriculture sector or food chain leveraged by FtF implementation	1,000,000	10,000.00	0	0	0	5,119.00	5,119.00	51%	1%
2C	Number of jobs attributed to FtF implementation	200	10	0	0	0	0	0	0%	0%
2D	Number of public-private partnerships formed as a result of FtF assistance	15	2	0	0	47	30	77	3850%	513%
2.1.1	Number of new laws and policies implemented to support private enterprise growth	3	0	0	0	0	0	0		0%
2.1.2	Number of amendments to laws/regulations/policies implemented	5	5	0	0	0	0	0	0%	0%
2.1.3	Number of policy/regulation dialogue platforms created and effectively utilized	10	TBD	0	0	0	0	0		0%
2.2.1	Number of targeted enterprises accessing business development services through USG assistance	300	120	0	0	0	0	0	0%	0%
2.2.2	Value of agricultural and rural loans **	TBD	TBD	0	0	0	0	0		
3A	Number of local organizations certified/qualified to receive direct USAID funding	25	0	0	0	0	0	0	0%	0%
3B	Number of students benefitting from improved academic facilities and programs	12,000	250	0	0	0	627	627	251%	5%
3.1.1	Number of individuals who have received USG supported short-term agricultural sector productivity or food security training	6,000	300	0	75	1,634	29	1738	579%	29%
3.1.2	Number of individuals, organizations, and institutions that have received training of a technical nature	15,000	700	0	0	77	12	89	13%	1%
3.2.1	Number of individuals that have received training on management or leadership	1,000	200	0	55	141	104	300	150%	30%

* Targets for indicator 2A are not listed because data collected needs to be compared with previous year sales. Once sales information is gathered for 2012, it will be used as the baseline against which incremental increases can be measured.

** Targets for indicator 2.2.2 are listed as TBD because it is currently not in FED's scope to provide loans. As FED revises the PMP for the Year 2 Workplan, we will discuss with USAID whether this indicator is applicable to FED.

FED Indicator Progress Report for Program Year One (October 2011 - September 2012)

No.	Indicator	Targets		Cumulative Actual (Annual)	% Achieved (Annual)	% Achieved (LOP)	Indicator Disaggregation		
		LOP	FY						
			2012						
1A	Gross margin per unit of land or animal of selected product	25%	5%				Targeted Commodity	Rice	
								Vegetable	
								Cassava	
								Goat	
							Gender Household Type	Male No Female	
								Female No Male	
								Male & Female	
							Water Management	Rain Fed	
								Irrigated Area	
							County	Bong	
								Grand Bassa	
								Lofa	
Margibi									
Montserrado									
1B	Percentage Increase in crop yields	20%	5%				Commodity	Rice	
								Vegetable	
								Cassava	
								Goat	
							Gender Household Type	Male No Female	
								Female No Male	
								Male & Female	
							Sex of Farmer	Male	

								Female	
							County	Bong	
								Grand Bassa	
								Lofa	
								Margibi	
								Montserrado	
								Nimba	
1C	Number of enterprises participating in USG assisted value chains	580	49				Sex of Enterprise Owner(s)	Male	
								Female	
							Commodity	Rice	
								Vegetable	
								Cassava	
								Goat	
							County	Bong	
								Grand Bassa	
								Lofa	
								Margibi	
								Montserrado	
								Nimba	
Size of company	Number								
1D	Number of microenterprises linked to larger-scale firms as a result of USG assistance	150	6				Sex of Enterprise Owner(s)	Male	
								Female	
							County	Bong	
								Grand Bassa	
								Lofa	
								Margibi	
								Montserrado	
								Nimba	
							1E	Number of rural households benefitting directly from USG	54,000
Female No Male									
Male & Female									

	interventions							Continuing vs New	Continuing	
									New	610
							County		Bong	135
									Grand Bassa	50
									Lofa	105
									Margibi	45
									Montserrado	36
									Nimba	239
1.1.1	Number of farmers and others who have applied new technologies and management practices as a result of USG assistance	54000	2,200	71	3%	0%	Sex of Farmer	Male		
								Female		
							Type of Person	Producers	71	
								People in Government		
								People in Firm		
								Rural People		
							Continuing vs New	Continuing		
								New	71	
							County	Bong	6	
								Grand Bassa	14	
Lofa	46									
Margibi	0									
Montserrado	0									
Nimba	5									
1.1.2	Number of hectares under improved technologies or management practices as a result of USG assistance	20,000	500	28.5	6%	0%	Continuing vs New	Continuing		
								New	71	
							Sex of Adopter/Implementer	Male	28	
								Female	43	
							Technology Type	Mechanical & Physical	X	
								Biological		
								Chemical	X	
								Management and Culture Practices		

							County	Bong	
								Grand Bassa	
								Lofa	
								Margibi	
								Montserrado	
								Nimba	
1.2.1	Number of private enterprises, producers organizations, women's groups, trade and business associations and community-based organizations (CBOs) receiving USG assistance	880	115	91	79%	10%	Type of Organization	Private Enterprise	18
								Producer Organization	67
								Women's Group	5
								Trade Association	
								Business Association	
								CBOs	1
							Continuing vs New	Continuing	
								New	91
							County	Bong	18
								Grand Bassa	10
								Lofa	15
								Margibi	5
								Montserrado	22
Nimba	21								
1.2.2	Number of private enterprises, producers organizations, women's groups, trade and business associations and community-based organizations (CBOs) that applied new technology or management practices as a result of USG assistance	880	115	1	1%	0%	Type of Organization	Private Enterprise	
								Producer Organization	1
								Women's Group	
								Trade Association	
								Business Association	
								CBOs	
							Continuing vs New	Continuing	
								New	1
							County	Bong	
								Grand Bassa	
								Lofa	

								Margibi	1
								Montserrado	
								Nimba	
1.3.1	Number of households using improved food storage methods	10,000	50				Gender Household Type	Female No Male	
								Male No Female	
								Male & Female	
							Type of Storage Method		
							County	Bong	
								Grand Bassa	
Lofa									
Margibi									
Montserrado									
Nimba									
1.3.2	Number of Households using improved food processing technologies	10,000	50				Gender Household Type	Female No Male	
								Male No Female	
								Male & Female	
							Type of improved Processing	Bottling	
								Parboling	
								Cooling	
								Steaming/Steeping	
								Drying	
								Food Blending	
								Others	
							County	Bong	
								Grand Bassa	
								Lofa	
Margibi									
Montserrado									
Nimba									
1.3.3	Number of individuals	2500	100				Sex	Male	

	trained on nutrition messages within agricultural program							Female	
							County	Bong	
						Grand Bassa			
						Lofa			
						Margibi			
						Montserrado			
							Type of Training	Nimba	
						Agricultural Productivity			
						Enterprise Development			
							Type of Individual	Others	
						Producers			
						People in Government			
						People in firm			
							Age Range	Rural People	
						Below 35			
						36-65			
							Targeted Commodity	66 and Above	
						Rice			
						Vegetable			
						Cassava			
							County	Goat	
2A	Value of incremental sales (collected at farm level) attributed to FtF							Bong	
								Grand Bassa	
								Lofa	
								Margibi	
								Montserrado	
							Nimba		
2B	Value of new private sector involvement in the ag sector or food chain leveraged by FtF	1,000,000	10,000	5,119.00	51%	1%	Targeted Commodity	Rice	
								Vegetable	
								Cassava	
								Goat	

	implementation						County	Bong	79.00
								Grand Bassa	143.00
								Lofa	4,402.00
								Margibi	0
								Montserrado	0
								Nimba	495.00
2C	Number of jobs attributed to FtF implementation	200	10				Sex of Enterprise Owner(s)	Male	
								Female	
							Continuing vs New	Continuing	
								New	
								Urban	
								Rural	
							County	Bong	
								Grand Bassa	
								Lofa	
								Margibi	
Montserrado									
Nimba									
Size of company	Number	77							
2D	Number of public-partnerships formed as a result of FtF assistance	15	2	77	3850%	513%	Type of Partnerships	Ag Production	76
								Nutrition	1
								Post harvest transformation	
								Multi-focused	
								Others	
								Rural	
							Sex of Owner	Male	59
								Female	18

2.1.1	Number of new laws and policies implemented to support private enterprise growth	3	0				Sector	Agriculture Resource	
								Food	
								Market standards and regulations	
								Financing and public investment	
2.1.2	Number of amendments to laws/regulations/policies implemented	5	5				Sector	Agriculture Resource	
								Food	
								Market standards and regulations	
								Financing and public investment	
2.1.3	Number of policy/regulation dialogue platforms created effectively utilized	10	TBD				Sector	Agriculture Resource	
								Food	
								Market standards and regulations	
								Financing and public investment	
2.2.1	Number of targeted enterprises accessing business development services through USG assistance	300	120				Sex of Enterprise Owner(s)	Male	
								Female	
							Continuing vs New	Continuing	
								New	
							Type of Enterprises	Farmer association	
								Business Association	
								Private firm	
								Educational Institution	
								NGO	
								Government	
Others									
County	Bong								

								Grand Bassa	
								Lofa	
								Margibi	
								Montserrado	
								Nimba	
							Size of company	Number	
2.2.2	Value of agricultural and rural loans	TBD	TBD				Continuing vs New	Continuing	
								New	
							Type of Loan Recipient	Producers	
								Wholesaler/producer	
								Loan trader/assembler	
								Others	
							Sex of recipient persons or organization	Male	
								Female	
							County	Bong	
								Grand Bassa	
Lofa									
Margibi									
Montserrado									
Nimba									
Size of company	Number								
3A	Number of local organizations certified/qualified to receive direct USAID funding	25	0				Sex of Owner(s)	Male	
								Female	
							Type of Organization	Farmer association	
								Business Association	
								Private firm	
								Educational Institution	
								NGO	
							Government		
Size of Organization	Number								
County	Bong								

								Grand Bassa	
								Lofa	
								Margibi	
								Montserrado	
								Nimba	
3B	Number of students benefitting from improve academic facilities and programs	12000	250	627	251%	5%	Sex of Student	Male	392
								Female	235
							County	Bong	0
								Grand Bassa	0
								Lofa	0
								Margibi	382
								Montserrado	38
Nimba	207								
3.1.1	Number of individuals who have received USG supported short-term agriculture sector productivity or food security training	6,000	300	1738	579%	29%	Sex	Male	26
								Female	3
							County	Bong	11
								Grand Bassa	2
								Lofa	6
								Margibi	0
								Montserrado	3
								Nimba	7
							Type of Training	Agricultural Productivity	X
								Enterprise Development	
								Others	
							Type of Individual	Producers	X
								People in Government	
								People in firm	X
								Rural People	
							Age Range	Below 35	
								36-65	X
								66 and Above	

3.1.2	Number of individuals, organizations and institutions that have received training of a technical nature	15,000	700	89	13%	1%	Sex	Male	3
								Female	9
							County	Bong	
								Grand Bassa	
								Lofa	
								Margibi	
								Montserrado	
							Nimba	12	
							Type of Training	Agricultural Productivity	
								Enterprise Development	X
								Others	
							Type of Individual	Producers	X
								People in Government	
People in firm									
Rural People									
Age Range	Below 35								
	36-65	X							
	66 and Above								
Long-term vs Short term	Long term								
	Short term	X							
3.2.1	Number of individuals that have received training on management or leadership	1,000	200	300	150%	30%	Sex	Male	75
								Female	29
							County	Bong	35
								Grand Bassa	30
								Lofa	0
								Margibi	0
								Montserrado	0
								Nimba	39
							Type of Training	Agricultural Productivity	
								Enterprise Development	X
Others									

Baseline Survey

During the second quarter, the M&E team developed and administered the FED Baseline Survey (BLS). The Baseline Survey results were compiled, analyzed, and submitted to USAID in our Baseline Survey Report on April 30, 2012. The objectives of the Baseline Survey were three-fold: 1) to provide information on household demographics and resources and agriculture and livestock in the targeted counties, 2) to establish a baseline to help measure future program achievements, and 3) to help design the program to local conditions and needs.

The BLS results collected baseline data on three major categories: 1) demographics, 2) agriculture and livestock activities, and 3) household dwelling characteristics (i.e. water supply, electricity, etc.). The final BLS report not only outlined survey results, but also included lessons observed and recommendations in the areas of logistics and planning, sampling strategy, and monitoring and reporting. You can refer to the FED Baseline Survey report for full details on results and recommendations.

Data Management & Collection Processes, Tools, and Systems

In order to effectively monitor and evaluate the activities implemented by the program, FED needed to first develop detailed and systematic data management and collection tools as well as procedures and systems. To this end, FED has worked throughout the first year of the program to create, revise, and adjust these tools and systems so that the data collected on project indicators can meet the five data quality standards of validity, reliability, timeliness, precision, and integrity.

In terms of data collection tools, FED has developed standard data collection forms for all project indicators and has disseminated those forms to the field for use by county M&E coordinators and extension officers. FED has also trained these field staff on their use.

Data collected is entered into both Excel data entry forms as well as into TAMIS, FED's project management database system. Within TAMIS, FED has developed an M&E module that includes indicator reference sheets for each indicator including the definitions, measurement units, and calculation details, etc. Program activities are all connected to relevant indicators and listed in the M&E module by indicator. Data capture forms can be generated in the system for each component and for training data.

Finally, reference data forms have also been designed to collect data, which is later entered into TAMIS for reporting and reference. This includes rain gauge data and market price data, among other categories.

One area that needs to be further strengthened is the documentation of the data management and collection procedures. FED will be working in Year 2 to complete this documentation and re-train all relevant staff, including all M&E staff, extension officers and technical staff at the Monrovia and FED county offices.

M&E Staff Update (Hires & Changes)

During the second quarter, FED hired an M&E specialist to fill the key personnel position, supported by two M&E officers and a GIS officer in the Monrovia office. In the third quarter, M&E coordinators were hired for the four primary target counties of Grand Bassa, Bong, Lofa, and Nimba counties. The M&E coordinators work alongside the extension officers to collect and verify field data and the M&E officers in Monrovia review original data forms for completeness and correctness and enter the information into TAMIS, Excel, and PIDS. Once the county offices complete the upgrade of their IT facilities and program activities are scaled up, data entry into TAMIS can be done directly in the field, and verified in the system by M&E officers. This will be completed in the first quarter of Year 2 of the program. Additional M&E staff will be hired in the county offices to support the monitoring and data entry efforts.

During the third quarter, Agricultural Economist, Ray Greer completed the analysis and write-up of the baseline survey and presented key findings to FED staff and USAID. Rhona Walusimbi, another M&E STTA, arrived on May 16 to conduct a special study during May and June around food consumption patterns and income usage among potential FED intervention group. Her key findings were presented on June 13. Sudarshini Dharmawardane, TAMIS STTA, arrived in Monrovia on June 15 to provide technical assistance in developing a M&E database in TAMIS that will capture performance data for the project.

The M&E specialist left the project in September 2012 and a replacement hire, Robert Ressequie, was identified and submitted to USAID for approval. In the interim, two STTAs were brought in to provide technical assistance on data quality (Erika Dunmire) and management oversight of the M&E team to ensure the M&E system is strengthened and systematized (Shahram Ahmadzadegan).

Staff Trainings

A key component of developing M&E systems and procedures is training, which helps build the capacity of the team and maintain consistency in the application of M&E instruments and procedures.

In this effort, the following training activities were conducted:

- The M&E staff, including coordinators and officers, was trained during the second quarter on the data collection instruments and procedures designed by the M&E specialist.
- In addition, M&E staff attended L-MEP's Managing for Results training offered in late April and late June.
- The M&E coordinators have also trained the extension officers and county managers on how to use the data collection instruments.
- The FED senior ICT specialist provided training to the M&E coordinators and extension officers during the fourth quarter on GPS data collection for training and demonstration site locations.

FED plans on conducting a mobile data collection training for all M&E staff during the First Quarter of Year 2 and will begin transitioning some of the data collection instruments from paper to mobile. Paper instruments will still be available as a backup, however, in case of loss of signal on the mobile devices.

Special Studies & Support

Although the primary role of M&E is to collect and verify data on FED's program activities and ensure those activities are designed and implemented to meet project indicators, their technical expertise can also be used to provide technical support to program activities, especially in the area of capacity building.

During the second quarter, the M&E team provided technical support on a number of program activities. At the Cuttington University Agriculture Show, the FED M&E team assisted in the demonstration of a mobile data platform as a data collection tool. This included developing a short survey to be administered to farmers attending the show as well as an example of a form for agricultural extension officers to collect data from the field.

In addition, the M&E team provided support on an agricultural study being led by Joseph Saysay, a former president's young professional currently pursuing a Masters of Science in Agricultural Economics and Management at Huazhong Agricultural University in Wuhan, China. The team worked with Saysay in developing his research plan, logistics, financial reporting, and budgeting.

During the third quarter, FED conducted a Vegetable Seedling Special Study in each of FED’s six focus counties. In coordination with the peri-urban team, FED county managers, the M&E specialist, and special studies team leader, the study identified 31 vegetable seedling producers as short-listed candidates for the FED Vegetable Nursery Program.

Data Quality Assessment (DQA)

Toward the end of the fourth quarter in August, L-MEP began a Data Quality Assessment (DQA) of the FED program, which has now been concluded. According to the DQA report, the assessment “revealed some strengths and some weaknesses of the program’s data management and reporting systems as well as the quality of the data being managed and reported through these systems.” Overall, the report concluded that data management processes are systematic, data collection tools are available, data reporting procedures exist, and training provided, but improvements need to be made in terms of a broader training effort, some revisions to the PMP, better documentation of the M&E procedures already in place to ensure consistency, expansion of the M&E team, and some strengthening of minor system issues. Refer to the L-MEP DQA report dated September 25 for further details.

Standard M&E Activities Conducted

Throughout Year 1 of the program, the M&E team has regularly conducted monitoring and data collection for FED’s MDF activities. These M&E activities are summarized by component area in the table below.

Table 1: FED Activities from April – June 2012

Activities for Component One: Agricultural Productivity				
Date	Activities	County	# of Farmers Trained	# of Groups
April – July 2012	Vegetable Production Training	Margibi	100	4
April – July 2012	Vegetable Production Training	Montserrado	200	9
June 2012	Rice Productions and Processing Demonstration	Bong	213	8
June 2012	Rice Productions and Processing Demonstration	Nimba	240	9
June 2012	Rice Productions and Processing Demonstration	Grand Bassa	106	4
June 2012	Rice Productions and Processing Demonstration	Lofa	213	8
June 2012	Tube well training	Nimba	1 Supervisor, 5 workers	NA
June 2012	Tube well training	Bong	1 Supervisor, 6 workers	NA
Activities for Component Two: Enterprise Development				
May 2012	Business	Montserrado	48	20

	Management Skills Training for SMEs in the Cassava Value Chain			
May – June 2012	Business Skills Training for Liberian Farmers	Grand Bassa	32	8
June 4 – 8	Enterprise Development	Nimba	31	16
Activities for Component Three: Capacity Building				
June 15 – 16	Capacity Building Teacher's Training	Margibi	8	1
June 19 - 20	Capacity Building Teacher's Training	Nimba	42	1

FED's Collaborative Partner Organizations

FED Partner	Description	Key Role	Start Date	End Date
Development Alternatives, Inc. (DAI)	DAI works on the frontlines of international development. Transforming ideas into action — action into impact. DAI is committed to shaping a more livable world.			
Winrock International	Winrock International is a nonprofit organization that works with people in the United States and around the world to empower the disadvantaged, increase economic opportunity, and sustain natural resources.			
International Fertilizer Development Center (IFDC)	IFDC is a public international organization addressing critical issues such as international food security, the alleviation of global hunger and poverty, environmental protection and the promotion of economic development and self-sufficiency.			
Samaritan's Purse	Samaritan's Purse is a nondenominational evangelical Christian organization providing spiritual and physical aid to hurting people around the world. Since 1970, Samaritan's Purse has helped meet needs of people who are victims of war, poverty, natural disasters, disease, and famine with the purpose of sharing God's love through His Son, Jesus Christ.			
Louisiana State University	LSU is committed to excellence at every level, offering a challenging academic and research environment in one of the most unique cultural settings in the nation			
The Cadmus Group	The Cadmus Group helps address the nation's most pressing environmental, energy, and health challenges.			
The Center for Development and Population Activities	Founded in 1975, the Centre for Development and Population Activities (CEDPA) is an internationally recognized non-profit organization that improves the lives of women and girls in developing countries.			

Delegation Team Visits FED Program Sites

A delegation team led by FED Chief of Party, Jonathan Greenham, visited several FED project sites in Montserrado and Margibi counties on August 22, 2012. The team included Janet Stormes, a congressional staff member on the Senate Appropriations Committee, Dorothy Rayburn, Department of State Legislative Affairs Office, and Edith Houston, USAID director for West African Affairs. The overall purpose of the visit was to show the delegation the support FED is providing to schools like BWI that are trying to build human resource capacity through creating Centers of Excellence.

The delegations first stop was BWI, which is located in Kakata. Since 1927, the institute 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/technical program, and an accelerated vocational training program for high school graduates.



As part of its Component Three initiatives, FED is assisting BWI to facilitate a series of stakeholder conferences intended to review the future role of BWI, given advancing technology and the changing socio-economic environment. FED is also taking an active role in strengthening and expanding its internship program, with the goal of integrating feedback from interns and employers into existing syllabi and improving the relevance of BWI technical curriculum and the technical competence of graduates. Additionally, FED is supporting

BWI's compost program for local farmers, through the provision of equipment and materials, while ensuring all programs incorporate an ECOWAS compliant curriculum in agriculture.

The delegation met with members of the administration and visited the newly equipped computer and science labs for agriculture students, as well as the general and American libraries. The team expressed how impressed they were with the level of progress at BWI, and the FED-led initiative toward making the institute a Center of Excellence.

The delegation also visited the "Women of Destiny" farming group in Mountbarclay, Montserrado County, who is currently involved in cassava production and processing. During the meeting with the delegation, Comfort Jallah, head of the women's group, and member of the FED-supported, Technical Working Group, of the National Cassava Sector Coordinating Committee, explained how they are currently farming on 11 acres of land in Bensonville, Montserrado County, and have 150 more acres in Bong County planted with cassava.

Highlights from a Visit with the ONE Campaign

During the reporting month of June 2012, a twenty person delegation from USG, including both Democrats and Republicans visited FED activities in Margibi County. The team visited BWI in Kakata City, Margibi County, and had a meeting with the administration, faculty, and students. The meeting was as assessment of needs, and how the USG assists in meeting those needs. They toured the institution's Compost Building and Agriculture field.

By 2015, Feed the Future (FTF) aims to help an estimated 332,000 vulnerable Liberian women, children, and family members – mostly smallholder farmers – escape hunger and poverty. More than 96,000 children will be reached with services to improve their nutrition and prevent stunting, and child mortality.



Members of the ONE Campaign look on as the director of agriculture at BWI explains his department's achievement in the field.

Agriculture development assistance funding through FTF has ranged from between \$20 and \$25 million during the years 2009 through 2011. USG long-term food aid programs compliment agricultural development in Liberia.

FTF resources have primarily focused on the agricultural breadbasket counties of Bong, Nimba, Lofa, and Grand Bassa. Sixty percent of rice and cassava farmers are located in these counties. FTF hopes to build development corridors to attract new investment and create demands for services that local and international entrepreneurs will strive to fill. In concert with MoA priorities, investments will center on rice, cassava, goats, and vegetables.

On June 16, 2012, a member of the delegation, Morgana Wingard, photo journalist, visited one of FED interventions in Doumpa, Nimba County. During her visit to Doumpa, photographs were taken and farmers were interviewed on how they are trained and their goals after training by FED on improved agriculture skills and business management. The farmers told Morgana, that they will take the knowledge gained from FED to their personal farms and apply them to improve and increase their production level and profit.

National PPR Vaccination Campaign Targeted Liberian Goats and Sheep in a FED-led Collaborative Effort

Goats are a core household asset in providing food and income for Liberian families. Therefore, the 2012 National Peste des Pestits Ruminants (PPR) vaccination campaign launched in September in a collaborative effort of the Ministry of Agriculture (MoA), BRAC, USDA Land O'Lakes, Samaritan's Purse, and the USAID FED project proved to be vital in protecting the estimated 220,000 goats in Liberia. The vaccine was administered across Lofa, Bong, Nimba, Montserrado, Grand Bassa, and Margibi counties, targeting over 100,000 sheep and goats, and affecting 226,836 rural households.



The campaign was a priority initiative of the MoA, and took almost four weeks to complete. Failure to vaccinate against PPR would have put the entire national herd of sheep and goats in Liberia at risk. This would have proven devastating given that goats are valuable assets that enhance nutritional and economic status in Liberia, especially for women who raise goats for home consumption and market sale. The PPR vaccine has the ability to prevent infection and further spreading of the disease, which is characterized with high morbidity and mortality rates.

“PPR is the most damaging disease in sheep and goat populations in Africa,” said Dennis B. McCarthy, FED’s goat value chain specialist. “The disease is highly contagious and is rapidly fatal resulting in up to

90% herd loss. PPR or Goat Plague causes severe economic losses for pastoralist and agro-pastoralist households by depleting their ability to cope and dramatically reducing food security.”

The vaccine was administered by 200 private animal health promoters, who received training prior to the campaign in order to ensure it was dispensed properly and safely, and materials were disposed of in an environmentally responsible way.

MoA Launches Collaborative Effort to Improve National Livestock Sector

In collaboration with the MoA and Land O’Lakes, FED hosted a one-day National Livestock Consultative workshop on September 6, 2012, at the Corina Hotel, Sinkor, Monrovia. International partners at the event included USAID, European Union, BRAC Liberia, Samaritan Purse, FAO, CARE-Liberia, Vets without Border, German Agro Action, and IFAD among others. The objective of the technical meeting was to identify donor-funded interventions currently under implementation in the livestock sector and facilitate relationship building among participating organizations. In order to effectively manage the



development of the National Livestock Sector, the MoA must understand what is on-going in the sector on a national level. Currently, the MoA is building its capacity and expertise in understanding all the development interventions on-going in the livestock sector across the country. Given the recent increase in the scale and scope of donor-funded livestock interventions in the country, the MoA needs to know who is doing what in this sector, and subsequently update its records and allow effective oversight and design.

The expected outcome of this meeting is to identify the increased knowledge among the MoA livestock team of the scale and scope of donor-funded livestock interventions in Liberia and assist livestock sector participants to strengthen their professional network.

Stakeholders in the livestock sector in Liberia have been challenged to contribute their expertise toward the transformation of the sector. Speaking on September 6, 2012, at the start of a one-day technical consultative workshop for livestock intervention in Liberia, Acting Agriculture Minister, Sizi Zubah, said that the intervention signifies the importance attached to the sector. He also pointed out that the overall improvement of the livestock sector in Liberia largely depends upon the valuable technical expertise of all stockholders within the sector. “The livestock sector is in need of the contributions of experts for its improvement,” he said.

Also speaking at the workshop, the National Coordinator of the Livestock Division, Seklau Wiles reminded breeders of sheep and goats across the country to take advantage of the ongoing 2012 National Livestock Peste des Petits Ruminants (PPR) vaccination campaign in the counties of Nimba, Bong, Lofa, Margibi, Grand Bassa, and Montserrado.

“The Ministry of Agriculture in collaboration with BRAC-Liberia and USAID/FED launched a campaign to vaccinate sheep and goats in Liberia, which officially started on September 5 in the counties free of charge,” said Wiles.

Wiles disclosed an urgent need for training of animal breeders across the country in order to avoid high mortality among the livestock. She also recommended the establishment of a credit system for animal breeders, enabling them to build durable facilities for their animals.

Representatives of the international partners in the livestock sector made presentations on the various roles they are playing in the development and improvement of the sector and how they are providing technical and material support to owners of livestock in Liberia.

Jallah was a FED participant in the Business Skills Training for SMEs in the cassava value chain from April 4-5, 2012. Since then, Jallah has been part of the FED business planning and mentorship program. From May 24-25, Jallah also participated in the long-term FED training program, which the IFC designed, entitled “Developing a Business Plan for a New Venture.” Her approach to production and processing of cassava has changed due to these trainings, and she is now actively exploring opportunities for expansion and engaging in a local marketing survey for her products.



“The equipment given to the group from the African Development Fund facilitated the operation of the Bensonville processing center, which enabled the processing of cassava into gari, fufu, starch, and deepa,” Jallah said. “We are also working with other female farmer groups to share knowledge gained from training in improved method and skills in cassava production and processing. Currently, our group is mainly producing fufu for sale at the local markets, due to a lack of economic drying facilities for gari, particularly in the wet season.”

After the visit, the delegation leader expressed gratitude for the progress being made by the female farmers with whom they interacted and for FED’s support for their efforts.

FED COP Addressed BWI’s 2012 Graduating Class

FED’s Chief of Party, Jonathan Greenham, served as the guest speaker at the commencement ceremony on September 15, 2012, for the graduating class of 348 students from the Booker T. Washington (BWI) Institute located in Kakata City, Margibi County, Liberia.



For the past several months, BWI and FED have been collaborating to expand the internship program, identify short-term training for faculty, and upgrade equipment, necessary resources, and curricula for the Department of Agriculture and BWI Library, with the goal of creating an environment which is conducive to the pursuit of excellence.

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 Agriculture Department has a total of 300 regular students and 133 accelerated students.

Entrance requirements for students into BWI include proof of graduation from the ninth grade, and passing the West African Examination Council (WAEC) exam. Classes are conducted over the expanse of four years in economics, electronics, automotive, or general studies.

BWI was closed during the country's violent civil war in 1990, and was reopened in 1997. According to Mulbah Jackollie, BWI principle, the institution was blessed to be spared massive looting due to alumni's attachment to BWI and their former teachers, as well as the presence of UN peacekeepers who protected the institution.

Citing the significance for students to have "a target in life, and a role model," Jackollie said leaders like Liberian President Ellen Sirleaf and Greenham are critical for students to look up to and have as inspiration to be the country's future leaders. Sirleaf, he noted is setting an example for women to attend college, as they look to her for motivation, understanding the struggle she went through politically to reach her current position.

"All changes start and end with people and their actions; everyone has the choice, to strive for good things for all or to ignore others and be selfish," said Greenham in his address. "Don't live in tomorrow, thinking about what might be. Life is what happens, while you are making plans. While it is very good to have high goals, don't miss what is under your nose right now."



USAID
FROM THE AMERICAN PEOPLE

SUCCESS STORY

Orphanage Founder Recipient of FED Support

My Brother's Keeper Orphanage Works with FED Technical Staff to Plant Vegetable Plots



FED staff was in attendance at the groundbreaking ceremony in July, and also provided farm tools and food supplies such as rice, cooking oil, fish, and basic food ingredients. A new fence will also protect the vegetable site from goats.

"Thanks to FED and USAID for the wonderful support in vegetable production that is currently on-going at the orphanage," said National Director and My Brother's Keeper Founder, Ralph Gelego.

Providing shelter for over 40 orphans that were victims of the 14-year Liberian civil war, National Director and Founder of My Brother's Keeper orphanage, Ralph Gelego speaks highly of the technical assistance provided by the USAID-funded Food and Enterprise Development (FED) project, part of the Feed the Future Initiative.

"FED support to the orphanage has been welcome and will bring about a huge change in the nutritional diet for the children currently residing at the orphanage," he said. "With an acre and half of land provided by the orphanage, vegetables of a large variety can now be grown for both consumption and for income generation that will serve the general purpose of the orphanage."

A FED-led groundbreaking ceremony was conducted on July 7, 2012, with several FED staff, including FED Chief of Party Jonathan Greenham, on a demonstration vegetable plot at the orphanage, located in Careysburg, Montserrado County. The orphans also participated in digging of the vegetable beds, which included bitterball, peppers, cabbage, eggplant, potato, collards, and sweet potato greens.

"It is very important for the orphanage to now be able to grow their own crops," said Gelego. "It gives an added advantage to having the proper kind of diet and affords the kids a basic understanding of agriculture. FED field coordinators' regular presence will also provide supervision and help build interest by everyone at the orphanage."

FED signed a Memorandum of Understanding (MoU) with the orphanage on July 1, 2012, with the goal of increasing access to nutrition for children of the orphanage, improving education on how to grow vegetables, and strengthening knowledge on goat herd maintenance and health.

PPR Vaccination Campaign Officially Launched

National campaign targeted Liberian goats and sheep in a FED led collaborative effort



Farmers who have been restocked with goats lost in Liberia's civil war. Lufa County.

“This program will contribute to poverty alleviation and reduce the consequences of food crisis in communities in Liberia through the improvement of animal health,” said Joseph R.N. Anderson, MoA National Project Coordinator, Control of Trans-boundary Animal Diseases (TADs).

Goats are a core household asset in providing food and income for Liberian families. Therefore, the 2012 National Peste des Pestits Ruminants (PPR) vaccination campaign launched in September in a collaborative effort of the Ministry of Agriculture (MoA), BRAC, USDA Land O’Lakes, Samaritan’s Purse, and the USAID FED project proved to be vital in protecting the estimated 220,000 goats in Liberia. The vaccine was administered across Lofa, Bong, Nimba, Montserrado, Grand Bassa, and Margibi counties, targeting over 100,000 sheep and goats, and affecting 226,836 rural households.

The campaign was a priority initiative of the MoA, and took almost four weeks to complete. Failure to vaccinate against PPR would have put the entire national herd of sheep and goats in Liberia at risk. This would have proven devastating given that goats are valuable assets that enhance nutritional and economic status in Liberia, especially for women who raise goats for home consumption and market sale. The PPR vaccine has the ability to prevent infection and further spreading of the disease, which is characterized with high morbidity and mortality rates.

“PPR is the most damaging disease in sheep and goat populations in Africa,” said Dennis B. McCarthy, FED’s goat value chain specialist. “The disease is highly contagious and is rapidly fatal resulting in up to 90% herd loss. PPR or Goat Plague causes severe economic losses for pastoralist and agro-pastoralist households by depleting their ability to cope and dramatically reducing food security.”

The vaccine was administered by 200 private animal health promoters, who received training prior to the campaign in order to ensure it was dispensed properly and safely, and materials were disposed of in an environmentally responsible way.



USAID
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SUCCESS STORY

FED Driving Data Collection Efforts

FED is employing new innovative mobile and geospatial technology in Liberia



Making FED come alive, GIS mapping demonstrates baselines survey locations, demonstration plots, and current training as of June 2012.

“These tools allow project staff to spot trends faster, and easily share data with other organizations. You can immediately identify where there are potential errors and/or gaps in your data collection,” said Jaclyn Carlson, FED ICT specialist.

The USAID-funded Food and Enterprise Development (FED) program is changing the development terrain in Liberia by leading the way with mobile data collection that allows data to automatically be geo-tagged. This greatly helps to streamline the data collection process, while also making it more accurate and reliable. It also opens up a range of opportunities that would otherwise not be possible if relying solely on paper surveys. Mobile and geospatial technology together enables the project to visualize their data in real time. This type of technology is also proving to be especially vital as Liberia’s physical infrastructure is still recovering from the country’s recent civil war.

Instead of having to wait for the manual entry of data into a computer, mobile data collection speeds up the ability to read results, and helps to minimize error, in both collecting and entering the data, due to an easy to use touch screen interface and the ability to upload via network connections.

This technology allows for the collection of baseline demographic and household specific details, but also can be expanded to capture more multimedia based data, such as taking videos and photos. Mobile data then combines all key data collected into one location and makes it more readily accessible to stakeholders and project data managers.

“The FED approach employs paper, mobile, and geospatial technology for their data collection efforts. This includes training project staff, M&E personnel, and FED hired Agriculture Extension Agents, in the advanced use of GPS units,” said Manuela Rayner, DAI Senior Geospatial Analyst. “By the end of the five-year program, FED will have one of the more robust monitoring and evaluation geospatial datasets managed and maintained by local staff.”

The goal is to build local Liberian staff capacity on the use of mobile and geospatial tools, in order to make data collection efforts more sustainable. Currently, FED has interviewed close to 1,000 households using mobile technology. The challenge now is to ensure all users of this technology are trained-up to the level where they manage and implement collection efforts from start to finish, without outside assistance.

“Using mobile device for data collection has been one big step forward for the FED M&E team,” said William Massaboi, M&E Officer.



USAID
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SUCCESS STORY

FED Working to Triple Harvest Yield

New agricultural program is working to increase harvest production and profitability in Liberia



Subsistence farmers, Annie and John, live with their children in the relatively untouched community of Doumpa Town.

“We have cultivated four acres of upland for cassava, and cleared two acres of upland for livestock, including goats, sheep, cows, and chickens. We have also decided to triple the amount of lowland using the FED power tiller and rice mill,” said Jonathan L. Fahn, field manager, speaking to FED and the ONE Campaign visiting team on a field visit at Doumpa.

Assisting Liberia’s continued recovery from a devastating 14-year civil war which ended in 2004, and killed an estimated 200,000 people, the USAID-funded Food and Enterprise Development (FED) Program, part of the Feed the Future Initiative, launched in February 2012. The project’s goal is to teach local farmers to increase their production and profitability.

FED identified Doumpa Town, Wee Clan, Wee-Gbeh-yi-Mahn District, Nimba County, located in Liberia’s eastern region, near the Guinea border, through conducting an assessment for lowland rice and vegetable production at the initiative of a native Doumpa citizen, Victoria Garpeh. Entering into an agreement with the Organization for the Development of Agriculture and Farmer’s Related Association, Inc. (ODAFARA), a local NGO, FED is providing technical agriculture assistance in the development of lowland rice and vegetable production to the township of Doumpa, which has excellent quality soil, and encompasses swamps, woods, forests, and river banks. Men from the community cleared the land and provided all of the labor, while women joined their effort with vegetable production on the upland sites. FED provided the technical support, which included a rice specialist, and horticulture, enterprise development, and power tiller trainings.

Over the last four months, farmers have cultivated 2.232 hectares of lowland for rice production. Transplanting and puddling of 49 of 56 plots began in June, and special mobilization efforts have been launched to speed-up the progress with the goal of tripling production by next season’s fall harvest. Each one-hectare field is now planted with seven crops, through both indirect and direct planting, and includes cabbage, hot pepper, eggplant, tomato, bitter ball, cucumber, and macro cabon. The lowland development is completed, the land de-stumped, trees cut, peripherals dug, a head dyke constructed, and all 56 plots transplanted. Additionally, on the upland vegetable site, 60% of the platform nursery has been built and the sowing of seeds on the nursery has begun.

Currently, the project is working with 342 local farmers, of which 49% are women. This community is learning new skills from the FED technical team, which they will later transfer to their own farm plots. Additionally, over the next several months, FED will provide basic computer training to select farmers so they can begin creating an inventory, finance records, and sales reports.



USAID
FROM THE AMERICAN PEOPLE

SUCCESS STORY

FED Launches Internship Program

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



Minister of Agriculture, Florence Chenoweth addresses students at the launch of the new agriculture internship program on July 31, 2012.

“We need to feed Liberians, we need to make money for Liberians in the rural areas, we need to provide jobs for Liberians, and agriculture can do that,” said Jonathan Greenham, FED chief of party at the internship launch. “And with the skills you learned in university and this internship program, you can go out and make a difference for Liberia’s future.”

With the goal of creating professional opportunities in the Liberian agriculture sector, the recently launched USAID Food and Enterprise Development (FED) internship program is preparing emerging youth and students to become future leaders. The program facilitates students to put their classroom learning into practice, while also building needed technical skills for agriculture careers. The program will be carried out in phases over the five-year duration of the FED program, each three months long, beginning August-November 2012.

Students will not only gain practical agriculture knowledge, including field research methods, agriculture as a business, data collection, accounting, and administration, they will promote the concept of agri-business among agriculture and business students, and also build professional relationships which will assist future employment opportunities. In addition, interns will be provided professional development, and mentorship to prepare them for the Liberian and global labor markets in their respective field of study.

The program was launched by the Minister of Agriculture, Florence Chenoweth, who expressed gratitude to FED for providing the opportunity to develop professional skills, recognizing the many challenges and opportunities of an agricultural career. Additionally, she underscored the importance for the interns to be role-models in their communities, institutions, and homes, in order to inspire others to join the agriculture sector. “Let us make agriculture a business and feel privileged to be a part of this program as there are other students out there that need this opportunity,” Chenoweth said.

Over the next nine years, the Liberian government will train up to 71,000 Liberians to enter the workforce; FED anticipates having 600 agriculture interns enrolled in the intern program. Currently 58 students, age 20 to 35, have been selected from four universities and technical schools, including the University of Liberia, United Methodist University, Nimba County Community College, and Booker T. Washington Institute. They have been placed in 20 public institutions, NGOs, INGOs, and farm enterprises across Liberia and make a small stipend, which assists with transportation costs.

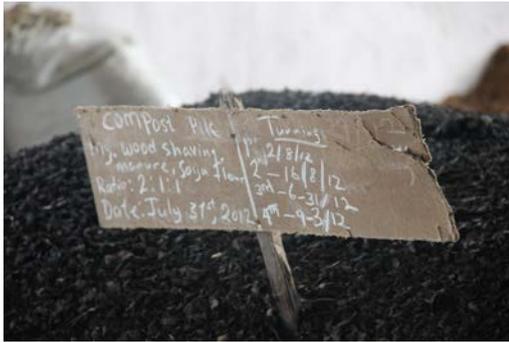
Through this internship program, FED will continue to contribute directly to building local human capacity which enhances the overall workforce development in Liberia, and the reduction of poverty through the provision of jobs and life skills, especially amongst young and unemployed youth.



USAID
FROM THE AMERICAN PEOPLE

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.

“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.”

Liberia Counties and Districts



The following annex presents some of the information collected by the FED project staff over the last nine months. Additional details are available in the various reports, meeting notes and special studies.

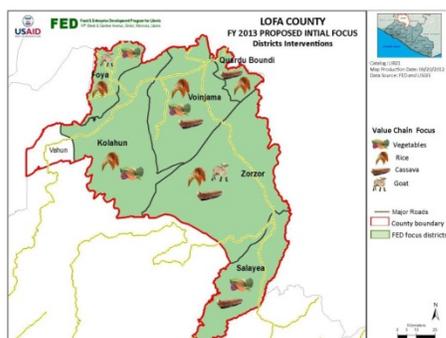
1.1: Background on the Rice Value Chain in Liberia

Liberia and world rice prices: Liberia's annual rice import bill is around \$100 million each year, and although this is private money, the GoL remains sensitive to and feels vulnerable to international price rises and the creation of a potentially dissatisfied urban population. In 2008, with freight costs rising due to higher oil prices, an export ban in India to allow internal procurement of rice for food relief rather than more expensive wheat lead to panic and trader speculation on the world rice markets and although freight costs only rose about \$110/ton CIF Monrovia and rice was actually available to meet world demand, rice prices rose from \$400 to over \$1,000/ton. It was only when Japan finally released stocks of US rice purchased under the WTO agreement that hedge fund speculation slowed and the market calmed in 2009.

Currently approximately 7% percent of world rice production is traded and the 5 big exporters, Thailand, Vietnam, India, Pakistan and the USA dominate with 85 percent of the trade. Dr Eric Wailes, a FED STTA and University of Arkansas rice economist and his colleagues estimated in their latest modeling of world rice production and use that international rice prices will be flat or even decline slightly as self-sufficiency in rice and the use of high-yielding hybrids and other improved production technology are adopted. A combination of slow growth in consumption and somewhat higher growth in output are expected to increase ending stocks and reduce prices over the baseline period². FAO outlook studies also confirm this medium term trend.³

Scattered smallholder subsistence farmers, a lack of economies of scale and infrastructure, especially roads in Liberia's rice producing areas, low quality processing, lack of trade credit and cheap imported rice dominating urban demand results in Liberia consistently having a shortfall around 200,000 MT as local production (120,000 MT) does not meet consumption (350,000 MT), Some observers think that local rice production is closer to 50,000 MT.

The impact of rising rice prices, a staple Liberian food, are particularly severe on the very poor, whose income does not rise as the rice price rises, and especially on the 40% of Liberia's children that are chronically malnourished. West Africa as a whole is a \$10 billion market for rice, locally produced and imported, so Liberia is vulnerable not only to world trading shifts and what happens in Myanmar and



India, but also regionally. Liberia has the lowest rice price in the ECOWAS region which itself imports 80% of its rice. Anecdotal tales tell of warehouses and traders along the Guinea, Sierra Leone and Ivory Coast borders and cross border shipments of rice for sale elsewhere. Import parity price changes with distance from the port and transport costs. Liberia's challenge is how to balance a competitive supply of rice to the urban poor with more returns to rice for the rural poor; how to combine rural food security through increased farm stocks, along with more competitive small farmers, many of whom have limited access to the markets and modern processing facilities, if it is to replace

the imported rice, from more productive and efficient producers.

² Wailes and Chavez, World Rice Outlook, March 2012.

³ <http://www.fao.org/docrep/015/a1989e/a1989e00.pdf>

To reach its goal of rice self-sufficiency by 2020 and offset domestic demand, the National Rice Development Strategy (NRDS) projects increases of domestic production (in milled equivalent) by an estimated 150 percent to about 501,410 metric tons. To achieve this growth rate, however, domestic rice production needs to grow at an average annual rate of about 21 percent from 2012 to 2017, and a minimum of 500 new ha of lowland rice are needed per county.⁴

The three key determinants of a competitive local rice market are 1) the actual volumes that can be aggregated in the production areas to allow cost effective pickup and transport, (a minimum of 500 tons and preferably 5,000 tons would attract the Monrovia brokers to collect and retail) 2) the real volume of the demand for country rice, (and there are indications that the local market is starting to show price differentiation away from the cheapest rice quality, so this is encouraging, but stones in, and poor milling and polishing of country rice remain a major issue with urban consumers, who are used to American parboiled); and 3) the price that country rice can be sold if Monrovia is to compete with imported rice, a price which is very dependent on the location of the production and the state of the roads, which are generally poor.

The NRDS estimated that in 2009 the whole country had 190,000 ha of upland rice and 20,000 rain fed lowland rice with yields of 0.9T/ha and 1.2T/ha. Other studies suggest totals closer to 135,000 ha, with 6% lowland and 94% upland. With a population of 3.8 million increasing at growth rates of 2.5-2.9%, the increase in rice consumption from these new mouths alone requires 10,000 ha of new rice land. If you assume 90% upland farms with an average size of around 1 ha producing about 1.1 MT per household and the 10% (or less) lowland farms produced about 1.7 MT per household, 10% storage losses, 5% retention for next seasons seed, and 35% milling reduction, then currently the average lowland household of 5-6 people only produces 850 kg of milled rice i.e. with an average consumption of 120kg/capita, only 130kg to share or sell. A 10% storage loss and 35% milling reduction are somewhat optimistic, the reality is closer to 50% milling reduction, though FED is targeting these points in the value chain to try to achieve these values. Also the “average” household does not really exist, what is important is the distribution of households around this average. FED is seeking out the larger smallholders to work with on commercializing production and marketing, exploring the options for irrigated rice schemes in Lofa, and intensifying lowland swamp production. For upland rice, there is little or no surplus produced per average household, and quite aside from sustainability issues, the economics for commercial rainfed upland rice are not promising, in terms of production cost and output per person-day (labour productivity, not just land productivity are key to addressing food security), without taking transport costs into account to processing centers and on to markets.

FED is working with a local partner and the International Finance Corporation, who have made an equity stake, to develop a successful integrated business model which has a processing business that buys paddy through a contract scheme, providing quality inputs and extension advice as part of the contract. This change agent partner would function as an aggregator. FAO is interested in collaborating with the downstream activities. The current rice wholesalers or brokers for imported rice are unlikely to get involved in such contract schemes, unless they access the same trade credit they get now from the importers. There is a niche market for branded, quality local rice, and FED is working with a local processor to develop that market, determining the size of the niche will need a consumer willingness-to-pay study. Whatever the models used by our partners, commercial viability has to be shown on paper first (including the all-important cash flow, and working capital requirements).

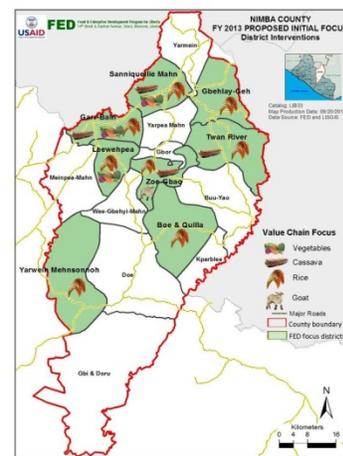
Rice strategy targeting: In 2010 an estimated 58% of the rice area (147,000 ha) and 68% of the rice farms, (57,240) were in Nimba, Lofa and Bong counties, and this is where the small volumes of country rice marketed in Monrovia usually comes from. In Nimba in 2010, average yields were 1.1-1.2 MT/ha,

⁴ National Rice Development Strategy, MOA, GoL, 2012

and there were an estimated 61,180 rice farms on 55,060 ha. We assume 90% are upland, (50,000 ha) and 10% are lowland (5,500 ha), so to increase total production the main target has to be the largest area of rice, the rain fed upland. We also assume, because of environmental concerns that the biggest increases in yield from upland rice are going to come from productivity not from encouraging an expansion in area. If we estimate that 5% of these 61,180 farms can be reached and directly influenced over the next 4 years; we have approximately 3,000 farms to reach, or 750 per year in Nimba. Similar calculations lead to totals of 2,000/500 per year for Lofa, (where 85% of the households produced rice in 2009, and where upland rice is less important than lowland) 1,700/425 per year for Bong, (which is the most food insecure at 52%) and 1,200/300 per year for Grand Bassa, (a minor producer with only 5% of Liberia's production, compared with 60% in Bong, Nimba and Lofa). or a total of c. 2,000 per year. To reach 5% of the lowland farms, the total is about 150 per year for all four counties.

Another reason to intensify versus expand is in the past the average household in Nimba had 25 acres of community land to rotate its crops on, but now fallows are reducing ,as populations increase and as cash crops like rubber (17,480 ha) oil palm (8,820 ha), cocoa (12,460 ha) and sugar cane (11,850 ha) increase in importance. According to the 2010 Comprehensive Food Security and Nutrition Survey, 76.6% of the households in Nimba produce cash crops as well as food crops, the highest percentage in Liberia. Nimba has a total area of a little over 1.1 million hectares, but private use permits of 79,263 ha and the iron mine concession reduce the area available for farming, though not as much as Grand Bassa which has eight PUPs of 596,129 ha out of a total area of 793,572 ha, not counting the LAC concession, currently under negotiation.

Access to roads is another determinant of whether expanded rice production for commercial sale will be financially and economically viable. The recent JICA rice study estimated mean costs of transporting paddy to the village of \$2.50/50 kg. Traders buy paddy at an average cost of \$17.50 per 50kg at harvest, rising to \$22/50kg six months later, with a range from \$14-\$34. Using motorbikes, a common method to get rice from the village to mill cost \$0.50- \$3/50kg sack depending on season and location. Local millers are charging 9-10% milled rice for 100kg of paddy, which is 18-20 kg of paddy at current 50% recovery rates. Other millers operated by NGO's have offered milling services at \$LD7 per kilo but found little takers, as the women's labor hand pounding is not highly valued. The map below shows the extremely limited road infrastructure in Nimba county.



Another site variable for profitable rice production is urban populations with purchasing power that are nearer than Monrovia. Nimba county has urban centers with about 70,000 people in them, a potential demand of up to a few thousand tons. The districts of Saniquelle and Gbehlay Geh are well placed to serve the Guinea and Ivorian markets, though rice production in the adjacent counties of Guinea is fairly sophisticated, and produces high quality product.

The main constraints to increased commercial upland rice production are acidity, decreasing fertility, P and N deficiencies, blast and processing. There are many more Nerica's released for upland than lowland and they are all input-responsive, but not input-dependent. Use of Nerica upland varieties could increase yields to 1.7 t/ha over the 1.1t/ha traditional yields, then with a 5% take up rates just in Nimba could produce an additional 1,800 MT paddy or about 1,100 MT milled rice, while simple improvements in storage and milling methods could increase that amount by another 5-10% as well as allowing farmers to capture higher post-harvest prices. If all four counties had 5% of the upland farms gaining these yield increases, then an extra 7,250 MT of paddy would result. Intensification on the upland farms would

require improvements in soil fertility and weed control; the two main reasons farms are abandoned and left fallow. Adoption of new lowland varieties and management techniques could increase the return per unit of yield to labor for weeding and inputs for soil fertility management could lead to longer cropping periods and longer fallow periods. Village level hullers, destoners, dryers and improved threshers could improve quality and improve storage. Targeting the swamp areas off the main roads would reduce chronic hunger and improve food security, especially if combined with village level processing.

For the lowland rice, aggregations of swamps near the main road, and grouping farmers, with better water control, improved N and P, varieties tolerant to iron toxicity, double-cropping on some land and quality processing with de-stoners could produce increases in production on 5% of the existing area of up to 2.8 MT/ha versus the 1.7MT traditional yields, although a recent survey in Nimba by JICA/CRS showed traditional varieties with yields equal to Nerica lines, and this assumes that the problems of consumer acceptability, labor availability and incorporating these shorter season varieties into the current cropping system can be overcome⁵ This expanded rain fed lowland production would require investments in infrastructure, collective action to prepare the land and plant on time and improved health measures. 5% of the lowland farms in the four counties or 750 households doubling yields could produce approximately 75 MT of paddy, 45 ton of additional milled rice.

A study at WARDA in the early 1980's found that losses due to rats in kitchen storages averaged 5%, a simple rat guard could help with this loss, which represents 5,000 MT of upland rice per year. Current milling practices yield 50-55% milled rice from paddy, while improved one pass mills, with the rollers adjusted for the more ovoid grains of *Oryza glaberrima* yields 60-65%, which if applied to just 25% of the current country rice production of 100,000 MT would yield up to 2,500 MT of extra milled rice per year.

Drying of lowland rice is especially critical, both in terms of storage and also in terms of cracking during milling. Simple drying floors can reduce moisture to 14% or lower. Parboiling, where water and fuel is available, also reduces breakage during milling, increases the nutritional value of the milled grain and makes for a bulkier product after cooking, something Liberians have got used to with the imported parboiled rice.

Current imported rice prices in Monrovia range from 70 cents to \$1.20/kg. Transport, milling and packing costs of around 4-6c/kilo, 8-15c/kg and 2-3c/kg reduce the parity price at the farm gate to between \$0.50 to \$0.80/kg. WFP is buying parboiled at \$18-\$20/50 kg, brokers are buying at \$22-25/50 kg and selling at \$35-50 kg. Country rice in the local markets is selling at \$30/50 kg. With labor becoming an increasingly important constraint especially in lowland rice production, any extra rice produced for sale has to be high quality to get the premium prices needed to cover costs and with the current systems Liberian farmers have a difficult time producing rice at the scale and quality needed for the larger markets

FED intends to focus its rice interventions both geographically and also technically, aiming primarily to increase productivity, without significant expansions in area, which is problematic, whether in upland fallows or lowland swamp environments.

The rice activities will concentrate in both the more favored location/s near a road or a population center to produce enough new lowland rice to encourage commercial scale transactions (500 ton plus), while also concurrently producing enough new upland rice in more dispersed locations to reduce the hungry gap and chronic malnutrition. The market will be a key focus only in the latter case; we are assuming that labor is available and that enough people still go hungry in the countryside that much of the extra

⁵ CRS/JICA Rice Value Chain Study, July 2012

production of upland rice will be consumed on the farm by the 40% in those households w/o significant incomes, who are still chronically malnourished.

The main rice interventions include improved fertilizer use, 20-30% of the costs of irrigated rice elsewhere in the region are due to fertilizer and the local Liberian fertilizer prices are higher than the regional prices; so we are focusing on urea deep placement. (UDP) as one key intervention in lowland rice. The actual yields achieved are key to returns to inputs and profitability, an estimate of 5% of farmers getting an increase from 1.1 MT/ha to 1.4 MT/ha in upland rice is probably more realistic than the projected 1.7 MT/ha to 2.8 MT/ha for lowland rice. The recent JICA rice survey did not find evidence for farmers yields of over 2.3 MT in Liberia, while the April 2011 Domestic Resource Cost Analysis report used yields of 1.7 t/ha upland and 2.8t/ha lowland, which again seem rather high for average yields.

FED's commercial approach is to focus on identifying and nurturing integrators, who can work with farmers, FBO's, input suppliers, warehouses, millers, etc. We are not starting from scratch there are some structures to work with. We are also focused on line planting and weeding, using the modified Madagascar weeder, (detailed Nigerian studies have shown 27% of the labor costs are associated with weeding and 30% with harvesting and processing), which we intend to improve through a few simple interventions, drying floors, parboiling and one pass milling, we intend to capture the "lost" bags that Liberia leaves on the floor of their rice mill by capturing the potential 10-15% lost during harvesting and processing.

1.2: Background on the Cassava Value Chain in Liberia

World cassava production is around 200 million metric tons (MMT). Nigeria currently leads world production in terms of tons and dollar value of cassava produced, with 37.5 MMT valued at over \$3.9 billion, Brazil, Indonesia and Thailand produced another 22 MMT each in 2010.

World trade in cassava is dominated by Thailand and China. Thailand has had about 60-70% of the global trade from 2000 to 2011, around 4.8 MMT, and China had 90% of the tonnage of global cassava imports in 2010. South Korea and the United States consistently import most of the rest of the cassava traded.

The majority of African production (which is > 25% of the world production) is consumed locally. Regional West African production ranges from Ghana with 1.4 MMT, followed by Liberia with 0.5 MMT, and Sierra Leone and Ivory Coast with 0.2-0.3 MMT (cf Nigeria's 40 MMT per year).

Ninety four percent of the farmers in the FED baseline survey grew rice and cassava.

The 2011 Liberian Agricultural Statistics shows yield's per hectare for Cassava well over 8 tons for Bong and Nimba Counties, with Nimba being the major cassava producing county in Liberia with 103,070 MT out of 482,270 total production.

Table 1: 2011 Liberian Agricultural Statistics

County	CASSAVA						% of Tot.
	Farms	Hectares		Ha/Farm	Yields/Ha(KG)	Prod.(Mt)	
		Number	% of Tot.				
Liberia	122,520	61,040	100	0.5	8,016	489,270	100
Bomi	4,110	2,060	3.4	0.5	7,000	14,420	2.9
Bong	21,180	8,470	13.9	0.4	8,400	71,150	14.5
Gbarpolu	5,050	2,020	3.3	0.4	6,900	13,940	2.8
Grd. Bassa	9,930	4,970	8.1	0.5	7,400	36,780	7.5
Grd. Cape Mount	4,000	2,400	3.9	0.6	7,400	17,760	3.6
Grand Gedeh	4,200	2,540	4.2	0.7	8,300	21,080	4.3
Grand Kru	8,460	3,380	5.5	0.4	8,000	27,040	5.5
Lofa	9,090	4,550	7.5	0.5	8,570	38,990	8
Margibi	6,070	3,040	5	0.5	7,000	21,280	4.3
Maryland	9,780	4,890	8	0.5	8,120	39,710	8.1
Montserrado	6,080	3,040	5	0.5	7,000	21,280	4.3
Nimba	20,240	12,140	19.9	0.6	8,490	103,070	21.1
River Cess	4,460	2,230	3.7	0.5	9,060	20,200	4.1
River Gee	3,790	2,270	3.7	0.6	8,040	18,250	3.7
Sinoe	6,080	3,040	5	0.5	8,000	24,320	5

Bong had 21,180 farms, but only 8,470 ha producing 71,150 Mt, while Nimba had 20,240 farms, with 12,140 ha producing 103,070 Mt. Grand Bassa had 9,930 farms, more than Lofa (9,090 farms). but lower yields, so produced less, 36,780 Mt, versus 38,990 Mt in Lofa.

Farmers and farmer groups use cassava for subsistence and to generate household income. Cassava consumption at the household level varies between 30% and 70%, with the remaining cassava production sold at the market for cash. Households that farm cassava report consuming cassava 3 times a week, as GB, Dumba, Fufu, and Gari.



FED in FY 2013 aims to increase yields through dissemination of improved varieties and add value through processing. As one of the means of achieving this goal, FED will partner with CARI to train farmers in the multiplication of improved planting materials at the village level. CARI currently has 20 improved cassava varieties including Yellow roots, Matardi, Tropical Manihot escalanta (TME), Mana-Gbolu, MH-95, Bassa Girl and the CARICA series. These varieties were tested and selected from among 200 plus varieties that were brought to Liberia from IITA-Nigeria. These 20 varieties planted on mounds and ridges

give the best yields.

CARI is willing to collaborate with FED in trainings, cuttings multiplication and establishing trial sites where farmers can be introduced to clean planting materials and improved planting materials. Farmers will also be trained by FED in the field in improved propagation, mini-setting, multiplication of two node cuttings, to increase rapidly new genotypes.

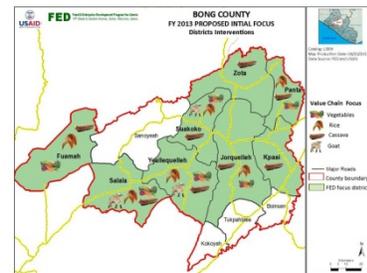
There are very few cash costs incurred by the farmer, their main labor costs are land clearing, and mound building, cuttings for planting are often sourced from neighbors, and transport from the farm to the village and on to the market is usually on foot. Distant markets may require the hire of motorbikes or taxis. Some cassava farmers demonstrate "better" production techniques than others, but for the most part, the planting density and spatial grid is poor, planting is on the flat, which lowers yields and makes harvesting more difficult. Field observations show obvious signs of poor fertility and disease (yellowing of leaves, etc.), all of which impact productivity.

All farmers sell raw cassava on the local markets, within 10 kilometers of the nearest market farmers usually walk to the market carrying cassava in 50kg bags, while farmers that grow cassava farther away will pay to transport cassava by motorbike, which costs approximately 130 LRD—50 for the 50 kg bag and 80 for the rider carrying the product to sell.

Transportation from the farm to the more distant markets can cost more, ranging from \$350 LD to up to \$675 LD for a 50 kg bag from Gbanga to Monrovia. Market women from Monrovia visit the local markets and purchase from farmers and aggregate, then transported by pick-up (30-50-50 kg bags) or station wagon (15-50 kg bags).

Farmer's estimated they saw low prices of between 150 and 400 LRD and high prices between 350 to 700 LRD for fresh cassava in the 2012 season. The Monrovia wholesale price for a 50 kg bag of fresh cassava ranges from \$650-750 LD at the low end up to \$1,700 LD at the high end of the market. This bag will usually be retailed at more than \$2,000 LD.

Cassava prices vary considerably; suggesting both seasonal shortages and that supply to the urban markets at certain times of the year is close to demand, because the arrival of another truck on the Red Light market destroys the price. This is in contrast to the small local or regional markets where prices fluctuate, but fresh cassava usually clears the market. Indeed cassava left in the ground and harvested and taken to sell by the pile, is seen as a ready source of small cash for school fees etc. Prices will vary by distance from the population centers and market, accessibility and season. This price volatility in turn generates a large range in gross margins for farmers, FED estimates at the low end of the prices, a farm of 1 ha could generate an average of USD \$99 in gross revenue, and when the high prices prevail, the same farm generates an average of USD \$221 in gross revenue.



Processing is a more attractive option when you can access quantities of low priced fresh cassava, and these low prices can be caused by the season or a location isolated from the markets, with high transport costs. With conversion rates of 3:1 for gari and 5:1 for flour and gari retailing in April 2012 at \$1,200 LD, fresh cassava needs to be at the low end of the market, say \$250 LD to make gari economic, rather than the \$700-\$1,000 LD it reached about the same time. As most people plant in June/July and harvest in May, gluts occur quite frequently and depress prices.

Rice is popular in the Liberian urban markets not only because of its price, but also because of its ease of preparation. The market is shifting however, and quality (white) gari is in demand and indeed is imported from Guinea and Sierra Leone. A number of Liberians brought new food habits with them when they returned from exile, for gari, for maize and for plantains.

1.3: Background on the Vegetable Value Chain in Liberia

Vegetables: Liberian horticulture is smallholder based with minimal inputs and localized marketing channels. Local knowledge derived from practical horticultural production exists, but is primarily among the older generation, while younger farmers lack experience, and information either does not exist, is not readily available or is wrong. The sector has lagged behind those in other countries in the region.

The horticultural value chain in Liberia is characterized by a series of bottlenecks so it is very important to ensure that constraints are met holistically rather than piecemeal, working in close collaboration with the Ministry of Agriculture and other donor projects.



The climate is a tropical monsoon climate with a relatively short dry season of four months after the third week in December which poses several challenges. These include crop protection, post-harvest physiology, logistics, and dry season inputs including the need for irrigation. These problems are coupled with an almost total lack of published information on horticultural production in Liberia.

The commonly available fertilizers are NPK 15:15:15 and urea. NPK 15:15:15 is not appropriate ratio of nutrients for vegetables, wasting both money and nutrients. Urea is totally unsuitable for horticulture.⁶ There are large numbers of naturally occurring beneficial organisms. It is striking to note that secondary pests such as whitefly, leaf miner, red spider mites and thrips are widespread in most horticultural crops in the country but at sub economic thresholds. This state of affairs could be quickly turned around, if the indiscriminate use of persistent synthetic pyrethroids and other broad spectrum crop chemicals expands.

The quality of dried product in Liberia is poor. For example, the various types of dried chilies are both expensive and show signs of moldiness and thus likely to contain mycotoxins. Details of pests, diseases crop physiology, soil management, and irrigation scheduling and production planning are not part of the skill training and background of many persons operating in the field. It will be necessary to develop and provide manuals and training materials in these areas, and upgrade the curriculums in the vocational agriculture colleges to include them.

The successful intensification of crop production requires a carefully considered application of additional inputs to ensure technical and financial success. The way forward is careful crop and variety choices, soil testing and use of appropriate levels of the correct fertilizers, a full analysis of crop needs based on yield potential, and better knowledge of the pest and disease complex as it applies to Liberia. The results of such an analysis will be developed as a series of detailed crop guides “best practices” from which can be derived educational materials tailored to the various users, extension agents, researchers, input suppliers, processors, farmers, etc.



⁶ Urea is the only available nitrogenous topdressing in Liberia. Ideally calcium nitrate is used for topdressing horticultural crops but LAN (lime ammonium nitrate) is an acceptable substitute. The problem with urea is that it converts to ammonia in the soil which as a cation is taken up in preference to calcium by the plant. Blossom end rot is already a problem in melons due to hot dry conditions in the dry season in Liberia even without urea top dressings. The nitrogen not taken up as ammonia is converted in the soil to nitrate which is good in itself, but the process acidifies the soil leading to a host of other problems including increased risk of aluminum toxicity.

Growers need to be able to determine the value of new investments, such as in irrigation, through partial budgeting and their development of cropping plans into business plans suitable for financing. This requires not just the costs of the investment but also the knowledge of any benefits that will flow in terms of yield, price, seasonality etc.⁷

Traders and logistics providers are an essential part of the value chain. In general, other than the ubiquitous motor bikes and the go-buy chop women, it appears that there are limited services in this area. Visits to markets in the dry season found horticultural crop quantities low, quality was very poor and prices were high.

Without significant volumes of crops available for sale, traders in horticultural products – from country traders buying directly off the growers to those selling in the various markets will struggle to make ends meet – even with high margins. The options for linking up with commercial farmers in Liberia are very limited so once production quality and quantity is improved, grower groups will be encouraged to aggregate their production through some form of marketing point near their smallholdings.⁸ This may simply take the form of a covered slab. Simple cold chains could possibly be introduced at a later point through wet wall charcoal cooler rooms – environmental considerations permitting.⁹ However the provision of these services requires a sufficient volume and continuity of product to justify the investment.

Access to supermarkets and other institutional buyers requires a continuous supply of consistent quality produce and not the soliciting of contracts to supply. Therefore the initial focus by default will be on the two lower links in the supply chain (input providers and producers). Some possible marketing and processing links have been identified and once smallholders have been brought up to speed these links will be explored. For example, FED has just signed a MOU with New Generational Women that has received \$93,000 from Chevron, contingent on FED support. This women's group has 75 acres of land and intends to grow 25 acres of commercial vegetables and 50 acres of cassava. In the longer term Chevron and other large industries like mining will be interested in sourcing fresh produce for their growing labor force.

The markets for fresh and dried vegetables are growing as urbanization and incomes increase in Liberia. There is a specialized demand for “exotic vegetables” driven primarily by the expatriate community and satisfied largely by imports, as these crops are not easy to grow in this climate and a larger demand for “indigenous vegetables” from Liberian residents, much of which is satisfied by local growers. Taste changes typically occur in urban settings and increasing incomes are increasing the market for vegetables. For some crops (e.g., bitterball, okra, eggplant, watermelon, and cabbage), demand is being met primarily by local production. For other crops (e.g., pepper), demand is being met by a combination of local production and imports. For example, a significant percentage of the dried peppers are imported from Guinea where conditions for sun-drying are more favorable than in Liberia. For still others (e.g., bulb-onions), demand is being met primarily by imports, although the technical potential exists for some degree of local production of these crops. Under similar agro-climatic conditions, neighboring Ivory Coast for example produces a significant percentage of the onions that it consumes. While vegetables like

⁷ Determining the financial viability of processing activities can be even more challenging especially for commercial operations including the purchase and storage of fresh produce for processing and sale. Service processing i.e. the processing fresh produce of others for a fee or a portion of what is eventually processed – is a lot easier.

⁸ There seems to be a strong preference for direct marketing by growers in Liberia so the advantages of developing relationships with processors, vendors, and country traders needs to be demonstrated

⁹ A bricks and sand cool chamber might be more environmentally acceptable and just as effective. This might cost \$200 to \$300 and hold 200 kg of produce. The challenge is RH's in Liberia are usually high.

tomatoes are now produced locally, most are imported from neighboring countries like Guinea, Mali, and the Ivory Coast. The local supply of exotic vegetables has not yet become competitive with these regional imports or returned to the pre-war quantity levels or quality. Pests and diseases and a lack of locally adapted varieties are significant constraints to expanded production of exotics vegetables.

However detail is lacking in regard to the real growth potential of the sector in terms of market surveys consumption trends, markets, consumption, prices, etc. The FED project has been collecting market data and proposes to link up with other studies being conducted by others under its knowledge management and dissemination initiative. Collaboration will continue with CARE (on MIS and village savings and loans) Welthungerhilfe (extension materials for leafy vegetables and marketing), Bangladesh Rehabilitation Assistance Committee (BRAC) (seedling production, commercial vegetable seed production, with the help of Agro-Experience), ACIDI/VOCA (Farming as a Business and farmer accounts), the private sector (inputs, including seed, specialty fertilizer, insecticides, and fungicides); MOA (Best practices, extension, PUA group coordinating actors) and the World Bank horticulture sector project.

The potential returns from vegetables grown well is large. Assuming yields of chili peppers of 6T/ha and prices of \$50 LD, gross incomes could be \$30,000 LD from a 10th ha plot. Fertilizer and packing costs are major expenses; costs are around \$20,000 LD, leaving a gross profit of \$10,000 LD, which is a couple of month's wages. A World Bank study reported on a group producing 9 to 12 bags of pepper 3 to 4 times a year, with each bag sells for at 9,000 LD to 15,000 LD. They indicated that 9 bags per harvest represents just a third of the actual production, as "over 20" potential bags of pepper would be lost during each harvest period to pests and other problems. But rubber tapping is seen as more predictable source of income, as margins are typically much lower, risks are high, access to land in the peri-urban areas is a challenge and credit is scarce. The major success of the CARE UPA project is the savings clubs established.

Little value is added currently, mostly transport and re-bundling, and the margins captured by the retailers from consumer sales are significantly higher than prices paid to farmers. The vegetable sellers in the markets are organized, while the farmers are not. Trust is lacking and family links are important along the value chain. Many peri-urban vegetable growers farm on leased or borrowed land. Although there is an advantage of scale for intensive vegetable production, the emergence of large-scale commercial vegetable growing for the high end expatriate market and for export, which is of interest to more affluent returnees, may spill their second grade production into the domestic market and cause displacement of the smaller low input growers.

Traders usually move only limited quantities and deal with only a few farmers. The wholesale vegetable sector is fragmented and vegetable trading is dispersed. Hygiene is a problem and there is considerable scope for the introduction of improved production and post-harvest processing practices and technologies to allow Liberian producers to better meet the national demand for vegetables and to eventually aspire to supplying the regional export markets found in Guinea, Ivory Coast, and Sierra Leone. There are no storage facilities for locally produced vegetables, which leads to major spoilage and forces farmers to take the wholesalers price to avoid crop losses.

The few larger vegetable traders are more likely to be integrated back into the production areas, and may even offer credit. In the markets the sellers are organized and essentially maintain a cartel, stopping farmers from selling directly to consumers.

In Greater Monrovia, there is a population of approximately 1,300,000 in Montserrado county, a population which has per capita more purchasing power than the rural areas. This demand can be supplied mainly by small impoverished farmers, trained to be commercial growers, and many of them could be young people. The niche demand for exotics is probably only between \$10-20,000 a month, but

both local production and demand for exotic vegetables seem to be growing. More investment and higher risks are involved in exotic production. Production is often on leased land, which discourages intensification.

FED will focus on the vegetable value chains in the Greater Monrovia Area of Liberia, on urban markets and production areas within a 25 kilometers radius of Monrovia. Some work will be done with existing growers in the growth corridor that leads into Bong and Nimba counties along the Ghanta -Monrovia highway, preparing for the resurfacing of that particular road and to take advantage of the slightly better soils and different season there. Land is more available there compared to Monrovia, where leased land and uncertain tenure is the norm. The main focus of the capacity building program will be focused on corn, chili peppers, bitterball and okra, as they are in demand and adapted to climate and pest/diseases. One of Monrovia's comparative advantages is production of leafy greens like spinach and sweet potato greens as they have the swampy land and these are difficult to handle and transport. Expansion of irrigation facilities will be supported for dry season production.

1.4: Background on the Goat Value Chain in Liberia

Current State of the Sector

*Meat/Livestock Products: Production and Imports.*¹⁰

The most recent data of the Ministry of Commerce and Industry (MOCI) regarding imports of meat and meat products into Liberia is dated 2005/06 and reports meat import value of US\$ 6 million. MOCI reports an estimated 26,000 head of live cattle and 15,000–16,000 head of live sheep and goats were imported from neighboring countries over that same period. Existing demand would suggest the potential for expanding domestic production, although cost structures would have to be contained to compete with imports. The existing low animal density (0.1 head/km² for cattle, 2.2 sheep/km² and 2.1 goats/km²) indicates that existing pastureland could sustain a higher density of livestock.

Domestic production is disadvantaged relative to foreign imports of frozen produce. While the main livestock producing areas are closer to the primary consumers in the largest urban centers of Liberia, in practice the costs of marketing in Monrovia are high. Roads are poor and there are no livestock passages or corridors by which live animals can be brought in. Importers of livestock products, especially importers of live animals from neighboring countries, face numerous administrative bottlenecks and harassments, including illicit taxes. An average of 137 trucks per week transport live animals from neighboring countries into Liberia. Reports from executives of the Butchers Association of Liberia indicate that the estimated rental cost is US \$1,000 per truck; trips from the Liberian border to Monrovia last an average of 4 days and each trip costs between US\$15 and US\$300 in illicit taxes.

There exists an interesting potential to supply the urban up market demand with meat products, especially chicken. This demand is very high and currently being satisfied through imports. The current price for imported chicken is USD 3.00/piece. Meat imports have a value of USD 2,7 M. with frozen chicken being the lion share of USD 1.4 M. Current consumption patterns are; - Meat consumption: 11kg/person/year (5.6 kg livestock incl. chicken, 4,4 kg bush meat) - Milk consumption: 9,7 kg/person/year- 11 eggs/person/year. There are optimistic estimates that project a considerable increase in national milk, meat and eggs consumption over the next 5 to 10 years. These figures mainly relate to up market demand of Liberian middle income class and expatriates. Consumption of poor Liberians remains relatively low, due to prices and access.

Meat is mainly imported, not produced in Liberia. Sheep/goat and cattle are imported from Mali and Guinea. Cattle are loaded onto trucks at the border and transported to the slaughterhouse in Monrovia and/or slaughter slab locations in the districts. The price of cattle sent to Monrovia varies between USD 350 and USD 500/hd. The price per pound of meat from the slaughterhouse is approx. USD 2.60 for beef and USD 3.00 for goats. Livestock and meat professionals are made up of buyers, market/toll collectors, negotiators, butchers, wholesale butchers, butcher-apprentices, sellers of roast meat, retailers, and importers. The Association of Butchers of Liberia (ABL) is the most organized structure that intervenes in the sector.

There are no modern livestock enterprises and most livestock were lost during the war, therefore the production has been dramatically reduced since the war and meat is imported. Today, there is no established local milk production. Milk is being imported at 100%. Local production is focusing on

¹⁰ GRM International Study Conducted for Sida. Support for Agriculture & Forestry in Liberia; A Review & Proposal. Nov 2010.

poultry (chicken and eggs). There are some modern farms that function again with large numbers, but produce mainly eggs. There are currently no day old chicks available to supply poultry production. Feed and veterinary services are an additional challenge, they are not being supplied locally. And finally, the costs for fencing and security are considerable. There are some piggeries mainly in rural areas that provide meat for household consumption. Feed is a main challenge for these piggeries as they require higher quality dietary protein than do sheep/goats/or cattle (ruminants). Goats and sheep formerly relevant only in traditional and subsistence farming, are now experiencing a dramatic increase in demand.

Consumption Patterns and Livestock Ownership,¹¹

Nationally, 41% or 1,267,000 people have an unacceptable food consumption pattern. They consume limited or insufficient nutritious foods to maintain an active and healthy life (usually dominated by cereals with minimal or no protein-rich foods like fish, pulses and meats). This observation concurs with FAO's calculations that approx. 38% of people are undernourished (2004-6). Of these, 13% or about 368,000 people have an extremely one-sided consumption pattern, mainly surviving on rice, roots and tubers. They are classified as having a poor food consumption based on a 7-day recall period. People with acceptable food consumption, i.e. their general dietary intake is composed of food items from all the main food groups, constitute 59% of the total population. These consumption groups (acceptable, borderline and poor) were created based on the frequency and variety of consumption of different food items. Between 2006 and 2010, food security in rural Liberia has improved even more markedly than the figures reveal since the latest survey was carried out during the lean season while in 2006 it took place following the harvest of the main crop, paddy. In 2006, 50% of the population was classified as having unacceptable food consumption (poor and borderline). By 2010 this has reduced to 41% while the percentage of households with poor food consumption slightly declined by 1% to 12%.

¹¹ State of food and Nutrition Security in Liberia, Comprehensive Food Security and Nutrition Survey 2010.

Proportion and number of undernourished

	Food consumption (%)			Population (no.)	
	Poor	Borderline	Acceptable	Poor	Borderline
Greater Monrovia	1.2	6.6	92.2	11,650	64,074
Lofa	3	33.5	63.5	8,306	92,749
Gbarpolu	4.2	32.2	63.6	502	26,851
Grand Bassa	6.6	27.4	66	14,632	60,744
Margibi	7.2	30.1	62.7	15,114	63,187
Nimba	9.2	23.2	67.6	42,506	107,190
Grand Gedeh	10.8	31.2	58	13,528	39,080
Sinoe	12	33.1	54.9	12,287	33,981
Cape Mount	13.1	41	45.9	16,647	51,974
Rivercess	15.8	38.7	45.5	11,298	27,674
Bong	16.3	37.3	46.4	54,357	124,722
Rural Montserrado	23.4	51.4	25.2	34,496	75,772
River gee	28.1	54.4	17.5	18,768	36,333
Grand Kru	33.6	44.6	21.8	19,459	25,829
Bomi	38.8	34.8	26.4	32,638	29,273
Maryland	43.3	29.3	27.4	58,861	39,694
Liberia	13	27.9	59.1	368,050	899,039

The Proportion and Number of Undernourished (above ¹¹) shows the prevalence and number of acceptable, borderline and poor food consumption households by county. River Gee, Grand Kru, Maryland and Bomi counties having the highest prevalence of households with poor consumption, close to or above 30%. In terms of absolute numbers, Bong and Maryland have the highest number of poor consumption households according to the survey.

Table 3.3 Ownership of livestock (% households)

	Chicken	Goat	Duck	Pig	Sheep	Cattle
Bomi	34.4	1.0	3.0	0.2	1.4	0.0
Bong	61.7	13.7	10.4	7.7	3.5	0.2
Gbarpolu	68.8	13.6	5.6	0.4	7.6	0.2
Grand Bassa	56.8	7.4	17.8	4.2	1.8	0.0
Cape Mount	51.2	1.8	2.2	0.0	2.8	0.0
Grand Gedeh	59.6	27.2	11.6	0.6	4.0	1.4
Grand Kru	66.0	16.0	5.6	1.8	3.2	0.6
Lofa	63.7	8.2	4.0	2.4	3.4	0.2
Margibi	57.9	7.4	11.6	4.2	1.8	0.0
Maryland	44.9	23.8	9.2	7.4	8.4	1.4
Monrovia	15.9	0.2	3.6	0.4	0.0	0.4
Nimba	64.6	22.6	14.4	12.0	7.8	0.0
River Gee	72.3	23.6	5.1	1.0	8.6	0.6
Rivercess	64.1	7.8	16.2	6.6	1.0	0.0
Rural Montserrado	46.2	5.0	7.2	5.6	1.6	0.4
Sinoe	63.1	19.4	20.0	1.8	4.6	0.2
Liberia	46.6	8.9	8.6	3.6	2.6	0.3

Table 3.3 (above¹¹) shows poultry are the dominant animal kept by households followed by goats. Households in countries bordering Cote d'Ivoire (Grand Gedeh, Maryland, River Gee and Nimba counties) in which grasslands are vast remain most likely to own goats, sheep and cattle although the numbers for the latter are negligible. Poultry ownership is most prevalent in central Liberia especially around Monrovia, probably due to greater demand for chicken and eggs. With most small ruminants found in Nimba, Grand Gedeh, Lofa, and Bong counties.

Goat sub-sector production system dynamics, etc.

Goats are a traditional part of many rural village households and farms in Liberia. They essentially constitute a walking bank account and are traditionally sold when funds are needed to pay school fees, hospital costs, weddings, and on occasions when cash is needed quickly in an emergency, health situations, etc. In addition, in many rural areas they are seen as a prestige item and having many goats lends an air of power and prestige to the owners. Goats are not traditionally raised as a business enterprise in Liberia and in the rural village run loose with little if any conscious management practices

applied. The indigenous West African Dwarf goat variety is quite hardy and prolific, gestation period 5-6 months and frequent twinning of kids is common.

Under traditional practices sheep and goat researchers in Liberia & West Africa consistently report 40-60% mortality rates prior to one year of age. They have found that confinement of the animals during the last month of pregnancy and the first two months of lactation allows for appropriate nutritional supplementation, leading to increased birth weights, better colostrum production and improved survival. It is estimated that such management practices in conjunction with available access to inputs such as veterinary pharmaceuticals, nutritional supplements, etc, can reduce mortality rates to 15% or less.¹² The native breeds of sheep and goats, the Djallonke and West African Dwarf respectively, are quite prolific, giving birth approximately every six to eight months with a litter size of 1.2 to 1.4. The decrease in mortality would translate to an additional two or more animals raised for each ten born, and an increase of approximately 0.5 animals raised per female per year. Conservative estimates from the most recent 2009 internal reports of the statistics division of the MOA indicate there are at least 75,330 goats and 43,470 sheep in the national herd. A reduction from 50% mortality rates in sheep/goat yearlings to 15% alone could theoretically result in national herd increases of the order of 15,000 animals per year.

Veterinary pharmaceuticals are not available in the rural areas. Those few organizations, NGOs for the most part, that purchase veterinary pharmaceuticals go to Guinea, Conakry, to purchase them and bring them into Liberia paying various import duty fees, etc, in the process. The Republic of Liberia Tariff Suspension Order currently in effect (Executive Order no. 30 expiring in March 2012) designed to accelerate reconstruction of the agriculture sector allows for the tax free importation of fertilizers, seeds, and various farm implements, while veterinary pharmaceuticals are conspicuously absent from the list of critical duty free agricultural inputs. There is only one agriculture input supply store in Monrovia stocking only basic veterinary pharmaceuticals for sale and at extremely high prices. Veterinary services are grossly inadequate with literally no practicing professional veterinarians in the rural areas. No other project and/or NGO Program is addressing the issue of Veterinary Pharmaceutical drug shops/outlets in rural areas.

Private/Professional Veterinary Practice is essentially non-existent in Liberia. There are few Veterinarians and the establishment of professional practice is cumbersome and lengthy. In order to formally open Private Veterinary Practice in Liberia one must start with Registration at the Ministry of Agriculture (MOA). The process involves presenting one's Professional Certificates of Education, C.V., and any other documentation relative to specialized training and/or permits of practice to the Ministry for review. The documents reflecting qualifications, education, etc, presented are then reviewed by the Medical Board within the Ministry of Agriculture, the National Livestock Coordinator in the MOA (a practicing veterinarian in the MOA), is the head of this Medical Review Board. If the Medical Review Board Approves the qualifications, etc, they draft a letter for the Minister of Agriculture's Signature and addressed to the Ministry of Commerce stating that the applicant meets the qualifications to perform Veterinary Medical Practice. This letter when received by the Ministry of Commerce then starts the somewhat lengthy process of the Ministry of Commerce regarding requirements for a business registration, licensing, etc, etc. A Business License issuance involves standard business qualification requirements such as having an individual bank account in country and approved standard accounting procedures in place, etc, which must be presented by the applicant and reviewed by the Ministry. One of the two private veterinarians operating in Liberia recalls something of the order of \$2,000 in all for the process from start to finish. An additional \$500 fee paid to the Ministry of Foreign Affairs is required if applicant is not a Liberian citizen. Often the MOA will delay formal approval until they can come to

¹² Dr. Mary E. Gessert DVM, Farmer to Farmer Small Ruminant Husbandry and Management, Assignment #596072E.

inspect the new premises of a veterinary business for final certification once in operation. These procedures make it not only highly risky but time consuming to establish a professional practice.

The formal process for obtaining permits to import veterinary pharmaceuticals also involves the MOA, Medical Board and National Livestock Coordinator once again, reviewing the application and list of pharmaceuticals, etc, and drafting a permit for importation for the signature of the Minister of Agriculture herself once again. Veterinary pharmaceuticals if imported without an official permit are subject to full import duties and tariffs amounting to the standard 25% of total value. Veterinary pharmaceuticals are not on the list of duty free items listed in the Presidential Executive Order No. 30 signed in March 2011, which suspends tariffs on agricultural & agricultural related construction inputs in order to accelerate reconstruction of the agricultural sector in Liberia. Under the current Executive Order, animals for breeding, animal feed, fertilizers, pesticides, farm implements & machinery, etc, are examples of items currently having duty free status. Executive Order No. 30 is in effect for one year only and expires March 2012. It is unclear if the Executive Order will be extended and/or a revised list of duty free items be added for the coming year.

Only one trained MOA Livestock extension officer is present in each of 7 of the 15 counties in the country. The single County Livestock extension agent alone is responsible for meeting the needs of his/her entire County of assignment. The MOA is responsible for official meat inspection at the slaughter houses in the country. In the rural areas where slaughter slabs exist, the MOA is equally responsible for meat inspection and disease free certification both prior and following slaughter. There are no Higher Education Institutions in Liberia offering advanced Animal Science Production, Nutrition, and/or Animal Health programs of instruction. There is a desire on the part of MOA that such advanced training capacity and curriculums be available in the University and/or other training centers in country. The MOA currently sends meat inspectors (two so far) to the school for meat science in Botswana, Southern Africa.

Animal disease diagnostic and surveillance capacity is minimal. Border posts frequented by livestock importers from neighboring countries do not have either quarantine facilities or Phytosanitary and/or Zoosanitary inspection capacities and personnel. Veterinary diagnostic laboratories of the National Program under the Ministry of Agriculture (MOA) are in need of equipment and upgrading in order to function at a minimal adequate level in support of the livestock sector. The National laboratory currently focuses on diagnoses of individual cases submitted by County Livestock Agents. A National Animal Health Laboratory facility such as this should be concerned more with surveillance of potential epidemic animal disease threats on a national level rather than incidental diagnosis of common routine animal diseases, i.e. intestinal parasites, etc, routinely encountered by producers. A National Laboratory such as this should be focused on the detection and monitoring of “reportable” diseases such as Foot & Mouth Disease (FMD), Peste des Petits Ruminants (PPR) and Pleuropneumonia among others with a national/regional animal disease threat perspective.¹³ The Laboratory currently is powered by a diesel generator with considerable cost for fuel and maintenance to the MOA. Given budget constraints of the MOA this is not sustainable and alternative energy sources, i.e. solar, etc, should be investigated.

Growth potential of the sector: markets, demand/ trends, prices, etc

Market demand for goat meat has clearly increased dramatically over the past 3 years and is still on the rise. Demand is no longer solely linked to holiday seasons or festivals but rather is on a consistent rise in consumption/demand on a daily basis. This not only occurring at the formal retail supermarket level (upper income Liberians & expats) but significantly at the urban and rural informal sector in open air restaurants frequented by everyday Liberians (the goat meat soup crowd), etc.

¹³ Dr. Daniel K. Miller DVM, Farmer to Farmer Animal Health & Nutrition Training Workshop, FAO, MOA, ACDI/VOCA, USAID, ODAFARA, Assignment #5960034.

Based on a quick and dirty informal survey, I would estimate hundreds of the so called “Comfort Restaurants” have sprang up in and around urban labor centers in recent years catering to the common laborer working class with “Goat Soup and Dum boys” (goat meat soup and dumplings of pounded cassava cakes). These restaurants operate for the most part in high labor areas of urban centers and are part of a burgeoning informal sector demanding traditionally preferred goat meat dishes. While reluctant to register with the Ministry of Commerce for fear of interference in their growing businesses, these establishments are flourishing in the alleys and barrios of growing cities and towns. On an average day, each of these restaurants slaughters three to four head per day year around and double or triple this amount on feast days and in holiday seasons. Not able to invest in refrigeration, they stock live animals in courtyards on the premises and slaughter on site according to demand. These establishments purchase live animals from either informal traders who have traveled to livestock markets just over the border in adjacent countries, Ivory Coast, Guinea, and/or Sierra Leone, or have simply consolidate purchases at the farm gate in Liberia. Due essentially to lack of supply in Liberia, the vast majority of slaughter animals are from bordering countries.

The retail price of goat meat is nearly twice the price of beef in super markets in Monrovia at this time. In 2008 formal sector Goat live animal Monrovia market prices were approx. \$35-45 USD per animal and now in 2011 is approx. 75-85 USD per head on average. In the formal sector, supermarkets & restaurants catering to expat and higher income Liberians, there is a general preference for the larger size meat goat (Malian variety) over the smaller (Liberian variety) goat varieties on the market. In general, the larger animal offers basically more meat/bone per unit size (dressing percentage) than the smaller West African Dwarf indigenous variety. However, the smaller Dwarf Liberian variety offers a meatier and far more convenient, easily transportable package, occupying less space and having lower maintenance requirements for food and water when stocked in limited courtyard spaces awaiting slaughter in urban meat and restaurant establishments. It is estimated that informal sector demand for the classic Liberian West African Dwarf goat varieties far exceeds the demand in the formal sector for the larger Malian varieties. In 2006 goat prices in Bong and Grand Bassa rural areas were approx. 40-50 USD/head. In 2011 goat prices in these same areas are now 80-90 USD/head. (re; Liberia Cattle Union Association, Liberia Butcher’s & Trader Union Assoc, ERA Super Markets Trade Corp., various meat suppliers to supermarkets and restaurants in and around Monrovia, Concern Worldwide goat restocking project manager).

Restaurant establishments catering to the Goat Soup market can enjoy extremely lucrative profits. The carcass resulting from a medium sized Goat costing 80-100 USD can provide enough meat for approximately 34 bowls of Goat Meat Soup selling for 5 - 7 USD per bowl in the restaurant trade in Liberia. This results in consistent profits of at least 50 USD per goat (note pg 22 Value Chain estimated margins). Approximately 80%, of the fresh goat meat currently arriving on the market in Liberia is imported as live animals from Guinea, Sierra Leone, and/or Mali. The estimated cost of importation from Guinea to Monrovia markets is relatively high, approx. 19 USD/head total which includes customs duties at the boarder of approx. 2.50 USD/hd, and transportation costs approx. 16.50 USD/head, in addition to the purchase price of the animal. Clearly, domestic Goat meat offers a far more lucrative product to the existing market than the imported variety currently occupying the majority of the market.

There is estimated some 20 tons of frozen lamb/goat meat per month imported from New Zealand and Australia into Liberia. Fresh goat meat is greatly preferred over frozen imported meat throughout the markets. Both goat live animal and goat meat buyers in Monrovia would buy Liberian Goats over the imported varieties if available. Traders purchase animals more often in the Guinea market because they can get the quantities they need easily, i.e. one can purchase up to 100 live goats in one visit. Currently, purchasing even 30 animals in rural Liberia of locally produced goats requires several trips to different locations and different households with considerable time spent negotiating with farmers, etc. The Liberian livestock and goat populations were essentially decimated during the 14 years of civil war across

the country. Many rural farm families lost all of their livestock stock in the course of the war years. (re; Liberian Butchers & Traders Union Association, Liberian Cattle Union Association, various Private Traders).

Current interventions and plans; MOA, NGOs, Private Sector, etc.

what they are doing, what they are planning to do.

A major campaign aimed at restocking small animal farm livestock; chickens, ducks, pigeons, and sheep/goat population in Liberia has been underway since the end of the war under the IFAD funded Agricultural Revitalization Support Program (ARSP). These restocking campaigns for goat breeding stock began with the attempted purchase and importation of goats from the surrounding countries but has been problematic in that preferred healthy, breeding stock goats of reproductive age (6-8 months) are not available in adequate numbers. The majority of animals normally presented in livestock markets of the bordering countries; Guinea, Sierra Leone, Mali, are older adult animals destined for slaughter rather than breeding stock purposes. In addition, many of the goats purchased in border country markets for restocking purposes brought illnesses acquired in the large livestock markets where they were purchased reflected in high mortality rates of the imported animals and cases of disease transmission to indigenous livestock.

In response to the problems encountered, restocking campaigns changed the focus to purchasing indigenous Liberian animals in those few areas which still had significant numbers, i.e. Nimba County, and redistributing them to counties targeted for restocking. Here again, major mortality rates as high as 50% in some cases, have been experienced and the acquisition of the required numbers of good breeding stock from local farms in Nimba county for example has been problematic. Producers are understandably reluctant to sell good breeding stock which would reduce their own future production potential growth. Implementing partners under the ASRP program currently have restocking targets of some 2,566 small ruminants (sheep and goats). Restocking efforts begun by NGOs implementing the ASRP Program in 2010 to date (after approx. 2 years into the program) have resulted in only 460 animals being procured and distributed with some 140 of these animals having died from disease and stress related issues associated with the restocking efforts. (re; AGRO-VET Inc, Human Development foundation (HDF), Action Aid, Africare, Concern Worldwide, Welt Hunger Hilfe (WHH *German Agro. Action*).

The United States Department of Agriculture (USDA) is launching a Food for Progress Project implemented by Land O'Lakes in 2011. The Project will focus on promoting goat production through classic restocking efforts with associated producer training in fodder production and animal health while improving meat processing, slaughter facilities, and marketing in both rural and urban areas. Diploma level animal husbandry and veterinarian training will be strengthened through both curriculum development in local institutions as well as long term training opportunities abroad. Major restocking activities are planned under the program focused on Lofa, Nimba, and Bong Counties with a target of procuring and distributing some 30,000 animals over a period of three years.¹⁴ The planned level of restocking in this effort could be very problematic given the past experience of similarly planned classic restocking interventions in Liberia to date. In addition, the program envisions Community animal Health Workers (CAHWs) trained under the program having ready access to veterinary pharmaceuticals which, under the current lack of Vet. Pharmaceutical outlets in Liberia, could be problematic as well.

There are impressive instances of relatively successful private sector "neighborhood" restocking efforts going on outside of the classic NGO restocking efforts seen under the ASRP Programs in the country. Although somewhat limited, these are instances where a neighbor, having several goats for example, is in a position and willing to lend several female animals to an adjacent neighbor, while sharing one or two

¹⁴ Land O'Lakes, Inc. USDA Food for Progress Proposal FY2011, Liberia.

bucks (males), for the period of time necessary for kidding to occur. At the end of kidding and weaning cycles, the animals are either returned to the owners and/or kids are passed on to other neighbors willing and interested in acquiring animals. In those cases where this has occurred, extremely successful rates of animal restocking have been achieved with relatively insignificant mortality rates occurring when compared to the larger restocking campaigns implemented under the ASRP Programs. Although relatively limited in occurrence around the country, these neighborhood restocking efforts represent outstanding examples of sustainable restocking strategies and approaches achievable.

Samaritan's Purse (NGO) under independent funding has been implementing remarkably successful small ruminant (sheep/goat) restocking programs in the Counties of Gbarpolu, Lofa, and Bong since 2005. The Samaritan's Purse Community Pass-on Scheme strategically places intense emphasis on the initial selection process of farmers capable of participating in the scheme. Community Facilitators initially review individual farmer interests within targeted districts of intervention among the farmers and villages. Once potential participant farmers have been identified, they are organized into farmer committees of up to 150 farmers and tasked with prioritizing interested participant farmers among themselves for the initial receipt of animals. All farmer committee members cannot receive starter animals as some must await the kidding and pass-on scheme progress from fellow members. Initial recipient farmers are selected by the committee based on need, i.e. most often female heads of households and/or families which may have lost the male head of household in the war, etc. Once selected, recipient contribution/commitment qualifications of a farmer to receive a pair of female animals is the construction of an animal shelter together with fabrication of a mineral salt lick block (based on Samaritan Purse design/training). Once the selected farm family has successfully completed the contribution/commitment tasks and associated training, they are eligible to receive the animals. Each recipient farmer must pay-back three offspring to the Pass-on Scheme program before eligible to begin to market animals produced. In addition, one individual per village is selected for para-vet training in animal health disease diagnosis and treatment. This individual is required to be from the specific village and literate and capable of successfully completing the required para-vet training provided by Samaritan's Purse livestock production specialists. Once trained, the Community Animal Health Worker (CAHW) is provided a stock of the basic necessary veterinary pharmaceuticals and equipment required.

The Samaritan's Purse Community Pass-on Scheme program has successfully graduated 450 farmers out of a total of 509 participating farmers in Gbarpolu County alone since its inception in 2005. In 2009, they started a new program in Lofa County with approximately 450 farmers and are planning to expand an additional 125 farmers in Lofa and 25 additional farmers in Gbarpolu counties in 2012. All of the pass-on animals to be used in the 2012 restocking campaigns have been produced under the previous restocking efforts completed under the program. Participants overwhelmingly confirm that anyone ready and willing to sell goats produced under the program can easily find markets in the region. Samaritan's Purse is anxious to expand the production base of the program to other districts in both Lofa and Nimba counties if additional funding can be identified.

The MOA County Agriculture Coordinators (CAC) in many counties have established Agricultural Coordination Committees (ACC) which meet regularly (monthly) for the purpose of coordinating the actions of all agricultural development partners programs within the specific county. These meetings bring together all NGOs involved in agricultural development as well as donor partners including the FAO/EU-FFP, WFP SDC, GIZ SP, UNMILs and all MOA County Office Divisions such as the Quarantine Division, Livestock Division, Offices of City Mayors, Project Planning Division, etc, etc. ACC meetings begin with the formal registration of all participants and a review of submitted reports of each organizations specific development activities both planned and ongoing. The purpose of the meetings are to basically keep everyone abreast of both planned and implemented development efforts in the agricultural sector within the county and to review any issues regarding coordination needs and assessments required by the committee. A particular emphasis is placed on the use and reporting of any

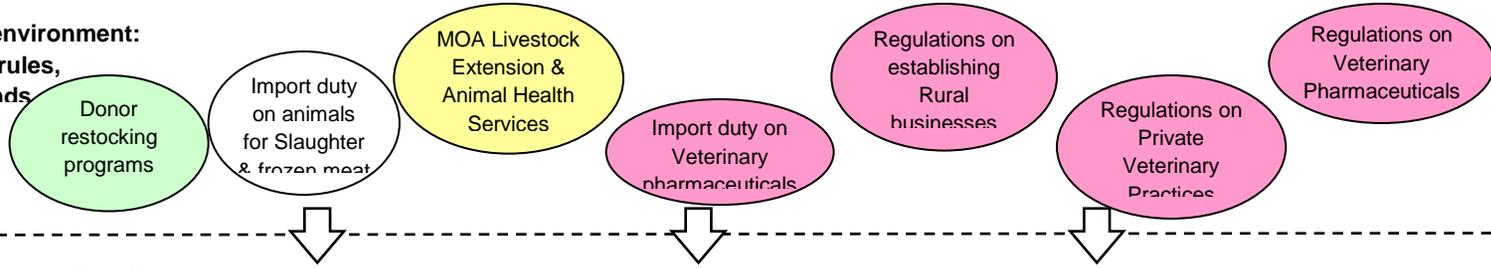
chemicals/sprays and veterinary drugs or vaccines being used in the development programs execution by partners regarding potential concerns/issues of such uses to the general population of the county. The Samaritan's Purse has been particularly effective in coordinating their efforts in goat restocking with local ACCs in Lofa, Gbarpolu and Bong Counties and maintaining strong ties with the local authorities and other development partners in the execution of their programs. Good development partnerships have developed over time within these programs.

The European Union (EU), through the African Union Inter-African Bureau for Animal Resources (AU/IBAR), has funded a National trans-boundary animal disease control vaccination campaign to address Peste des Petits ruminants (PPR) disease control in sheep/goats in Liberia and the region for the past three years. The Ministry of Agriculture (MOA) has been responsible for implementing the national PPR vaccination campaign. The EU/AU/IBAR Program came to a close in December 2011 and possibility of a follow-on program is unclear. The MOA has not been able to fully execute the PPR vaccination campaign at the planned levels to date and now, with the close of the initial program funding, is unable to complete the campaign on schedule. (re; MOA National Project Coordinator, Control of Trans-boundary Animal Diseases (TADs), National Livestock Bureau/Technical Services.)

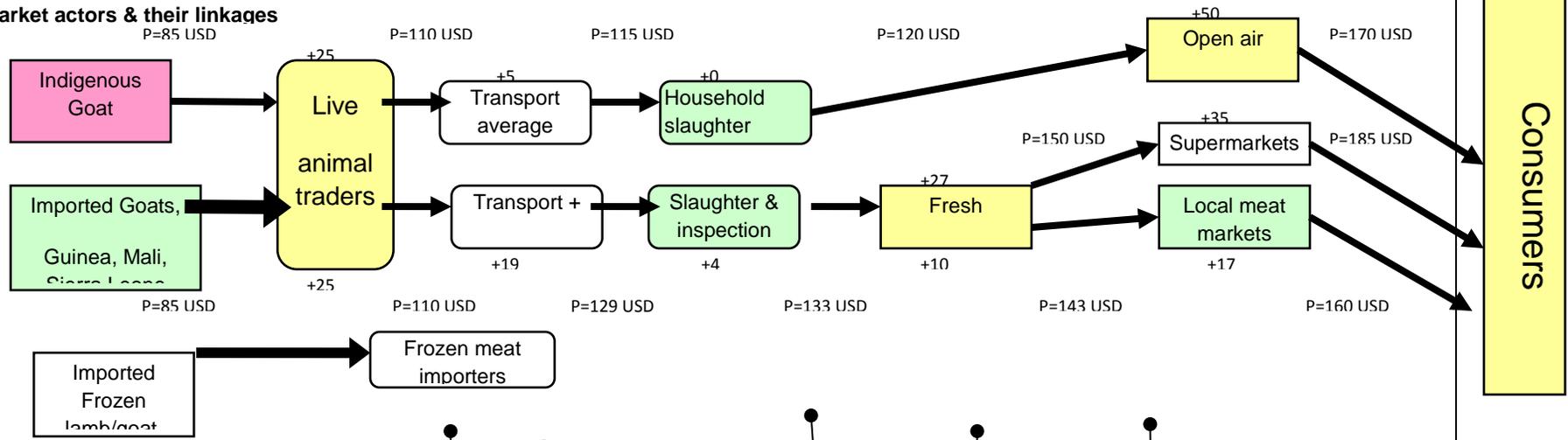
A Livestock Working Group has been established in the National Bureau of the Ministry of Agriculture (LPRC) in Monrovia. The group is composed of Donors, NGOs and Private Sector, involved in the livestock sector with the objective to "Promote Coordination within the Livestock Subsector.

Market-system Map – Goat Meat Sub-Sector FED Liberia.

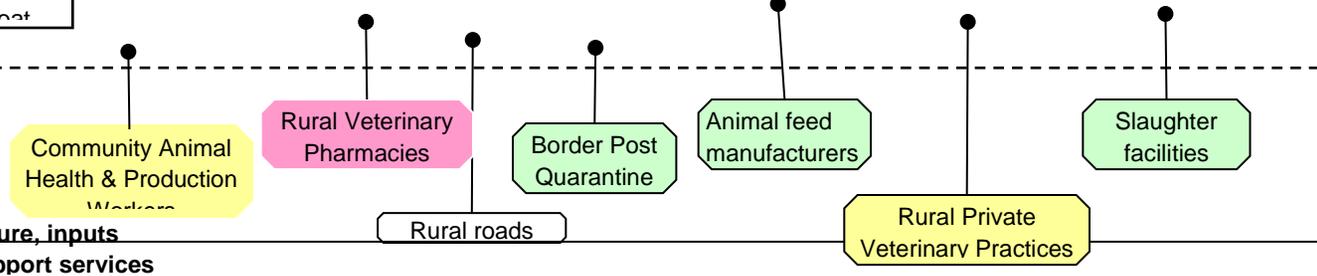
The market environment: institutions, rules, norms & trends



The market chain: Goat Sub-sector market actors & their linkages



Key infrastructure, inputs and market-support services



Target Groups

- FED alone
- FED alone
- FED alone