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Smallholder Oil Palm Support Program (SHOPS)

FINAL REPORT

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Acronym List

AoR	Agreement Officer's Representative
CBL	Central Bank of Liberia
CoP	Chief of Party
CPO	Crude Palm Oil
EMMP	Environmental Mitigation and Monitoring Plan
Ha	Hectare
IDQA	Internal Data Quality Assessment
IFC	International Finance Corporation
LCP	Leguminous Cover Plant
LESSP	Liberia Energy Sector Support Program
LIFE III	Livelihood Improvement for Farming Enterprises
LINSOP	Liberian Initiative for Sustainable Oil Palm
L-MEP	Liberian Monitoring and Evaluation Program
LOP	Life of Program
LWA	Leader with Associates
MC ²	Micro Community Credit or the Means of the Community Meet the Competence
M&E	Monitoring and Evaluation
MEO	Mission Environmental Officer
MFI	Micro-Finance Institution
MOA	Ministry of Agriculture
Mt	Metric Ton
INGO	International Non-Governmental Organization
PANFAMCOS	Panta Farmers Multi-purpose Cooperative Society
PERSUAP	Pesticide Evaluation Report and Safe Use Action Plan
PIDS	Performance Indicator Database System
PKO	Palm Kernel Oil
PMP	Performance Management Plan
PROSPER	People, Rules and Organizations Supporting the Protection of Ecosystem Resources
RSPO	Roundtable on Sustainable Palm Oil
SHARP	Smallholder Acceleration and REDD ⁺ Program
SHOPS	Smallholder Oil Palm Support
SPC-NI	Small Producing Countries National Interpretation
SoW	Scope of Work
USAID	United States Agency for International Development
USG	United States Government

EXECUTIVE SUMMARY

The Smallholder Oil Palm Support (SHOPS) project is a three-year program funded by the United States Agency for International Development (USAID) designed to stimulate economic growth, alleviate poverty and increase food security for Liberia's smallholder producers of palm oil. The main objectives of the project are (1) increased productivity and profitability of Liberia's smallholder oil palm sector, (2) improved marketing and trade capacity of the sector, and (3) improved enabling environment and support functions. SHOPS is working with the Government of Liberia, development and local partners, key cooperative and business associations, as well as financial services institutions to re-establish a highly functioning smallholder oil palm sector. This is the final report for the project highlighting its main achievements and remaining challenges in the sector.

Under the three year (April 12th, 2011-May 31st, 2014) program, SHOPS has mobilized technical staff, volunteer technical assignments and expert consultancies to supported concrete economic development at the community level to: improve technical innovation, profitability, management capacity and long term planning; and support the transfer and adoption of best practices within the oil palm sector. SHOPS has engaged in capacity building in lucrative technical skills including metal fabrication, nursery operations, and business administration procedures for applying for and managing credit.

The final program evaluation showed that SHOPS technical and business development activities stimulated over **9,000 Liberian farmers**, technology users, and entrepreneurs to generate USD **7.7 million dollars¹ in increased income** over the duration of the project. SHOPS activities resulted in the **creation of over 300 small businesses that utilized their own capital to invest \$738,330 USD in the agricultural sector**, not including annual wages and in-kind payments to over 3,805 employees and seasonal workers. Due to the 10 year lifespan of the processing technologies, the 25-30 year life span of improved oil palm trees, and the sustainable supply chains created by the program - increased income, small business creation, and seasonal employment opportunities will continue and expand beyond the life of the program.

Under the **nursery production component**, SHOPS extension staff provided technical support to 43 decentralized nursery operators in the production of over 120,000 improved *tenera* oil palm seedlings. Sustainable supply chain linkages between 30 nursery operators and 2 high quality pre-germinated *tenera* seed importers lead to the direct purchase of 55,000 pre-germinated seeds. Efforts to promote nursery operators and their seedlings resulted in: 54 village level demonstrations introducing the nursery operators and their services; discussions on the advantages of F1 seedlings; demonstrations of correct production practices through ceremonial plantings; month-long radio talk shows on nine radio stations to introduced SHOPS nursery operators; and the sale of 30,000 seedlings. The commercialization campaign for phase two of seedling production was cut short by the end of the program and approximately 70,000 seedlings are still in nurseries. The seedlings will be sold and planted from June to August, 2014. Upon finalization of these seedling sales, SHOPS expects sales of 50,000 or more additional seedlings with the remainder to be planted by nursery operators after the project close-out.

¹ The SHOPS internal final evaluation, conducted in March 2014, demonstrated the overall increased income of SHOPS beneficiaries to be \$8.3. The internal evaluation methodology was extended to include manufacturers, palm processing equipment owners, Freedom Mill 2 (FM2) owners from LSOPRP, FM2 users/customers, nursery operators, cooperative loan recipients, and individual loan recipients.

Under the **processing component**, SHOPS technical training staff and one international consultant developed four new oil palm processing technologies including the motorized Freedom Mill, Palm Kernel Cracker, Palm Kernel Separator and Palm Kernel Expeller. Manufacturer trainings with 6 Liberian-owned metal manufacturing workshops sought to transfer fabrication and production standards to the workshops for commercialization through a sustainable supply chain. Commercialization efforts through radio, print media and over 70 on-site demonstrations have supported sales of over 264 manual and 28 motorized processing units. Processing units provide owners with the ability to process palm fruits from their own farms and provide community members with service unit processing for only a small fee (typically paid in oil). The increased revenue from processing provides both owners and producers with a strong incentive for reinvestment in planting of new palm.

When processed, oil palm fruit can produce including crude palm oil, palm kernel oil and palm kernel cake that are important for food, cosmetics and animal husbandry trade and industries at the national, regional and international levels. In Liberia, oil palm products are easily sold at national and regional levels at prices that are often above the world market. Under the **marketing component**, SHOPS tracked information related to prices of various oil palm products on a quarterly basis. SHOPS developed a network of over 100 contacts across Liberia involved in oil palm processing, trade and use of raw materials. The established contacts were invaluable to a market assessment and stakeholder validation meeting that relied on key informant interviews to study: market opportunities and inefficiencies; distribution networks, processes, and terms of trade; estimated market demand and absorption capacity; annual price volatility and geographic price differences; bottlenecks to market access and trade; and recommended strategies to improve the sector. The market assessment was capped off by a stakeholder validation meeting, where over 35 actors in the oil palm sector discussed major findings from the study.

SHOPS interventions in the **financial services** sought to improve demand and supply side capacity, and strengthen market and financial institution linkages. Interventions under the component were diverse including: partnerships and trainings with local MFI and commercial banks to support access to financial services; support to credit unions and VSLs to improve management procedures and access funds from CBL initiatives; collaboration with entrepreneurs and cooperatives to access loans from financial institutions; and engagement with one rural community to establish a MC2 rural community financial institution in collaboration with Afriland First Bank and the CBL. SHOPS activities in the financial services sector improved access to financial services for agriculture in rural communities resulting in approval of 186 loans with a value of over \$197,000 USD for 102 beneficiaries.

Activities under the **enabling environment** component included environmental mitigation and monitoring, gender outreach, and collaboration with other donor funded programs working to improve rural infrastructure and agricultural based livelihoods. Activities under the environmental mitigation and monitoring sub component addressed: improved water management for nurseries; improved farm management practices using composting, palm waste from processing, leguminous plants and soil sampling; and workshop safety in manufacturer trainings. All of these assignments reinforced SHOPS' approach to prioritizing techniques to intensify production of existing land in Liberia. Activities under the Gender Outreach sub-component ensured that women were involved in all major components by training them as

nursery operators, insuring their attendance during processing equipment and seedling commercialization demonstrations, and improving access to loans and outreach of financial service providers.

Under the **volunteer component**, SHOPS fielded 23 volunteers (out of the target 24) to provide technical assistance for assignments covering: financial management; support to the development of credit unions; agribusiness marketing assessment; improved soap making using palm based oils; sustainable farm management and mapping; improving soil fertility; and drip irrigation in the oil palm nursery. These assignments supported SHOPS activities under major program components and helped provide technical staff accompanying volunteers on assignments with new sets of practical skills.

M&E ACTIVITIES

ACTIVITY SUMMARY

Under the SHOPS M&E component various studies were undertaken to support and confirm progress of program activities including: an initial baseline study; a comparative study on *tenera* and *dura* varieties of oil palm; a mid-term evaluation; and a final evaluation. SHOPS M&E system consisted of 22 indicators which were tracked on a quarterly and in some cases annual basis. Due to limited staffing for M&E under SHOPS, technical staff and beneficiaries assisted the M&E Specialist in data collection. Technical staff were coached on when and how to collect indicators and quarterly schedules for collection processing and reporting were followed precisely for consistent timely reporting into the L-MEP PIDS (Performance Indicator Database System) used by USAID to check and report on progress. Two DQA conducted by L-MEP and one IDQA implemented in collaboration with ACDI\VOCA's regional M&E Specialist allowed the program to update SHOPS M&E plan and PMP and improve implementation of data collection, processing, storage and verification.

The first four indicators in SHOPS PMP presented in Table 1 below gauge economic participation and were tracked under the previous LSOPR project. The collection of data for these indicators in conjunction with the data already collected under the LSOPR project constitutes an overall longitudinal study of the impact of USAID's activities on productivity and profitability within the smallholder oil palm sector of Liberia. SHOPS was able to exceed program target for five of the six main indicators related to economic participation and technological innovation. The only indicator the SHOPS failed to achieve related to private investment generated. This indicator was very close to being met - seedlings produced during the program and sold and tracked in two to three months after the project close-out would have allowed the program to surpass the private investment target.

Table 1: Increased Smallholder Oil Palm Sector Productivity and Profitability

Indicators	Baseline Value	Y1 Ann. Targ.	Y1 Ann. Ach.	Y2 Ann. Targ.	Y2 Ann. Ach.	Y3 Ann. Targ.	Y3 Target Ach.	Y3 Targ. % Ach.	Cum. Targ. Tot.	Cum Target Ach.	Cum. Targ. % Ach.
# participants generating increased income	2,003	800	3,117	880	2140	970	973	100%	2650	6,230	235%
	481 W 1,522 M	200 W 600 M	1203 W 1914 M	220 W 660 M	728W 1412M	242 W 728 M	292W 681 M	120% 93%	662 W 1988 M	2,223 W 4,007 M	335% W 202% M
\$ value of annual net income	\$2.95 million	\$1.2 Million	\$893,985	\$1.32 Million	\$3.61 million	\$1.45 Million	\$3.21 Million	227%	\$3.97 million	\$7.72 million	194%
# enterprises generating profits	147	55	89	60	79	67	133	199%	192	301	157%
			11 W 78 M		11 F 68 M		13 F 91 M 29 Inst			35 W 237 M 29 Inst	
Private investment generated through technology and seedling sales	\$215,000	\$140,000	\$170,902	\$270,000	\$183,611	\$350,000	\$383,817	110%	\$760,000	\$738,330	97%
# farmers/processors adopting new technologies or management practices	2,003	800	2,782	880	1699	970	1423	147%	2650	5,904	223%
	481 W 1,522 M	200 W 600 M	1,068 W 1,714 M	220 W 660 M	605 W 1094 M	242 W 728 M	236 W 1187 M	98% 163%	662 W 1988 M	1,909 W 3,995 M	288% W 201% M
# new technologies or management practices made available for transfer	1	1	2	1	3	1	0	0	3	5	166%

INTEGRATED PROGRAM COMPONENT ACTIVITIES

COMPONENT 1: IMPROVED SEEDLING AND OIL PALM PRODUCTION

Summary of Component 1 Activities

Presently, Liberia's has over 160,000² acres of planted oil palm trees (roughly 10 million oil palm trees), the vast majority (>98%) are over 30 years of age and in need of immediate replanting. The average 30 year old oil palm tree in Liberia produces less than one gallon of oil per year³. An eight-year old, high yielding variety of oil palm tree can produce over six gallons⁴

² 2008 IFC report: "Review of the Oil Palm Sector in Liberia"

³ Statistic extrapolated from the average OP production per ha (4tons FFB/143 trees * 9% extraction rate/3.34kgs per gallon = 0.76 gallons/tree) using existing trees and traditional processing

of oil (when processed mechanically). To improve productivity and profitability under the production component, SHOPS has focused on two main interventions: 1) the support of sustainable trade linkages for high yielding, disease resistant pre-germinated oil palm seeds and seedlings; and, 2) training in nursery management, seedling production and commercialization.

Years of neglect and lack of replanting, has resulted in many cases of desperate oil palm producers planting low-yielding poor quality F2 seeds and seedlings. Misinformation and uninformed producers and input suppliers have perpetuated this practice. Presently Liberia does not have a breeding station capable of producing high quality *tenera* pre-germinated oil palm seeds, so SHOPS worked to improve the supply and accessibility of improved high quality seedlings by creating commercial market driven linkages between program trained nursery operators and two Liberian-based business. The local input suppliers import high quality pre-germinated oil palm seeds from regional oil palm breeding institutions in Cote d'Ivoire and Ghana as well as polybags for seedling production. Yields and profitability of F1 improved hybrid seedlings are more than 2x that of 2nd generation non-improved F2 hybrids. While the seeds are somewhat costly (approximately \$0.70-80/seed), when well cared for and maintained, hybrid seedlings have the potential to generate up to \$4500 USD/HA annually.

SHOPS extension staff supported nursery operators to develop technical capacity in the following areas:

- nursery establishment
- fencing
- shading
- transplanting
- correct spacing and layout
- correct weeding and watering
- mulching
- fertilizer usage and application
- culling
- outplanting

By the end of the program, approximately 10 of the 30 functioning nurseries were implementing standards similar to SHOPS own demonstration nursery at the Gbarnga office. These nurseries were transplanting on time, using mulch and fertilizer correctly and implementing regular weeding and watering schedules.

After providing technical assistance in nursery management and seedling production, nursery operators are ready to commercialize their seedlings. SHOPS provided commercial support to nursery operators through a variety of techniques including: circulation of 14 radio talk shows on nine radio stations near communities with nursery operators; and 54 town hall meetings and demonstrations with ceremonial plantings to target outplanters.

⁴ Statistic extrapolated from the average OP production per ha (16tons FFB/143 trees * 18% extraction rate/3.34kgs per gallon = 6 gallons/tree) using improved trees and processing equipment

Component 1 Main Life of Program Deliverables, Outcomes and Targets

- 30 new nurseries selected and trained in production of at least 1,500 seedlings each.
- Sales of at least 90,000 seedlings using mass media and village level demonstration.
- Seedling out-planting to result in at least 600 hectares under improved management.
- 1,000 farmers to have access to technical advice on correct outplanting, plant protection, weeding, use of LCPs, and feeding to successfully establish young palm seedlings.
- Three commercial importers of improved *tenera* seed with links to nurseries.
- Commercial sources of nursery supplies within a 50-mile radius of nurseries trained by the project.

SHOPS was able to exceed two of the four PMP production component indicators targeting linkages between nursery operators and improved seed suppliers, and number of nurseries trained in seedling production. A total of 55,000 seedlings and approximately 110,000 polybags were purchased by nursery operators directly from two Liberian agro-input suppliers. While the program may have not meet original program design outcomes in terms of the number of importers or the density of input suppliers, nursery operators were able to engage in direct investment with specialized business providing high quality inputs.

Approximately 30,000 seedlings were sold and planted by 514 beneficiaries. Seedling sales, number of hectares planted and number of people planting were affected by the seasonal calendar and closeout of the program. From a technical perspective, the ideal months of planting for oil palm in Liberia are from early June to mid-August. Heavy rain during this time period allows palms to establish before the dry season, reducing the risk of transplant shock and increasing survival rates. Unfortunately, due to the seasonal calendar for planting it was impossible to meet year 3 and life of program sales targets as the 2014 planting season began just as the program shut down. Based upon a current production of 70,000 seedlings and the probability that nursery operators may plant up to 25 percent of their production, we can assume that approximately 52,500 seedlings will be sold during the 2014 season. Given this scenario, sales due to program activities under phase 1 and 2 will total approximately 83,000 seedlings with an additional 27,500 planted by nursery operators. While estimated predicted seedling sales would be slightly below the program target of 90,000, the total number of additional ha planted should equal around 770 ha, exceeding the program target by 170 ha. As the number of seedlings produced in phase 2 of nursery activities increased by approximately 30,000, and there were new nursery locations, it is likely that at least 500 new planters will purchase and plant seedlings produced in phase 2.

Radio programs, village-level promotions and ceremonial plantings provided over 1000 producers with cursory techniques in correct outplanting and plant protection. However, the limited number of technical staff devoted to the technical component combined with the need to focus extension efforts on a large number of nurseries meant that there was limited time to make sustained follow up with outplanters. Consideration to provide a separate set of extension staff working with outplanters to develop correct practices could support market demand while promoting more intensive and profitable production practices.

Table 2: Improved Seedling Production and Oil Palm Production Indicators

Indicators	Y1 Ann. Target	Y1 Ann. Ach.	Y2 Annual Target	Y2 Annual Ach.	Y3 Annual Target	Y3 Total Ach.	Y3. Total % Ach.	Cum. Total Target	Cum Total Ach.	Cum. Total % Ach.
# Oil Palm producer groups linked to MOA or seedling importers for seedling importation	1	0	1	30	1	0	0	3	30	1000%
# Nurseries producing at least 1,500 seedlings/year	10	0	10	23	10	20	200%	30	43	143%
# Tenera seedlings produced by nurseries and sold to farmers	0	0	37,500	0	52,500	30,977 362 M* 139 F* 13* Institutions	59%	90,000	30,977	34%
# of additional ha. under improved technologies or management practices	0	0	250	0	350	270	77%	600	270	45%

*Number of purchasers and not number of seedlings purchased

Component 1 Challenges, Issues, Problems, and Constraints Encountered During Program Implementation

Under the production component SHOPS encountered a variety of problems, challenges and constraints including: the availability and proliferation of F2 seed and seedlings; programmatic timing issues related to the seasonal calendar; capital limitations, and poor technical implementation or misunderstanding of the programs approach by nursery operators.

Several weak organization and institutions were selected during the first phase of seedling production, due to their status as community groups or institutions. From this initial experience, SHOPS extension staff made considerable improvements in selecting groups, organizations and individuals with the resources, market and entrepreneurial spirit to accept and adopt SHOPS commercial approach under phase two and in phase three prospection. The program's decision to require nursery operators in phase two to make considerable investments in pre-germinated seeds and polybags removed potential poor performers. SHOPS demonstration nursery located at the Gbarnga office offered an excellent example to visiting nursery operators on what a well-weeded, well-watered and correctly fed nursery should look like.

Confusion and poor understanding among producers between high quality F1 seedling and F2 seedlings threatened the demand for high quality seedlings in some nursery operator's towns. Seed and seedling supply networks for F2 seed exist and as the seeds and seedlings are much cheaper and often misrepresented as F1 many producers plant the material to discover 3-5 years later they have a non-uniform palm that is a sterile or low yielding varieties. SHOPS extension staff addressed these issues by conducting radio shows and community-level meetings in areas

were F2 seedlings proliferation was especially problematic. Discussions centered on the advantages of F1 seedlings in terms of: yield; early bearing; income; land usage; disease resistance; and uniformity of palm growth and fruit production. The potential negative consequences of F2 seedlings were also discussed in terms of land usage, farm management, lower revenue and potential threats of disease outbreak. Information was shared on how to identify F1 and F2 pre-germinated seed and legitimate sources of seeds and seedlings along with discussions on minimum price, correct packaging and supporting documentation for F1 seeds and seedlings.

The final challenge as mentioned in the previous section relates to seedling sales and the seasonal production calendar. The program was able to undertake radio campaigns, village level demonstrations and ceremonial plantings, however extension staff was unable to provide adequate technical follow up and tracking of seedling sales under phase 2 of nursery production.

Component 1 Lessons Learned and Recommendations

To meet annual seedling demand among producers within the program coverage area, it is important to continue support to proven high level nursery operators. Several interventions can make the difference in transforming nursery operators from simply conducting an activity to being professional long-term agribusiness capable of providing a full range of services.

Providing sufficient water to seedlings is important to seedling growth and health - healthy, well watered seedlings are a superior product for outplanters. Manual watering of 2,000+ seedlings is costly, labor intensive and inefficient when compared to mechanized systems. Volunteer technical assignments have provided appropriate solutions to two nurseries to reduce labor and long term costs associated with watering. Irrigation systems can likely be installed for <\$0.20 USD/seedling over the 10 year life of the system. Drip irrigation equipment can be found in neighboring countries such as Cote d'Ivoire and Ghana. Several nursery operators have adopted simplified systems that eliminate manual lifting of water from water sources, and use distribution drums to easily water within the nursery. It is important to establish commercial supply chain linkages for irrigation equipment through existing agro-input vendors. Equally, for nurseries that have shown excellence in adoption of production practices, success in commercialization and desire to expand and grow based upon market assessment, it is important to continue to provide technical support for irrigation. Irrigation installation skills should also be developed among program extension staff and MOA county extension employees. Consideration should be given to some degree of cost sharing to support rapid growth and professionalization of proven high performing nurseries with strong markets.

As demonstrated by one volunteer technical assistance assignment, marketing studies and production cost calculations show that when production is scaled to meet a minimum demand, nursery are viable businesses capable of making excellent returns after two years. Assessments allow the nurseries to better understand their customer base, know actual demand and develop long term strategy. Additional nurseries that have proven records of excellence should undergo similar assessments and assessment skills should be developed among extension staff and MOA employees. In locations with high demand for additional tree crops (cocoa, rubber, coffee or citrus) assessments should include other high interest tree crops to diversify activities and increase profitability of nursery operators and producers.

Production practices in Liberia frequently rely on extensive (as opposed to intensive) land usage. In order for smallholders to achieve high levels of productivity and profitability, greater efforts to liaise and train producers in intensive production practices to improve yields are necessary. After seedlings have been purchased and planted, proper management practices are essential to insure timely bearing, adequate yields and overall seedling health and survival. Nursery operators should liaise with specialized extension staff to initiate demonstration plots and trainings to outplanters. This approach will likely increase seedling demand by providing closer relationships between program-trained nursery operators and outplanters in the community through training in:

- Correct land use selection in terms of slope, soil properties and bedrock depth
- Correct planting, spacing and protection of newly planted seedlings
- Annual weeding and feeding schedules
- Use of LCPs in interrow or leguminous crops in polycropping system
- Polycropping techniques to encourage farm maintenance and returns on land during the immature phase of production
- Use of processing waste (empty fruit bunches and empty fruit) to improve soil fertility and reduce the need for mineral fertilizer
- Integrated pest management and proper use, storage and disposal of PERSUAP approved agrochemical
- Correct pruning techniques

COMPONENT 2: MANUFACTURING OF PALM OIL EXTRACTION EQUIPMENT

Summary of Component 2 Activities

A critical step in the supply chain is the processing of raw palm fruit material into high-quality, high-value products. While existing Liberian palm plots are largely reaching the end of their productive lifespan, improved processing equipment is allowing producers to realize revenue, of which a portion can be used for reinvestment in improved seedlings. Under the processing component, SHOPS senior and assistant technical trainers were able to develop and test 4 new processing technologies; including the motorized freedom mill, motorized palm kernel cracker, palm kernel separator, and motorized palm kernel expeller. All technologies were tested for their viability and economic analyses were undertaken based upon throughput calculations and commodity values.

SHOPS technical training staff initiated eight manufacturer trainings at six different Liberian owned metal manufacturing workshops. All workshops met pre-established criteria involving: prior experience working with and repairing agro-processing equipment; technically competent workshop staff; sufficient human capital for expanded production; necessary tools and equipment to build processing technologies; and excellent workshop location and placement to facilitate commercialization. Manufacturers signed protocol agreements with the program outlining the training; norms of production and installation; marketing; and, monitoring. The manufacturer trainings led by the SHOPS senior technical trainer, provided training on workshop safety, machine design measurements and construction, hands-on fabrication and machine testing, installation and maintenance overview. During the training manufacturing, jigs were created to insure uniformity in design within individual workshops and across manufacturers.

After testing viability and training manufacturers, the program engaged in commercial support of the technologies with the support of manufacturers and associated vendors to supply equipment to interested producers. SHOPS trained a total of seven individuals and organizations to function as vendors in Freedom Mill promotion and service unit demonstration. SHOPS extension staff conducted over 70 processing equipment demonstrations to an audience of over 17,000 persons. Radio campaigns, jingles, t-shirts, stickers as well as brochures featuring economic analyses were also used to promote the improved processing technologies.

Component 2 Main Life of Program Deliverables, Outcomes and Targets

- At least three new metal manufacturing enterprise trained to produce motorized expellers.
- Two existing workshop trained in palm kernel processing technology production.
- Three workshops will begin manufacturing the Freedom Mill 2 manual palm oil expeller.
- Approximately 90 motorized palm oil expellers, palm kernel crackers, or palm kernel expellers and 450 manual palm oil expellers to be sold.
- A total of at least 400 new and expanded enterprises to engage in mechanical palm oil processing.

SHOPS achieved targets related to number of manufacturing workshops trained in manual and motorized processing equipment production. In terms of sales of both manual and motorized equipment and the number of enterprises engaged in mechanized production, the program underachieved initial targets. However, sales of manual processing equipment and the number of enterprises engaged in mechanized processing permit the program to exceed targets on major economic program indicators. Manual expeller sales have remained steady with increases in year 3 that will likely continue in subsequent years due to the training of two new manufacturing enterprises in the border town of Voinjama near the end of the program. Considerable increases in motorized sales in year 3 portray more enterprises adopting advanced technologies to expand the scale and scope of their processing activities.

Table 3: Increased Palm Oil Processing Equipment

Indicators	Baseline Value	Y1 Ann Target	Y1 Ann. Ach.	Y2 Annual Target	Y2 Annual Ach	Y3 Annual Target	Y3 Ann. Ach	Y3% Ann. Ach	Cum. Target	Cum. Ach	Cum. % Ach
#Manufacturing enterprises producing motorized technologies	0	1	1	1	1	1	1	100%	3	3	100%
# New manufacturing enterprises producing the manual expeller	3	1	1	1	1	1	2	200%	3	4	133%
# Motorized equipment units sold	0	25	1	30	6 5M (1 bought 2)	35	21	60%	90	28	31%
# Manual palm oil expellers sold	>180	125	97	150	75 64 M (1 male bought 2) 10 F	175	88* 12 F 71 M 5 Inst	53%	450	264	59%

# New or expanded enterprises engaged in mechanical processing	>129	115	76 65 M 11 F	130	76 66 M 10 F	155	95 13 F 77 M 5 Inst	61%	400	247 208 M 34 F 5 Inst	62%
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*One male purchased 3 units and two other males purchased 2 units

Component 2 Challenges, Issues, Problems, and Constraints Encountered During Program Implementation

Motorized oil palm expellers require significantly more technical knowledge and capital investment for both the manufacturing enterprise and the purchasing client. High manufacturing costs for motorized equipment, and the need for specialized parts means that manufacturing enterprises are more likely to cut corners in selection of raw materials and devise alternative and in some cases inferior adaptations to replace imported parts such as gear reducers. One of SHOPS major long-term partners, Moonlight Metal Works & Garage has not actively pursued key conditions and quality control standards to commercialize high quality motorized equipment such as motorized Freedom Mills and Palm Kernel Expellers. The workshop showed little interest in producing motorized Freedom Mills using gear reducers and has adopted a more complicated system of differentials to reduce the motor speed. While the Freedom Mills still perform well, resulting quality due to the substitution is likely lower over the long term but relatively minor overall. Moonlight has also shown poor precision and a tendency to cut corners in manufacturing palm kernel expellers and palm kernel crackers. Machines produced during trainings by SHOPS technical staff that Moonlight sold to clients have performed well, while at least one palm kernel cracker and one palm kernel presses produced by the workshop were built on entirely different design principles. Since 2009, Moonlight has become the most identifiable manufacturer of palm processing equipment in Liberia; however over the last year (as ownership has expanded the scope and geographic outreach of business activities) management and quality of production at the workshop have suffered. New staff has been put in place to monitor production and financial management as the owner expands his business and are presently rectifying some of the mistakes made over the last 12 months.

To address these problems, SHOPS has trained two additional workshops in motorized processing equipment production. Technical staff continues to follow up with Moonlight and have addressed flaws in processing equipment purchased by clients before program closeout. Competition is perhaps the best way to ensure adoption of quality standards and at least 2-3 additional workshops should be trained in the full range of motorized processing equipment production to ensure adequate completion. Technical training staff has developed machine quality control checklists but long-term adoption by workshops is a challenge. The complexity of motorized equipment can be difficult for new processing enterprises to master. Failure to properly regulate or a hasty decision to modify equipment can result in damage to the machine. In the future the program should encourage and train manufacturers to provide training and subsequent warranty services as an additional cost to machine purchases.

Financing for manufacturers and processors is important to increase the type and number of enterprises active in the sector. Successful loan applications were approved for one manufacturer and one processing enterprise and should build on this success. Economic analyses has shown that financing processing equipment loans will create profitable processing enterprise capable of reimbursing loans when repayment schedules are based upon the seasonal calendar.

Sustained focus is needed by SHOPS Business Credit Specialist to present accurate financing models and select viable clientele for presentation to financial institutions.

Component 2 Lessons Learned and Recommendations

Training of multiple manufacturers is the only way to create long-term sustainable competition that will serve as quality control after the shutdown of the SHOPS and departure of program technical training staff. To encourage competition and quality, while increasing availability and accessibility of technologies for processors, training of two to three additional manufacturers in the complete range of mechanized processing equipment is recommended. Geographic location should focus on Gbarnga, Voinjama, Foya and Monrovia. Program efforts in commercialization should continue to focus on supporting increase in the scale of vendors and expansion of their networks.

COMPONENT 3: OIL PALM MARKETING

Summary of Component 3 Activities

Palm oil is not only in high demand in Liberia but also in the surrounding countries of the Mano River Union Region (Guinea, Sierra Leone and Cote d'Ivoire). Price fluctuations for palm oil in Liberia show annual fluctuation patterns with low prices during the peak production and processing season and the highest prices just before the onset of the high production season. Prices continue to remain higher than world market prices for approximately 9 months per year and dietary preferences favors the crude unrefined palm oil of the *dura* variety over the refined bleached palm oil from *tenera* produced by industry. Semi-formal marketing networks presently exist within the oil palm sector and program staff played a facilitative role in collecting and sharing market information with actors. Oil palm prices information was collected from a geographically diverse set of oil palm producers, processors, traders, oil palm depots and business that consume raw material for manufacturing. SHOPS staff and a consultancy assignment led to shared information among actors and across markets on types of buyers, the range of derivative palm oil products in Liberia, the conditions of purchase (such as quality and minimum quantities), and prices.

In the final months of the program, SHOPS began to critically investigate local market conditions as part of a market assessment. The market assessment team reviewed key documents and undertook key informant interviews in Montserrado, Bong, Nimba, and Lofa Counties with a diverse set of sector actors. The findings from the assessment were shared at a stakeholder validation meeting in Gbarnga with over 35 individuals active in the sector. One of the major findings of the study is that CPO production in Liberia appears to have increased by about 25,000 Mt annually since 2009.

Component 3 Main Life of Program Deliverables, Outcomes and Targets

- 30 additional processing or oil palm trading enterprises to be aware of oil palm marketing options.
- 9,000 processing clients to benefit from links to FM2 owners and improved processing equipment.

During the life of program, SHOPS developed a network of 100 individuals active in the sector. This network (which included producers, processors, oil palm depots, wholesalers and soap makers) was extremely helpful in conducting a marketing assessment study. The market assessment ended in a stakeholder validation where over 35 sector actors provided the program recommendations and confirmation to address key findings.

The program was slightly under the targeted achievement for the number of processing clients benefiting from links to Freedom Mill owners and improved processing equipment. However, the significant number of users benefitting from improved processing, and the continued sale of Freedom Mills and provision of services to new end users after the program leaves little cause for concern.

Table 4: Improved Smallholder Oil Palm Sector Marketing, Trade and Linkages Indicators

Indicators	Baseline Value	Y1 Annual Target	Y1 Ach.	Y2 Annual Target	Y2 Ach.	Y3 Annual Target	Y3 Total Ach.	Y3 % Ach.	Cum. Total Target	Cum. Total Ach.	Cum. Total %
# Processing Enterprises Aware of Oil Palm Marketing Options	0	10	18 F 4 M 14	10	40 F 20 M 16 Institution 4	10	42 15 F 25 M 2 Inst	400%	30	100 F 39 M 55 Institution 6	333%
# Processing clients benefitting from links to FM2 owners and improved processing equipment	2,675 1,177 F 1,498 M	2,500	2,706 1,649 M 1057 F	3,000	1597 1005 M 592 F	3,500	2,505 1571 M 934 F	72%	9,000	6,808 4,225 M 2,583 F	76%

Component 3 Challenges, Issues, Problems, and Constraints Encountered During Program Implementation

The marketing component lacked major constraints as actors are reasonably well-networked within their existing markets, but value the opportunity to meet with market participants from other county and regional markets. This is particularly important because the market is decentralized. Accurate regional and up-to-date market information will be useful for work under the financial services component to assist smallholders in accessing financial services. Equally, there is no national or sub regional institution perceived as a fair broker in providing non-biased, accurate and up to date information on oil palm prices and demand. No clear private sector actor(s) exists to step into this role with such a decentralized market, but a sub-regional industry group led by a coalition of local oil depots could be explored as future market analysis and industry convening lead. Financial institutions prefer understanding and sure end markets that will buy products produced by business who have applied for loans.

Component 3 Lessons Learned and Recommendations

Major opportunities to expand on activities in the marketing sector include: improving understanding of interior local and regional markets for both country oil/*dura* and

Mekindo/*tenera* oil; development of local systems or organization to conduct and share market analysis that not only tracks market price, but analyzes production and processing volumes, regional product flows and trade shifts; and, exploring possibilities of import substitution with local Liberian products that use large amounts of PKO (soap, cleaning products and cosmetics).

The next step in expanding marketing activities in the oil palm sector is a cross-border trade study that will identify key markets where Liberian palm oil is traded in regional destination markets. The study was designed and expected to start before program close out but was postponed due to concerns over the Ebola Virus outbreak in Guinean towns critical to the completion of the assignment. The study would have conducted visits to main cross-border markets in Liberia, as well as the main destination markets in Sierra Leone, Guinea, and possibly Cote d'Ivoire which were identified through consultation with Liberian traders to determine where the oil trade is regularly transacted (in Liberia or across the border.) The assignment would also quantify the annual volumes of palm oil traded through these markets; seasonal volume trends; and, document price and terms of trade across the markets.

COMPONENT 4: ENABLING ENVIRONMENT AND SUPPORT FUNCTIONS

Summary of Component 4 Activities

Activities under the enabling environment program component helped to organize and support the sector as a whole, creating an environment in which the supply chain activities described above can flourish. Activities under this component included improving access to financial products and arrangements to contribute to value chain growth and competitiveness and improve incomes and cash flow management for households in the agricultural sector. Specific interventions within the financial services sector included: work with one local MFI to improve their agricultural lending strategy; linkages between a local MFI and cooperatives to provide small scale loans for their membership; development of loan applications for sector actors with commercial banks; and support and collaboration with CBL and Afriland First Bank for the development and training of rural community financial institutions and credit unions.

The SHOPS program also had collaborative interests with other USG-funded programs including LESSP, PROSPER and LIFE III. SHOPS worked with LESSP to provide information related to oil palm production and technical information useful in feasibility studies for technologies using CPO and palm biomass. Collaboration with PROSPER related to the provision of technical information on improved seedling production, and support to PROSPER initiated processing enterprises by providing technical training staff and program trained manufacturers to train 5 processing groups in: the advantages of the Freedom Mill; working parts and their functions; assembling and disassembling; part servicing; a demonstration of *dura* and *tenera* palm processing; and cleaning after usage. With improved understanding of the processing technologies the groups began harvesting and processing palm immediately. SHOPS was active in the multi-stakeholder oil palm technical working group and RSPO National Interpretation process by contributing to coordination to insure the involvement of smallholders as well as presentations at stakeholder events.

Component 4 Main Life of Program Deliverables, Outcomes and Targets

- The Business Credit Specialist to assist 130 Liberian enterprises in submitting completed loan applications to financial institutions for \$130,000 worth of loans.
- 37 Liberian enterprises to receive at least \$37,000 USD worth of loans.
- Collaboration with LINSOP to deliver the Liberian Initiative for Sustainable Oil Palm for review by the RSPO.
- Develop 2 policy reform and regulation recommendations.

SHOPS was able to exceed all deliverables related to financial services under the enabling environment component. Loan applications to MFI and commercial banks allowed small farmers, cooperatives and agribusiness to access loans for multiple purposes including: working capital; raw materials and machinery; processing equipment; and bulk purchasing. Activities within the financial sector went beyond simple loan applications and approval to support long term efforts to improve financial services in rural Liberia by assisting in the creation of community owned and managed financial institutions.

SHOPS was able to complete one policy and regulatory recommendation in support of the CBL using volunteer technical assistance to draft a Policy and Regulatory Framework for Credit Unions. While a Small Producing Countries National Interpretation (SPC-NI) was completed during the program, SHOPS cannot claim credit for the process as numerous stakeholders were involved with several playing more instrumental roles than SHOPS. Due to the presence of four large concession companies in Liberia, sector planning has been coordinated through RSPO associated programs such as the RSPO Road Show; SHARP; and the Small Producing Countries National Interpretation process (SPC-NI). Partnerships between the companies, IFC and INGOs with RSPO membership have initiated these processes. A lack of membership in the RSPO by SHOPS implementing partners (ACDI/VOCA and Winrock International) means that the program could not serve as a liaison for major RSPO trainings and events. However SHOPS gained greater understanding of the RSPO process, principles and criteria and insured that independent smallholder attended important meetings and that constraints for independent smallholders were shared.

Table 5: Improved Smallholder Oil Palm Sector Enabling Environment and Support Functions Performance Indicators

Indicators	Base Value	Y1 Ann Tar	Y1 Ach	Y2 Ann Tar	Y2 Ach.	Y3 Ann Tar	Y3 Ann. Ach.	Y3 % Ach.	Cum. Target	Cum. Total	Cum. %
# Number of Enterprises Obtaining Credit	0	10	1 New 1M	12	160 New 100 (52 M 48 F) Cont*60 (28 M 32 F)	15	25 New 1 M Con 2M 19 F 3 Inst	166%	37	186 New 102 (54 M 48F) Cont* 84 (30 M 51 F, 3 Inst)	502%

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Indicators	Base Value	Y1 Ann Tar	Y1 Ach	Y2 Ann Tar	Y2 Ach.	Y3 Ann Tar	Y3 Ann. Ach.	Y3 % Ach.	Cum. Target	Cum. Total	Cum. %
Amount of Credit Obtained	0	\$10,000	\$25,000 \$0 F \$25,000 M	\$12,000	\$55,079 New \$34,246 (\$16,416 F \$17,784 M) Cont* \$20,833 (\$11,111 F \$9,722 M)	\$15,000	\$117,397 New \$4,000 (\$4,000 M) Cont \$113,397 (\$35,937 M \$5,750 F \$71,710 Inst)	783%	\$37,000	\$197,476 New \$63,246 (\$16,416 F \$46,784 M) Cont* \$134,230 (\$16,861 F \$45,659 M \$71,710 Inst)	534%
# Enterprises applying for credit	0	35	101 48 F 53 M	45	178 New 94 (45 F 48 M 1 Ins**) Cont* 84 (38 F 43 M 3 Ins)	50	0	0	130	279 New 195 (93 F 101 M 1 Ins**) Cont* 84 (38 F 43 M 3 Ins)	215%
Amount of credit requested	0	\$35,000	\$59,000 \$14,960 F \$44,040 M	\$45,000	\$216,159 New \$55,549 (\$20,138 F \$35,411 M) Cont* \$160,609 (\$54,861 F \$105,748 M)	\$50,000	0	0	\$130,000	\$275,159 New \$114,650 (\$35,098 F \$79,451 M) Cont* \$160,609 (\$54,861 F \$105,748 m)	212%
Policy reform And regulation recommendations made	0	0	0	1	1	1	0	0	2	1	50%

*Continuous

Component 4 Challenges, Issues, Problems, and Constraints Encountered During Program Implementation

Financial services constraints in the smallholder oil palm sector are similar to the rural and agricultural sectors in general. Constraints include: financial institution's non-existent infrastructure and staff in rural areas; financial institution's limited interest and/or understanding of an appropriate methodology for agricultural lending; and loan duration limits that cannot finance production of crops like oil palm due to high initial costs and required long repayment periods. Borrowers on their part have limited financial literacy and capacity in: financial record keeping that can be valuable for banks to determine cash flow; undertaking market assessments that contribute to accurate and sound business strategy and planning; developing and following through on loan proposals; and in some cases proven management experience that may increase

the perceived risk to lenders with new business. SHOPS has worked to address these constraints through assistance in the creation and capacity building of local MFIs and decentralized community owned and managed financial institutions in rural Liberia. Volunteer technical assistance assignments have sought to improve financial record keeping; and, assist with market assessments and business strategy for producers and businesses involved in oil palm.

Component 4 Lessons Learned and Recommendations

To improve access to financial services for oil palm smallholders and processors, focus should be placed on strengthening the capacity of identified financial institution partners to deliver a range of services to a large number of commercial farmers, smallholders and agribusinesses. The relationship between SHOPS, Afriland First Bank and the Karnplay Rural Community Financial Institution is an important model to improve rural financial services. With sustained strategic support and collaboration, the model can likely improve agricultural production, trade and rural livelihoods. Support to credit unions to adopt strong management and governance practices, and subsequent training to providing innovative financial services such as mobile money will allow their membership to benefit from a range of appropriate services while covering operational costs.

Future interventions in the sector should strive to improve relationships and knowledge transfer between value chain actors and FIs. The program could seek to bridge gaps between financial institutions and value chain actors by: holding stakeholder meetings on value chain financing in partnership with financial institutions; organizing site visits by financial institutions to potential actors; encouraging actors to use financial services in their businesses (e.g. savings/insurance/mobile money); and promoting knowledge sharing on financial literacy through outreach resources (radio, media, audio-visuals).

CROSS CUTTING SECTORS

Summary of Cross-Cutting Activities

Environmental Mitigation and Monitoring

To fulfill the programs obligations under the SHOPS technical proposal, and complement the findings of the IEE and PERSUAP, Winrock's Environmental Compliance Specialist traveled to work with SHOPS staff at the onset of the program. As a result of that training, several key areas were highlighted as priority focal points for SHOPS including: 1) orientation for future SHOPS volunteers and other technical assistance; 2) development of brochures, signboards, and other informational outreach materials; and, 3) ongoing evaluation and research on pesticide availability and usage. SHOPS resubmitted the EMMP to the USAID and received approval by the MEO and SHOPS to implement the EMMP.

SHOPS implemented numerous volunteer assignments that helped reinforce environmental mitigation and monitoring in oil palm production. Pertinent assignments included: irrigation assignments on drip irrigation, mapping of slope, watershed management and stocking of water sources; soil fertility and IPM assignments that covered composting techniques, use of LCPs and use of palm processing waste in restoring soil fertility; and a mapping and land usage assignment

that covered appropriate land use for oil palm plantings by selection in terms of slope, soil properties and bedrock depth.

The program provided a variety of technical documents related to IPM for oil palm production including guides focusing on nursery management, management of the immature phase of seedling production and corresponding illustrated guides. The guides presented best management practices, pests, diseases and PERSUAP recommended techniques for usage, storage and disposal of pesticides. The guides also provided tables that included locally available agrochemicals and their status as approved or rejected under the PERSUAP. Staff conducted outreach to prevent negative environmental impacts and promote best practices including mulching, composting, correcting weeding and other techniques to limit the onset of pest and disease. SHOPS Production Extension Staff trained nursery operators in the proper use and application of fertilizer under the second phase of nursery production. Under the processing component, technical trainers reviewed work place safety at the onset of all manufacturing trainings. This included protective clothing, proper eyewear when welding, and safe use of equipment and machinery.

Gender Outreach

It was important that women be adequately represented in the SHOPS program. During the life of the program the team designed a variety of activities to insure that trainings, promotional and commercialization activities, and vendor networks were involving and inclusive of women. An initial, participatory gender workshop for SHOPS program staff was conducted by a Gender Specialist consultant. Initial recommendations for improving SHOPS outreach to women were developed based on findings of the gender PRA and workshop and included:

- Use of women's networks to increase awareness of processing equipment and palm production among women farmers
- Establish strong women's groups as Freedom Mill vendors and nursery operators
- Develop equipment lease financing models for women to purchase FM2
- Target successful women farmers in the main palm belt to pilot financing and production models to support women's own account oil palm farms
- Assist young women's entry into palm oil processing and trading by linking them to large depot/traders and MFI for microfinance training and equipment loans
- Disaggregate data for additional indicators in the PMP to better measure women's participation in SHOPS

During program implementation, SHOPS addressed the recommendations of the Gender Specialist by collecting disaggregated data beyond the originally intended indicators 1, 5 and 17 to include indicators 3, 13, 14, 15, 16, 18, 19, 20 and 21. Two female Freedom Mill vendors and one female-managed cooperative were trained to promote processing equipment in Buchanan, Voinjama and Karnplay. Promotional activities under the processing component also sought to target potential women processors by the airing of radio spots on local radio stations specifically designed to target women interested in oil palm processing. The ad was a conversation between two female friends discussing the advantages and profitability of the machine Freedom Mill processing unit. Process unit demonstrations encouraged women's attendance with over 6,100 women attending 73 demonstrations over the life of the program.

Under the production component, six female-managed nurseries were trained and produced approximately 13,500 improved oil palm seedlings for sale and planting. In order to encourage the purchase and successful planting of seedlings by women, a volunteer technical assistance assignment was fielded to develop oil palm production models that provide women the investment knowledge and technical expertise to successfully start their own oil palm plots.

Progress in improving rural women's access and involvement with financial services was significant under the program. Individual women members of cooperatives benefited from small loans to help with production and agricultural trade activities. The Gbehlay Geh Rural Women's Structure was approved for a significant loan from Afriland First Bank to engage in bulk buying of rice and palm oil. Gbehlay Geh Rural Women's Structure also provided a significant leadership role in the establishment of the first MC2 rural community financial institution in Liberia. The bank currently has over 65 female shareholders.

Main Life of Program Deliverables, Outcomes and Targets

- Selection of beneficiaries with attention to gender and marginalized groups
- Develop and implement an environmental mitigation and monitoring plan (EMMP).

SHOPS was able to meet overall objectives for both the gender outreach and environmental mitigation and monitoring sub-components. SHOPS developed and implemented the EMMP, through volunteer technical assistance assignments and extension staff field support. Women were involved across all major components. Major accomplishments included the creation of: 34 female owned processing enterprises; six female owned nurseries trained in seedling production; 139 female producers planting improved oil palm seedlings; and 48 female farmers and one female-managed cooperative benefiting from over \$72,000 USD in loans. Women's organization showed excellent repayment with one organization's members taking and repaying three rounds of loans from a Liberian MFI.

Challenges, Issues, Problems, and Constraints Encountered During Program Implementation

In general, program staff experience with conservation, environmental mitigation and monitoring techniques, and gender outreach were somewhat limited at the onset of the program. With time, technical staff showed a willingness to learn, adopt and implement improved techniques and gender sensitive strategies into their extension activities. Assignments focusing on conservation with volunteers were especially relevant in building staff capacity in conservation.

More complicated recommendations relating to equipment leasing or financing were not realized due to a lack of sustained focus by the program. A proposed model or financing scheme for women to enter into oil palm processing should be developed so that program staff has a step-by-step model for implementation.

Lessons Learned and Recommendations

As stated previously, production practices in Liberia frequently rely on extensive as opposed to intensive land usage. Volunteers should be recruited with specialized experience in conservation and natural resource management, as that expertise is somewhat limited in Liberia. Future assignments should be implemented with groups of professional nursery operators and producers

to pass on important natural resource management and conservation skills to stakeholders who can then share and market the skills in their communities. Equally, small- and medium-scale farms with a focus on agribusiness could benefit from farm mapping or surveying assignments that teach land use planning and conservation techniques before the onset of planting. Such trainings would improve the capacity of SHOPS extension staff, producers and private sector farm management staff. All assignments should have built in time for at least 1 lecture at agricultural training institutions such as Cuttington. Ideally the lecture would be composed of at least one pre- and one post-assignment lecture.

Under the gender outreach component, it would be interesting to have a full-time specialized staff member in the field that could review activities with field staff to better monitor and incorporate gender sensitive strategies in implementation of all major components. This position would be especially important to improving processes for nursery operator selection, commercialization of seedlings, demonstration and promotion of processing equipment, creation and support of input supply networks, and selection, development and fielding of volunteer technical assistance assignments.

VOLUNTEER COMPONENT

Summary of Component Activities

Over the life of program, SHOPS mobilized 23 F2F volunteers to provide knowledge, technical assistance, and training to support the major program components. Short-term volunteer consultants advised local farmers on technology transfer, natural resource management, quality control, product diversity, business strategy among other agribusiness issues. With the volunteers' expertise, SHOPS worked to improve the quality and viability of agricultural support institutions and financial institutions that provide much-needed resources to the agricultural sector. Under SHOPS, host institutions included: credit unions, cooperatives, producer groups, agribusinesses and local businesses involved in downstream processing.

Highly successful assignments included work with cooperatives on irrigation systems for their nurseries, a market assessment study for the development of long term nursery production strategies, multiple assignments addressing natural resource management and simple techniques to improve soil fertility for small and medium scale out-planters, support to the CBL and LCUNA to develop a credit union policy and regulatory framework, and support to business and credit unions to improve management skills.

SHOPS Main Life of Program Deliverables, Outcomes and Targets

SHOPS' objective under the volunteer technical assistance component was to field a total of 24 volunteers to support the oil palm sector. A total of 25 volunteer SoWs were drafted and 23 assignments were fielded by volunteers. Unfortunately, the two remaining SoWs were cancelled due the outbreak of Ebola along the Guinea-Liberia border near to the posting sites for the two assignments.

Table 6: Farmer to Farmer Volunteer Assignments Completed

Indicator	Y1 Annual Target	Y1 Ach	Y2 Target	Y2 Ach	Y3+No Cost Extension Target	Y3+No Cost Extension Ach.	Y3+No Cost Extension % Ach.	Cum. Total Target	Cum. Total Ach	Cum. Total % Ach
# Farmer to Farmer Volunteers Providing Support to SHOPS	8	2	8	12	8	9	112%	24	23	95.8%

Challenges, Issues, Problems, and Constraints Encountered During Program Implementation

Other than the aforementioned outbreak of Ebola at the end of the program, and the low number of assignments in year 1 due to presidential elections and program startup, there were no major issues or problems in implementing volunteer technical assistance assignments. The low number of assignments in year 1 was resolved by extra assignments in years 2 and 3.

Volunteer Component Lessons Learned and Recommendations

The most successful volunteer assignments were often those where a significant amount of preparation between the host institution, SHOPS and the volunteer took place during the drafting of the SoW and before the assignment. In order for the program to best prepare assignments with all potential stakeholders (including hosts institutions, other individuals or organization with interest in the training, agricultural training institutions, other USG programs and MOA field extension workers) a field staff coordinator capable of bridging technical and volunteer based administrative work is preferable to a Monrovia-based team of purely administrative coordinators. In the field collaboration with hosts and technical field staff would likely result in easier planning and implementation of assignments to provide technical assistance to a broader base and total number of beneficiaries. Logistics and coordination in Monrovia is relatively simple for established offices and has little bearing on the quality of assignments - while increased coordination efforts in the field are likely to have a direct impact on the quality of volunteer assignments.