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KENYA HORTICULTURE COMPETITIVENESS PROJECT ANNUAL REPORT #2, 2011- 2012



October 2012

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I. EXECUTIVE SUMMARY

The Kenya Horticulture Competitiveness Project (KHCP) is working to increase the food security and incomes of 200,000 smallholder farmers through enhanced productivity, crop diversification, and improved market access. This report highlights major achievements and activities for the period October 2011 to September 2012.

Overall

- USAID-KHCP provided commercial and technical support to 91,995 farmers who are investing in new horticultural crops and technologies and adopting a more commercial approach to farming as a viable business.
- Cumulative gross sales by all USAID-KHCP supported growers in the project's focus crops totaled \$38,338,280, an increase of 162 percent over the first year of the project.
- Project technical managers conducted a comprehensive range of trainings with partners for 184,173 smallholder farmers (52 percent women).
- New co-investment partnerships established this year with companies and NGOs, including the Fresh Produce Exporters Association of Kenya (FPEAK) and Monsanto, are bringing new technologies, agronomic services, and business services to an additional 80,500 beneficiaries.
- A total of 1,260 demonstration plots throughout the country are showcasing best practices and new technologies in the USAID-KHCP focus crops: fruits, food crops, and vegetables for export and domestic market.
- Major market information products were released including the Retail Audit Survey of domestic markets for fruits and vegetables, and the Global Competitiveness Progress Report, benchmarking the viability of Kenya's horticultural industry in relation to its competitors.
- Market development services resulted in 255 business partnership agreements in High Rainfall Zone I (HRI) between wholesalers, brokers, processors and retailers, covering sweet potatoes, capsicum, traditional vegetables, potatoes, mangoes, and passion fruit.
- USAID-KHCP participated in the consultative process that resulted in a newly approved National Horticulture Policy. The project's goals are fully aligned with the policy's objectives of industry growth and food and nutrition security.
- A Nutrition Action Plan was developed to expand the nutritional impact of USAID-KHCP on rural households. It includes a commercial ag-nutrition model to harness private sector investment in new nutrition product lines.

Fruits

- Average farm gate prices for the highest quality passion fruit have been at record levels averaging Ksh 48 (\$0.60) per kilogram (kg). This year, 1,233 hectares of passion fruit were planted, and sales of both fresh fruit and seedlings reached \$9.8 million.
- Passion fruit growers achieved net income per hectare increases of more than 100 percent in 2012 (from the 2010 baseline), reaching an average of \$13,816 per hectare.
- 17 passion fruit nurseries were established through co-investment arrangements with partners, leveraging another 14 new private investments, all with a combined capacity of over two million seedlings per year, sufficient to plant 1,300 hectares of passion fruit annually. USAID-KHCP's nursery system provides a sustainable hub for delivering extension services and technical advice.
- USAID-KHCP technical assistance to banana growers this year resulted in 124 hectares of banana plantings using tissue culture material. Three banana hardening nurseries were commissioned in Western Region, with a capacity of holding 30,000 banana plantlets per year, enough to supply 600 farmers.
- Gross sales in banana reached \$206,645 for production levels of 893 metric tons (MT), resulting in net income gains for the average banana producer of \$365, an increase of 33%.

Food Crops

- The more than 5,000 farmers partnering with USAID-KHCP on sweet potato production and marketing have produced 1,500 hectares, increased yields by an average of 90 percent, and generated nearly \$2 million in sales, or \$621 per farmer.
- A field-based training program on basic agronomic practices was provided to 37,625 farmers, alongside a network of 90 commercial demonstration plots, showcasing techniques and best practices.
- A new 'Rapid Vine Multiplication System' was developed in collaboration with KEPHIS. It was rolled out this year across 149 sites covering 24 hectares and 4.3 million vines of basic sweet potato root stock.
- Irish Potato farm sales from more than 1,000 hectares of commercial crop supported by USAID-KHCP technical assistance and extension services have exceeded \$2.6 million this year.

Domestic Market Vegetables

- 95 greenhouse tomato sites were established during the year using measures to combat soil-borne and plant diseases such as fusarium and bacterial wilt. These have reached more than 13,000 farmers through on-site trainings on hybrid tomato varieties, agronomy, and postharvest management.
- Gross sales of tomatoes from participating farmers reached \$14.2 million, making it the largest overall income earner for USAID-KHCP farmers.
- Farmer awareness and confidence has boosted pigeon pea seed multiplication from 64 to 104 MT. USAID-KHCP also supported private sector investment in specialized seed multiplication and processing technology, with packaging and machinery for a new range of seed retail packs suitable for small scale plantings. Over 30,000 farmers will have access to these new varieties.

Export Market Produce

- Sales of peas and beans surpassed \$1 million with nearly 400 hectares planted. Resulting incomes for growers have improved by 20 percent in dry weather and over 100 percent in wet weather.
- During the year, flower farmers produced nearly 11 million marketable stems valued at \$407,464. Introduction of new varieties and strong market demand resulted in increased price per stem of 14 percent.

Lessons Learned

- Water shortages in the semi-arid areas had a profound impact on crop performance. Rainwater harvesting technology, although highly successful, cannot be fully exploited in a drought year.
- The perception of water abundance in the high rainfall areas creates a misleading sense of complacency among farmers and an over-reliance on rain-fed farming, creating disincentives to invest in irrigation, which is more consistent and efficient.
- Poor recordkeeping means most farmers are making key business decisions on cropping and investment choices based on guesswork or emotion. USAID-KHCP is expanding its business skills trainings to reach an additional 60,000 farmers in 2013.
- Although still an area of high potential, exporters' confidence with smallholder outgrower schemes is declining and the economic future of this key sector may be under threat.

Priorities for Next Year

- Scaling up project impact in the potato and banana food crops, particularly through improving farmers' access to clean planting material.
- Boosting exporter confidence and commitment to new business models for sustainable and self-supporting smallholder outgrower schemes.
- Enhancing local market compliance to quality standards, traceability, and food safety.

2. INTRODUCTION

USAID-KHCP is working to build a highly competitive, inclusive horticulture industry in Kenya. To achieve its objectives, the project works in close cooperation with a wide array of stakeholders that support and represent the horticulture industry, including the Ministry of Agriculture (Horticulture Division/MOA), Horticultural Crops Development Authority (HCDA), Kenya Agriculture Research Institute (KARI), Kenya Plant Health Inspectorate Service (KEPHIS), and others in the private and public sectors. USAID-KHCP is also an active participant in the National Task Force on Horticulture.

Working with these and other stakeholders, USAID-KHCP is addressing constraints to national level horticulture competitiveness and household income and food security across three major components:

- **Productivity and Food Security** – focusing on crop selection, technology transfer, and nutrition.
- **Value Addition and Postharvest Management** – increasing and strengthening linkages between growers, micro-processors, and larger-scale secondary processors.
- **Value Chain Coordination, Policy, and Marketing** – providing specialist training and technical assistance to national institutions and trade associations.

2.1 REPORT METHODOLOGY

Due to the high number of beneficiaries and ambitious targets set in our proposal, sampling of program beneficiaries is the primary methodology for collecting and reporting on impact indicators. These indicators include gross margin, percent change in yield, production per unit, incremental sales, and technology adoption. Due to the diversity of farmer partners, growing conditions, and target products, the population was stratified by these criteria. Within each stratum, farmers were randomly selected to ensure an accurate, representative, and statistically rigorous sample. To eliminate the possibility of omitted variables and/or selection bias, a random sample was selected from the initial farmer-partner base, but was designed to grow to incorporate new clients as they are included into the program.

After concluding the final round of data collection in September 2012, the data were cleaned, incomplete surveys were dropped, and the analysis was finalized. During fiscal year 2012 (FY2012), nearly 700 farmers were surveyed to be included in the sample. Due to inconsistencies or incomplete crop cycles the final count was reduced to 512. These farmers were surveyed individually on demographic information, plantings, yields, sales, and costs by USAID-KHCP's M&E specialists. The sampled farmers received regular visits and contact from the M&E specialists to monitor their crop cycles and financial information. Once the information was collected it was immediately entered into CIRIS, Fintrac's custom database.

To abide by the principles of a statistically rigorous sample methodology, crops with 15 or fewer sampled farmers were not used to extrapolate across the entire farmer-partner population. In these instances, USAID-KHCP relied on its standard method of partner reporting. In the future, partner reporting will continue to supplement USAID-KHCP data, but greater reliance on sample extrapolation will be possible. FY2012 is the first year that USAID-KHCP is reporting based on the sampling methodology. The data represented in this report apply a mixed-methodology, using extrapolation from the sample averages applied across the entire population of farmer-partners under USAID-KHCP, where possible. The information coming from the sample was cross checked with existing partner reporting methods, USAID-KHCP agronomists, and partner agronomists to identify any gaps in the performance monitoring process and action was taken where necessary to clarify any discrepancies.

3. PRODUCTIVITY AND FOOD SECURITY

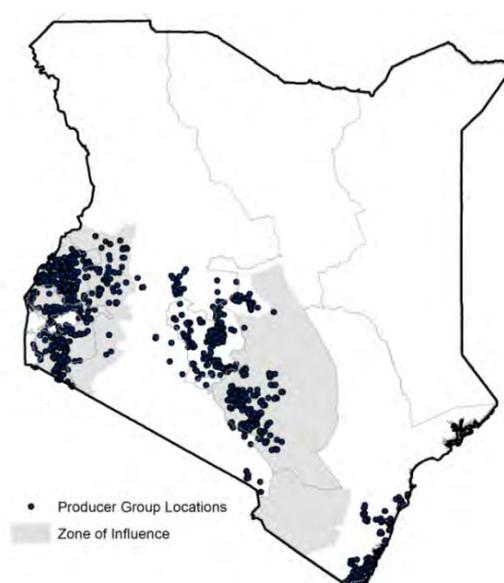
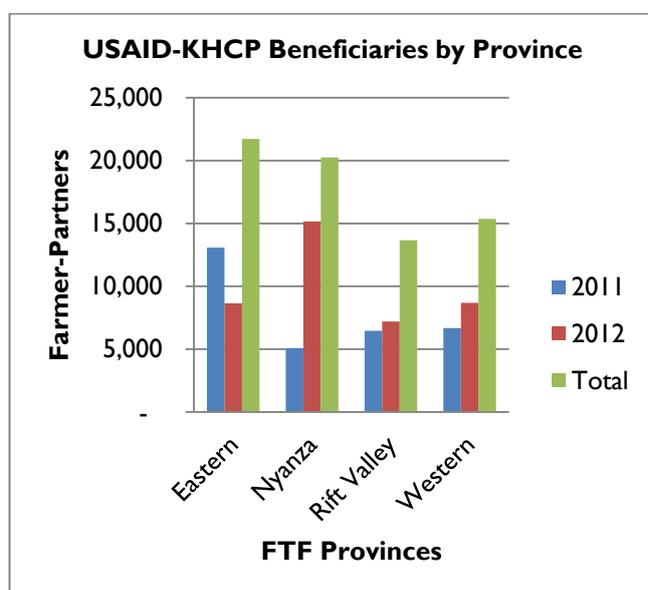
Kenya’s horticulture industry employs over six million Kenyans directly and indirectly and contributes 33 percent of agricultural GDP. Of the total horticultural production, about 96 percent is consumed locally, while the remaining four percent is exported; yet in terms of incomes, the export segment earns the country vital foreign exchange in excess of \$1 billion per annum compared to the \$3 billion per annum value of the domestic market. USAID-KHCP is providing commercial and technical support to 91,995 farmers who are investing in new horticultural crops and technologies and adopting a more commercial approach to farming as a viable business. A powerful combination of public-private partnerships is transferring export skills and expertise into the local market and in return opening up new supply areas and market opportunities for exporters.

3.1 FARMER-PARTNERS AND GEOGRAPHICAL COVERAGE

USAID-KHCP continues to align activities geographically within the Feed the Future zones of influence designated as *High Rainfall 1* and *Semi-Arid 2* corresponding to the 22 focus counties. These operational areas lie within the four provincial boundaries of Eastern, Nyanza, Rift Valley, and Western, which is where the project impact is concentrated as shown in Figure 1 and 2. The project is currently working in all 22 focus counties, with particular growth in 2012 in Nyanza and Western provinces. Opportunities are being created for expanding production and marketing of key crops in these areas, including banana (fresh and processed), sweet potato, passion fruit, and vegetables (for export and local market).

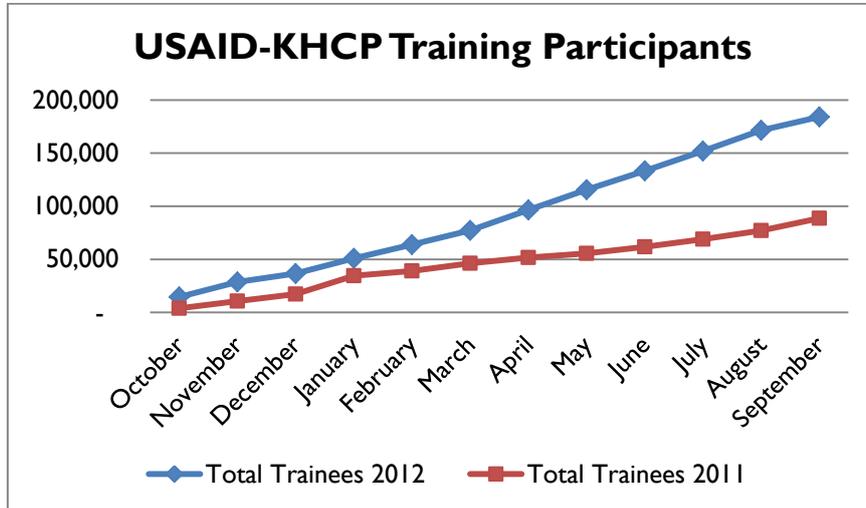
Three new co-investment partnerships were established this year with Nyanza-based companies and NGOs – Green Zone Agencies, C-MAD, and Crop Nutrition Laboratory Services. Together they are bringing agronomic and business services and introducing new technologies to 13,484 growers. A major new agreement with the Fresh Produce Exporters Association of Kenya (FPEAK) was designed to impact the entire horticulture industry and benefit more than 50,000 farmers directly. And a co-investment with global giant, Monsanto, will transfer technical knowledge and skills to 17,000 smallholders, and expand the company’s customer base.

Figure 1: USAID-KHCP Provincial Breakdown **Figure 2: USAID-KHCP Geographic Coverage**



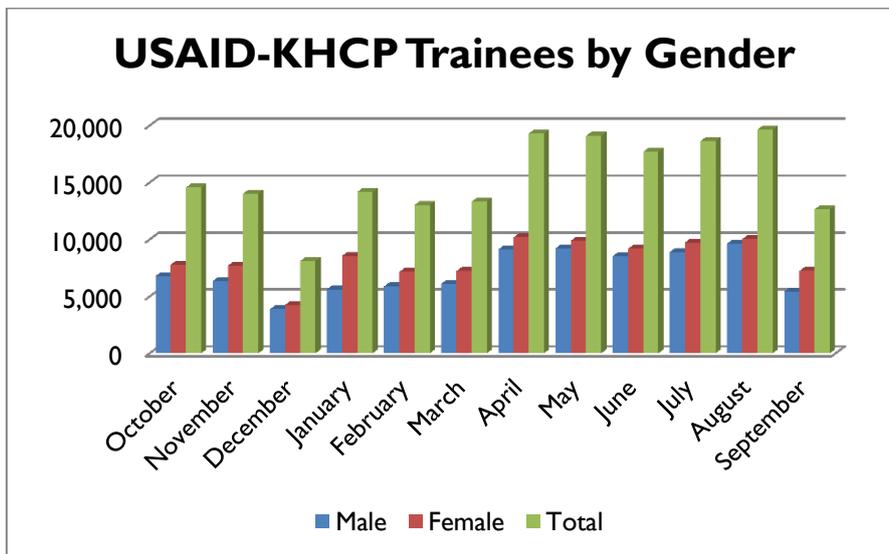
Farmers and business entrepreneurs that are taking risks with their capital and land by diversifying into high value horticultural crops need access to market information and sustained capacity building in all aspects of the value chain from ‘soil to stomach.’ As a result USAID-KHCP field managers conducted trainings with partners for 184,173 trainees in FY2012, as shown in Figure 3.

Figure 3: USAID-KHCP Number of Farmers Trained, 2011-2012



One of the key capacity building benefits provided through this training seeks to improve gender integration and equity, starting with ensuring women’s participation in all project activities. Figure 4 shows the gender breakdown of USAID-KHCP trainees, currently at 52 percent women. For other gender and youth impacts, see section 4.

Figure 4: USAID-KHCP Trainees by Gender FY 2012



3.2 TROPICAL FRUITS

3.2.1 Passion Fruit

USAID-KHCP's priority interventions in passion fruit this year include:

- a) Establishing high-quality certified seedling nurseries
- b) Improving water management and utilization
- c) Promoting improved passion fruit varieties

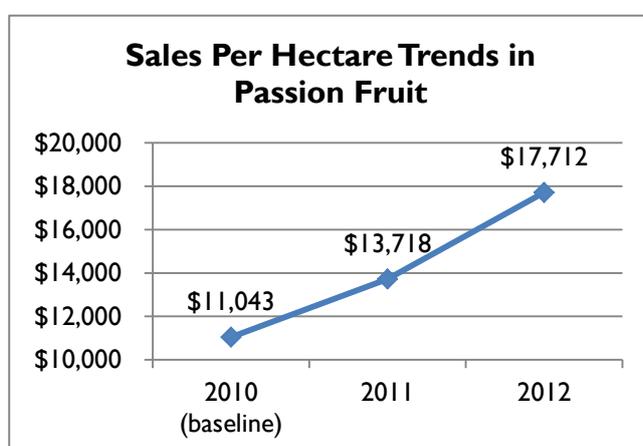
USAID-KHCP provides extensive and sustained technical assistance and marketing services throughout the passion fruit value chain in the key production areas in Kenya. This includes low altitude production of yellow passion fruit in the Coast and lower Eastern destined mainly for the juice processing market. However, production is largely concentrated in the high altitude areas in the Rift Valley, which favor the purple varieties for fresh and export markets. Concerted efforts to enhance the uptake of passion fruit as a viable value chain is demonstrated by the fact that the crop is now spread from the conventional areas of the Rift Valley to Nyanza, Western, and other parts of the Rift Valley such as Molo, Narok, Trans-Mara, Machakos, Makueni and Kajiado.

In 2012, purple passion fruit farmers and nursery operators enjoyed good and reliable markets for both fruits and seedlings. During the year, farm gate prices remained stable, at Ksh 48/kg (\$0.56/kg) on average throughout the year, while never going below Ksh 40/kg (\$0.47/kg) and even reaching an extremely profitable level of Ksh 80/kg (\$0.94/kg) for long periods. Stable prices led to increased plantings in the second quarter of the year, with 175 hectares of new passion fruit planted, increasing the total area under production to 1,233 hectares. Based on information extrapolated from sampled farmers, sales of both fresh fruit and seedlings reached \$9.8 million (Table 1), making it the second largest generator of total sales for USAID-KHCP growers after tomatoes. By contrast to tomatoes, however, passion fruit has only half the total area under production and just over one-fourth of the number of farmers growing the crop, giving passion fruit the highest returns for planting.

Table 1 : Passion fruit sales from USAID-KHCP farmer-partners

	Area (ha)	Production (kg)	Gross Sales (\$)	Gross Sales (Ksh)
Fresh Purple	1,233	12,640,463	8,681,540	694,524,829
Fresh Yellow	309	3,223,784	824,609	65,968,752
Seedlings	1.72	601,189	294,968	23,597,440
Total	1,544.08	16,465,436	9,801,137	784,091,021

Figure 5: Passion fruit sales per hectare, per crop cycle

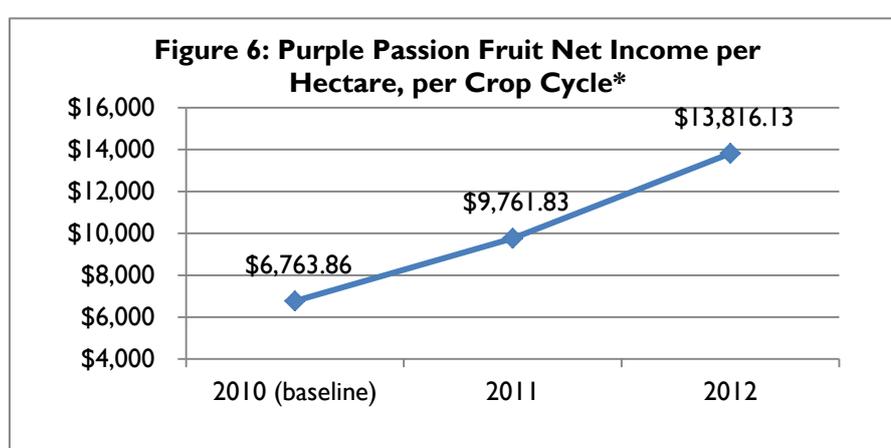


Increased awareness of standards for export of passion fruit among farmers and the improved availability of premium quality fruit are encouraging a number of exporters to source passion fruit from USAID-KHCP supported growers. Sales achieved have increased consistently since the baseline year 2010, reaching an average of \$17,712 per hectare per crop cycle (2-3 years, depending on the orchard) this year.

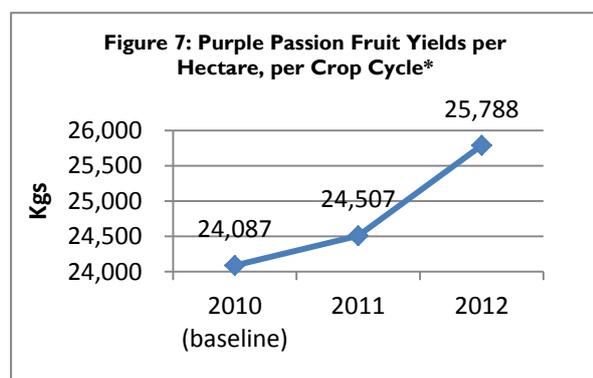
To maintain this upward trend, developing a reliable supply of clean planting material (seedlings) is key. Toward that end, USAID-

KHCP has established 17 nurseries through co-investment arrangements with partners. These have stimulated another 14 new private investments, all with a combined capacity of over two million seedlings per year, equivalent to 1,303 hectares of passion fruit annually. All of the nurseries have been registered with the Horticultural Crops Development Authority (HCDA) and 12 are also fully certified by Kenya Plant Health Inspectorate Service (KEPHIS). The rest are currently in the pipeline for certification in 2013. Specialized training for nursery operators and staff provided by USAID-KHCP and complemented by Kenya Agricultural Research Institute (KARI) has introduced new grafting techniques and improved seedling viability and subsequent orchard lifespans.

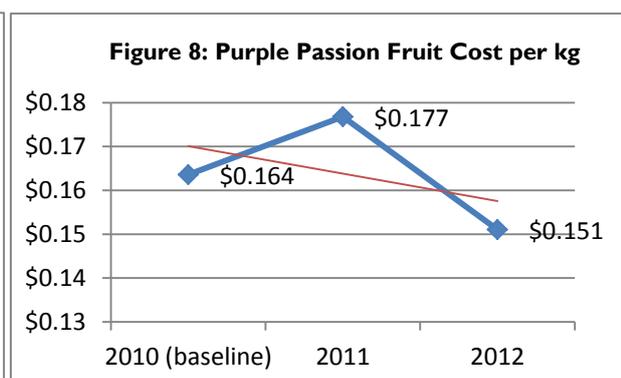
USAID-KHCP's nursery system also provides an effective and sustainable hub for delivering extension services and technical advice throughout the local farming communities. Improved agronomy and significant on-farm investment maintains purple passion fruit's position as a high value smallholder cash crop, achieving average net income per hectare increases of more than 100% in 2012, over the 2010 baseline (Figure 6).



*Crop cycle is 2-3 years



*Crop cycle is 2-3 years



A grower guide for passion fruit was completed in the year and is available to growers and industry stakeholders as reference material for production and for assessing financial requirements of passion fruit farming. Yield levels have continued to improve and production costs have decreased as a result of more efficient input usage and improved productivity (Figure 6 and 7).

USAID-KHCP value chain research in Rift Valley shows that a farmer investing in purple passion fruit can earn between five and eight times the cost of production, while remaining with capital investments that can be reinvested into the business for at least 12 years. This means that a farmer investing in 0.2 acres (175 plants) of passion fruit will invest Ksh 30,000 (\$353) and earn Ksh 175,000 (\$2,058) at average prices of Ksh 50/kg (\$0.59/kg). The project's combined initiatives are geared

toward achieving these results. To date, USAID-KHCP has accomplished sustained improvement in purple passion fruit profitability and return on investment, as demonstrated by productivity and income results (Table 2).

Table 2: Passion Fruit Productivity, 2012

	Yields (kg/ha)	Sales (USD/ha)	Cost per unit (USD/kg)	Net Income (USD/ha)
Current	25,788	\$17,712	\$0.15	\$13,816
Percent change from baseline	7.06%	60.39%	-7.66%	104.3%

By contrast, the yellow passion fruit sector where USAID-KHCP interventions are concentrated in the Coast has had a difficult year. Overall production of yellow passion fruit declined during the year which was attributed to poor rains and low crop yields. The 15 percent rate of improvement in crop productivity experienced by farmers supported by USAID-KHCP from 9,086 kg/ha in 2010 to 10,450 kg/ha in 2011 has not been maintained. Many of the new plantings failed due to erratic rainfall patterns with very few farmers having access to reliable supplementary irrigation. To address this challenge, USAID-KHCP interventions to improve water resource management include 20 water harvesting sites that can be used for both vegetables and passion fruit. However, site performance was inconsistent with nearly 40 percent not receiving enough rainfall run-offs to even become operational.

The traditional low-input low-output model for yellow passion fruit production is slowly changing through the technical assistance packages provided by USAID-KHCP to 774 farmers (62 percent female). Demonstration sites include a package of technology for new trellising systems, drip irrigation and correct planting of new seedlings using small pits and compost. To ensure sustainability of passion fruit productivity, USAID-KHCP is working closely with other key passion fruit stakeholders including KARI-Matuga, Micro-Enterprises Support Program Trust (MESPT), Ministry of Agriculture, input suppliers, and exporters to scale up commercialization of the crop. Farmers have been linked to Frigoken, a major processing company, who is the main buyer of yellow passion fruit in the Coast region. Frigoken has invested in a processing plant in Mombasa with an established capacity of handling 3,000 MT of fruit per year, providing a ready market for yellow passion fruit growers in that region.

In an effort to increase collaboration along the value chain, the National Passion Fruit Forum was organized by the project in May and brought together all the key industry players ranging from financiers, exporters, processors, regional traders, service providers, and various government ministries. The workshop created alliances that enabled smallholders to access better market prices, and stimulated specific credit packages suitable for the three-year crop cycle. The improved coordination of the passion fruit sector in Kenya is helping to maintain the momentum on improving its global competitiveness.

3.2.2 *Banana*

USAID-KHCP's priority interventions in banana during the reporting year include:

- a) Promoting tissue culture technology
- b) Establishing commercial nurseries
- c) Consolidating marketing infrastructure

Banana is Kenya's most important fruit on the domestic market making up 87 percent of traded fruit volumes and produced exclusively by smallholders. In 2011, bananas constituted 37.6 percent of the

total value of fruit produced and 11.1 percent of the total value of domestic horticulture. It is widely consumed across the whole country and contributes significantly to the incomes and household food budgets of many rural families. Both green and ripe bananas are raw materials for various processed products that are gaining popularity.

The traditional practice of exchanging banana suckers from one farm to another in the same area has been a major factor in spreading pathogens and reducing yields. In recent years disease-free banana plants have become available from tissue-cultured (TC) plantlets produced under sterile laboratory conditions. TC bananas grow faster, fruiting within 340 days compared to 420 for conventional bananas, have a higher yield and market value, and are rich in vitamins and minerals.



Photo by Fintrac Inc.

Antony Atesa of Africa Harvest trains farmers on orchard management, maturity indices, harvesting techniques and postharvest handling of tissue culture banana during a farmer field day in Nyeri County. Tissue culture bananas produce fruit, on average, 80 days sooner than conventional bananas and produce higher yields.

USAID-KHCP efforts this year focused primarily on promoting TC technology adoption among smallholder groups, in partnership with private sector tissue culture laboratories. The project initially targeted the banana sector in Central regions where more experienced growers had the potential to scale up TC technology quickly given their proximity to existing TC labs. Aberdare Technologies Ltd TC lab, for example, has supplied 49,908 banana plantlets to date through USAID-KHCP demonstration sites and another 3,150 plantlets to neighboring farmers through field days.

Activities are currently being scaled up into Kakamega, Meru, and Kisii counties, which have substantial value

addition opportunities in addition to high volume mainstream production. Farmers in Western region have already been linked to the Oserian TC lab which supplied an initial consignment of 14,900 banana plantlets for commercial demonstration.

Another area of intervention for USAID-KHCP is in supporting the establishment of small-scale commercial nurseries for distribution of certified plantlets to improve farmers' access to new and improved varieties. This year, three banana hardening nurseries were commissioned in Western Region, with a capacity of holding 30,000 banana plantlets per year, enough to supply 600 farmers and plant 25 hectares.

At the same time, the project's technical team is working together with KARI and agrochemical companies to map out the key areas of pest and disease infestation and provide both information and extension services on corrective measures to banana growers. Soil fertility analysis through USAID-KHCP partner Crop Nutrition Laboratory Services has been expanded, as has intensive training in precision application of supplementary fertilizers to increase yields and productivity. Other project partners involved in the banana value chain have trained 13,663 farmers (57 percent female) in the year covering topics such as orchard layout, land and planting hole preparation, water harvesting, and drip irrigation.

USAID-KHCP technical assistance to banana growers this year has resulted in 124 hectares of banana plantings using TC material. This is impacting a total of 4,995 farmers (64 percent female) whose food supply and cash incomes will significantly increase as harvesting begins. Initial sales have already reached \$206,645 for production levels of 893 MT (Table 3). With manageable production costs of around 18 percent, farmers can expect profitable gross margins of \$365 for their crop (assuming average plot size of 0.18 ha). This represents an increase of 33% from the baseline (2010).

Table 3 : Banana sales from USAID-KHCP farmer-partners, 2012

Area (ha)	Production (kg)	Gross Sales (\$)	Cost of production (\$)	Net income (\$)
83.40	893,681	206,645	37,298	169,347

USAID-KHCP's banana value chain strategy also covers a wide range of business services that includes monitoring consumption and prices at retail level and disseminating the information to farmers and other stakeholders. Targeted market linkages to hotels, restaurants, and retail outlets to develop sustainable markets are enabling farmers to obtain premium prices for their fruit (currently at Ksh 15/kg or \$0.18/kg). Building the capacity and business skills of farmer groups through commercial villages is also providing farmers with increased negotiating power through joint marketing. USAID-KHCP is working closely with MOA officials to harmonize available information on markets and technologies, including varietal selection, to enable better planning for marketing.

3.3 FOOD CROPS

3.3.1 Sweet Potato

USAID-KHCP's priority interventions in sweet potato in 2012 include:

- Commercializing the production and sale of orange fleshed varieties
- Improving farmers' access to locally available clean planting material
- Improving crop yields through water management and irrigation investment
- Improving postharvest management, including curing, size grading, selling by weight, standardized bags, and collective marketing
- Promoting household utilization and diversification for nutritional value
- Promoting processed products, such as blended flours for the baking industry

Sweet potato is Kenya's third most widely used food crop after maize and potatoes. Annual production in 2011/12 is estimated by the MOA at 690,000 MT, 70 percent originating from the higher rainfall areas in Western and Nyanza regions. It is widely grown as a small-scale subsistence crop in all parts of the country, given its ability to withstand dry periods and a low-cost production system requiring few inputs and minimal labor.

USAID-KHCP's strategic approach is to transform this subsistence 'poor man's crop' into a modern commercial industry. This has been met with partial success over the last twelve months. Farm incomes and sales have risen, in many places dramatically, but the picture is inconsistent and has not yet achieved the breakthrough that is needed. Generally, farmers are making more money, selling a larger percentage of their crop and, therefore, are able to offset costs more effectively through higher sales.

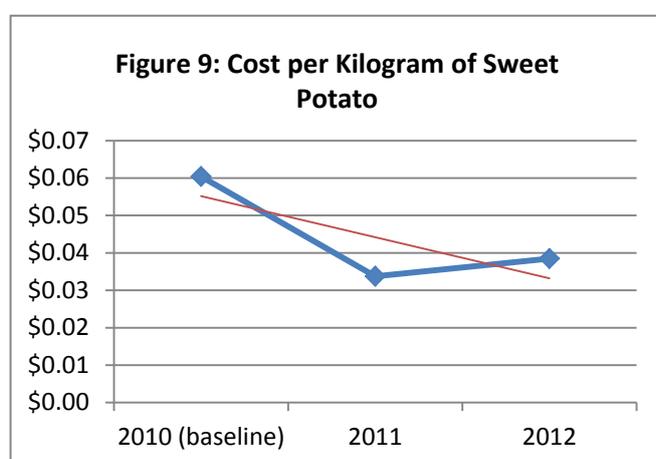
Table 4: Overall Sweet Potato Production and Incomes to Beneficiary Farmers

	Area (ha)	Production (kg)	Gross Sales (\$)	Gross Sales (Ksh)
Sweet Potato	1,559	9,787,247	1,948,200.54	155,856,043.10
Sweet Potato Vines	26.09	1,834,340	36,321	2,905,680
Total	1,585	11,621,587	1,984,522	158,761,723

The more than 5,000 farmers partnering with USAID-KHCP on sweet potato production and marketing have produced 1,500 hectares, generating nearly \$2 million in sales (Table 4). Based on a

sample exercise, net income per hectare has also increased on average by nearly 100 percent from \$543 per hectare in 2010 to \$1,036 per hectare in 2012, reflecting the combination of improved market linkages, improved quality, and the resulting higher prices. Yet, productivity has remained relatively stagnant, although it varies widely among the four regions where USAID-KHCP is working. Farmers have been reluctant to prioritize capital investment for sweet potato in preference for alternative higher value crops such as tomato or passion fruit. Achieving widespread change in traditional crop production systems is proving challenging, despite the individual success of the early adopters.

Nevertheless, an assessment of USAID-KHCP interventions in this important value chain illustrates that the new orange fleshed varieties developed by KARI during the last five years, which the project is promoting heavily, are steadily gaining in popularity and consumer interest and demand remains strong. Research trials conducted in collaboration with KARI using orange flesh varieties under sprinkler irrigation have achieved an average of 18 MT per hectare, an increase of 185 percent over 2010 baseline of 6.3 MT per hectare. Also, prices for orange flesh varieties in the local markets have remained consistently high averaging Ksh 35 to 45 per kg, often attracting a significant premium of Ksh 15 per kg over the white flesh varieties.



Production costs have also been reduced, as a result of closer linkages with input suppliers of fertilizer and agrochemicals and farmer training in agronomic and business skills. Figure 10 shows decreases in production costs per kilogram from \$0.06 in 2010 to \$0.04 in 2012 for the average smallholder farmer.

A field-based training program on basic agronomic practices has been provided to 37,625 farmers (60 percent female), alongside a network of 90 commercial demonstration plots, showcasing techniques

and best practices, such as water management, plant spacing, fertilizer application, and high density vine planting systems. Likewise, advanced agronomy and crop management training has been delivered to 125 extension specialists benchmarking Kenyan production against commercially successful countries like Honduras. Technical manuals covering all aspects of sweet potato production have been field tested and distributed to more than 2,000 extension specialists.

A new 'Rapid Vine Multiplication System' was developed in collaboration with KEPHIS. It was rolled out this year across 149 sites covering 24 hectares through project support for 4.3 million vines of basic root stock.

The interventions throughout the sweet potato value chain supported under USAID-KHCP have provided a solid platform of technical experience and commercial success which can be scaled up during the year ahead. However, there are still areas that need further work to exploit key opportunities:

- Progress on significantly improving yields has been slower than expected and seriously impacted by the drought. The analysis of crop productivity by region shows disappointing average yields expressed in MT/ha varies from 6.9 in Nyanza to 4.5 in Western and 4.7 in Eastern.

"In Kenya sweet potato is an important food crop that has gained increased importance due to its role in food security, ability to withstand drought as well as its potential for commercial processing. A comparison with other food crops shows that sweet potato yields more calories per unit area than either maize or Irish potato and nearly as much as cassava, while its protein yields is far higher than the latter."

- Dr. Wilson Songa, Agriculture Secretary,
Ministry of Agriculture

- Increasing demand for the new orange flesh varieties has often exceeded the supply of clean planting material, which has frustrated farmers and made consistent planting programs more difficult.
- The Kabondo Sweet Potato Cooperative Society, occupying a central position in the country's biggest cluster of sweet potato growers, has struggled to develop sufficient management and organizational capacity to implement effective collective marketing.
- The pilot project to export orange flesh sweet potato in bulk to European supermarkets using refrigerated containers and sea freight has made slower than expected progress in meeting the cost and quality parameters needed for economic viability.
- Farmers have been resistant to investing in sufficient inputs and irrigation for the crop and have not yet fully embraced the message of commercialization.

3.3.2 Potato

USAID-KHCP's priority interventions in potato include:

- a) Developing rapid seed multiplication
- b) Promoting appropriate postharvest technologies
- c) Strengthening the capacity of potato growers associations

Potato is the second most important food crop in Kenya after maize involving more than 790,000 smallholders planting in excess of 100,000 hectares annually. Together, they generate approximately Ksh 46 billion in sales. Currently the potato sub-sector is semi-commercialized and characterized by low productivity, limited agribusiness capacity, and poor product diversification. Constraints include low yields, high disease severity, and inadequate suitable varieties. As a comparison, Kenya produces 5-10 MT per hectare, while Egypt and South Africa achieve 26 and 36 MT per hectare, respectively. And only 5 percent of Kenyan potato farmers use high-quality seed from accredited seed suppliers.

USAID-KHCP has provided 5,617 farmers with training on agronomy and seed selection backed up by 14 field days, attended by 1,529 farmers. A supporting network of 30 demonstration sites produced a range of crop yields ranging from 9.9 up to 29 MT per hectare, more than three times the national average. Achieving similar yield improvements in mainstream crops is the key challenge now, given the combination of poor seed quality and high disease levels, from blight in particular. Technical assistance through the partnership with Syngenta East Africa is providing farmers with more effective and safe fungicide spray programs to avoid over dependency on any one single active ingredient. Field trials with KARI are raising awareness of the disease resistance capabilities of the Tigoni variety for areas with high disease prevalence.

Farm sales from more than 1,000 hectares of commercial crops supported by USAID-KHCP technical assistance and extension services have reached more than \$2.6 million (Table 5).

Table 5: Productivity of Irish Potato, 2012

	Area (Ha)	Production (kg)	Gross Sales (\$)	Gross Sales (Ksh)
Potato - Irish	1,062	10,859,071	2,671,196	213,695,691

Through USAID-KHCP support, Midland Ltd, a leading processing company based in Nakuru, introduced the use of crates for standardizing potato purchases from farmers in 50 kg and 25 kg units. This resulted in price increases from Ksh 8/kg to Ksh 12/kg (\$0.09 - \$0.14/kg). Resulting farm gate sales improved from Ksh 1,200 to Ksh 1,800 per bag (\$14 - \$21) over 12 months.

Through its current work in Bomet County, USAID-KHCP has helped expand an earlier initiative with KARI, MOA and the International Potato Center (CIP) on market linkage with Deepa

Industries, another leading processor. The company has since increased monthly purchases of 110 kg bags of potatoes from 400 to 900 bags from 15 groups of contracted farmers. Average income per grower has increased by 11 percent from Ksh 40,500 to 45,000 per month.

On a national level USAID-KHCP has provided business advisory services to a number of leading private sector agribusiness organizations to encourage more investment into the seed sector. For example, collaboration with the National Potato Council and the Kenya Federation of Agricultural Producers is helping build capacity within the Kenya National Potato Farmers Association. The association has recruited more than 1,000 new members during USAID-KHCP field days.

3.4 LOCAL MARKET VEGETABLES

3.4.1 Tomato

USAID-KHCP's priority interventions in tomato during the year include:

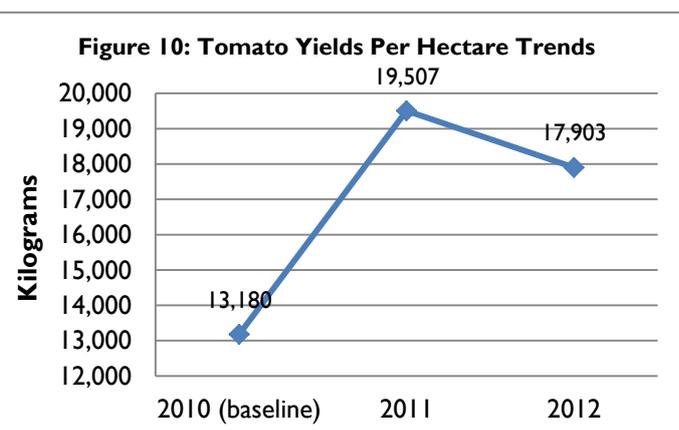
- Improving water management and increasing drip irrigation
- Increasing hybrid seedling supply
- Addressing bacterial wilt in greenhouse environment

USAID-KHCP is working closely with seed suppliers and agrodealers to promote trials of new high-yielding hybrid varieties. Efforts were also directed towards the expansion of tomato production into non-traditional areas that experience lower pest and disease pressures. Through a partnership with Syngenta East Africa, the project has established eight regional Horticultural Centers of Excellence that coordinate extension services through field days and demonstration sites for more than 8,000 smallholder farmers.. Forty youth groups have been trained on production of high-quality vegetable seedlings for sale to farmers in their area. One group, the Uwezo Seedling Youth Group in Meru County, has produced over 692,000 seedlings of tomatoes, capsicum, and cabbage this year. The sales have resulted in total earnings of Ksh 1,269,200 (\$14,923), equivalent to individual incomes of Ksh 66,800 (\$815) for each of its 19 members.



Photo by Fintrac Inc.

Members of Kiima-kyu Self Help Group in Makeni County harvesting drip irrigated tomatoes. The group has now commercially adopted horticultural farming and is reaping the benefits with high returns for their produce. With rainwater harvesting technology introduced by USAID-KHCP, they have been able to plant and harvest tomatoes for the first time ever in their community.



The increased adoption of new varieties by farmers working with USAID-KHCP has shown positive results in improved productivity. According to sampled farmers, average yields per hectare in 2012 exceeded 17 MT. Although slightly lower than in 2011, it represents an increase of 35 percent from the baseline of 13 MT just two years ago. In 2012, the addition of new farmers to the USAID-KHCP beneficiary pool who had not yet incorporated the recommended technical

package into their farming practices lowered the production average for all growers, including the already established ones. As the new farmers begin to adopt GAPs and technologies and to receive technical assistance from the project, results are likely to align in the next season.

The introduction of new varieties on their own has a limited impact; however, when introduced as part of an integrated technology package of best practices, there is potential to double or triple existing tomato yields and incomes. Nationally, USAID-KHCP established 265 demonstration sites (26 shade nets, 80 open field, 64 drip kits and 95 greenhouses), reaching more than 13,000 smallholder farmers through on-farm trainings on hybrid tomato varieties, agronomy and postharvest management. In order to combat bacterial wilt (*Ralstania solanacearum*), a disease that can cause major challenges for tomato production, USAID-KHCP recommended measures for its control that included carefully managed chemical spray programs, crop rotations, and the use of disease resistant cultivars of tomatoes. As a result of this multi-pronged approach, farmers in Kitui County achieved dramatic increases in productivity, with average yields increasing by 99 percent, from 15.7 to 31.3 MT per hectare.

Greenhouse production has continued to gain momentum with its ability to bridge the glut season and produce yields of up to three times the average yields attained in outdoor production. Leading supermarkets in Rift Valley and Nyanza are competing for the premium quality greenhouse tomatoes and sourcing from USAID-KHCP supported farmers. Since June 2012, the supermarkets have been able to procure 34.9 MT of tomatoes from USAID-KHCP farmer-partners, worth Ksh 1,569,600 (\$19,620). This has seen the prices of greenhouse tomatoes firming up at 45 Ksh/kg (\$0.53) compared to the Ksh 30/kg (\$0.35) offered in the open market. New export market linkages to Dubai have proved successful for 463 tomato farmers in Trans-Nzoia County, with an initial 36 MT of tomato worth Ksh 1.8 million (\$22,500) purchased in July, and weekly sales continuing through the year. The majority of sales recorded from participating farmers comes from seasonal rain-fed crops and is summarized in Table 6.

Table 6: Sales of Tomato by USAID-KHCP Farmers, October 2011-September 2012

	Area (ha)	Production (kg)	Gross Sales (\$)	Gross Sales (Ksh)
Tomato	3,131	56,059,138	14,282,634	1,142,610,745
Seedlings	-	744,526	20,744	1,659,520
Total			14,303,378	

3.4.2 Cabbages and Kales

Cabbage is an important vegetable on the domestic market that covers more than 20,000 hectares annually, producing 500,000 MT with a farm gate value of Ksh 11 billion (\$13 million). It is predominantly grown by smallholders and has a strong year round demand.

USAID-KHCP is providing innovative start-up infrastructure enabling youth entrepreneurs to roll out 40 vegetable seedling nurseries that have already dispersed over a quarter of a million cabbage seedlings to neighboring farmers. Improving access to high-quality seedlings enables farmers to schedule regular plantings to suit market demand and reduces the risk of localized over-supply. Crops grown from seedlings raised in these professional greenhouse environments achieve higher yields and more uniform crops with reduced postharvest losses.

“I have always thought that white collar jobs in big offices were the only way to earn a decent living. But this project [USAID-KHCP] has shown me that just like other professions, farming is my business. It is my office, bank, and livelihood.”

- Peter Odhiambo Oburu
Member, Sukuma Wiki Youth Group, Migori County

A series of 36 demonstration sites in non-traditional cabbage areas such as Kisii, Homa Bay, and Migori are providing 1,520 farmers with technical knowledge on intensive cabbage production. Providing hands-on experience with new varieties and transplanting systems has achieved yields of 60 MT per hectare, some 140 percent above the regional average.

Kales are grown all over Kenya, mainly as a kitchen garden crop for household consumption. Project initiatives in the high rainfall areas are targeting more specialized large-scale commercial production to improve the quality of product supplied to major urban markets. For example, the aptly named Sukuma Wiki Youth Group in Migori achieved yields of 8.9 MT per hectare over a three-month harvest period, producing in excess of 60 MT per month. This has resulted in a farm gate value of Ksh 857,400 (\$10,330) providing each member with an income of Ksh 35,725 (\$430). The group is supplying their kales to Migori town, Nairobi and Kericho markets.

Sales results from USAID-KHCP farmers to date (Table 7) are expected to ramp up quickly in the coming season.

Table 7: Sales and Productivity of Cabbage and Kales, 2012

	Area (ha)	Production (kg)	Gross Sales (\$)	Gross Sales (Ksh)
Cabbage	331	6,564,526	971,273	77,701,852
Kales (<i>sukuma wiki</i>)	1,700	17,179,585	2,889,181	231,134,452
Total	2,031	23,774,111	3,860,454	308,836,292

Kales also form a vital part of the USAID-KHCP's work with positive nutrition gardens that provide a continual supply of diverse vegetables to improve the nutritional balance and menu range prepared in institutional kitchens, including schools, prisons, and hospitals. In partnership with Real Impact, these sites have provided training on cooking and preparation of kales and spinach to avoid over-boiling, which destroys the nutritional benefit of a staple dish.

3.4.3 Pulses

USAID-KHCP's priority interventions in pulses this reporting period include:

- a) Promoting high yielding seed varieties (early maturing)
- b) Developing and commercializing fresh production in Coast region
- c) Improving postharvest management and value addition

Eastern and Coast provinces are the major pulse growing areas of Kenya. It's a key crop for the majority of farming communities in these semi-arid regions, which tend to slip in and out of chronic food deficits depending on the seasonal rainfall. The crop plays three roles in the dry land economy: it serves as a food security crop; an income generating crop; and a source of nutrition, supplying over 23 percent of dietary protein requirements. Research and development of new varieties of pulses by the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT) and KARI is being supported by USAID-KHCP through the multiplication, distribution, and sale of seed using a network of more than 150 trained agrovet dealers. The scientific breeding work provides the genetic advantages of adaptability to local conditions with improved drought tolerance, shorter-maturity, and higher yields.

Creating farmer awareness and confidence in the new varieties and agronomic practices through 18 demonstrations, and 17 farmer field days, has boosted seed multiplication from 64 to 104 MT. USAID-KHCP supported private sector investment in specialized seed multiplication and processing technology, with packaging and machinery to enable the launching of a new range of seed retail packs suitable for small scale plantings. As a result, more than 30,000 farmers will have access to these new

varieties in the coming season (October-November 2012), up 159 percent on the last season's total of 11,571 farmers who planted the improved seed.

Table 8: Farm Sales of Pulse Seed*, October 2011 – September 2012

Season	Number of Farmers	Area (ha)	Production (kg)	Gross Sales (\$)	Gross Sales (Ksh)
2010-2011	132	60	64,142	47,652	3,812,140
2011-2012	347	110	104,640	88,185	7,054,807
Percent Change	163%	83%	63%	85%	85%

*Pigeon peas, green grams, and cowpeas

USAID-KHCP is now concentrating resources on building momentum with production and sales of fresh pigeon peas targeting wholesale buyers in Mombasa, where fresh pigeon peas are an important part of the local diet. Farm gate prices in the Emali district of Makueni County peaked at Ksh 80/kg (\$0.95) in January and dropped to Ksh 40/kg (\$0.48) in June as the main harvest started. These price levels for fresh pigeon peas still provided a significant premium for farmers over the alternative dry pigeon peas that sell at Ksh 25/kg (\$0.30).

The combination of improved varieties and effective extension services through 51 demonstration sites and 24 field days has improved average yields by 70 percent from a baseline of 864 kg per hectare in 2010 to 1,467 kg per hectare in 2012.

Table 9: Sales of pigeon peas by USAID-KHCP farmer partners, October 2011-September 2012

	Area (ha)	Production (kg)	Gross Sales (\$)	Gross Sales (Ksh)
Fresh pigeon peas	1,727	5,626,159	3,818,871	305,509,645
Dry pigeon peas	154	110,940	74,213	5,937,031

3.5 SPECIALIZED EXPORT MARKET PRODUCE

3.5.1 Smallholder Flowers

USAID-KHCP's priority interventions in smallholder flowers include:

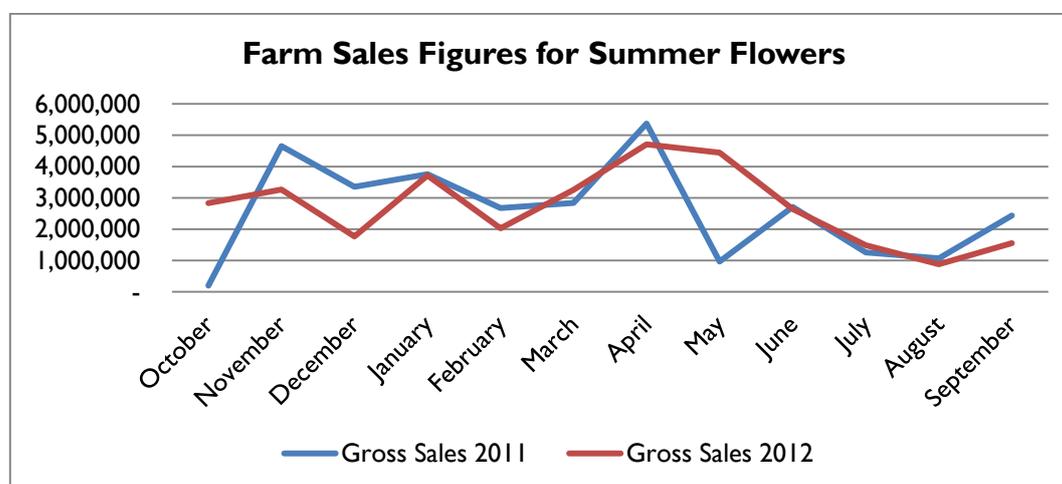
- a) Improving water management and increasing drip irrigation
- b) Promoting tunnel technologies
- c) Developing new products (varietal and consumer bunches)
- d) Diversifying markets
- e) Improving postharvest management (grading sheds)

Kenya's mainstream flower industry, with annual export sales in excess of \$512 million per annum, is dominated by Kenyan corporate investment in high-technology, large-scale greenhouse production of roses. The contrasting niche occupied by smallholder flowers, with annual sales of around \$2 million, is dominated by micro-investors producing high-quality flowers from plot sizes below 1/8 of an acre.

It has been a challenging year for the 5,704 flower farmers from 141 groups supported by USAID-KHCP due to unfavorable climatic conditions experienced in the key production regions. The severe dry spell in February and March 2012 significantly reduced the number of stems harvested, as most farmers depend on rain-fed production. Heavy rains, frost, and floods experienced between April

and June again lowered product quality and increased bulb rot in *Arabicum*, the key outdoor flower. The resulting numbers quantify the commercial impact on both the farmers and exporters (Figure 11).

Figure 11: Farm Sales for Summer Flowers, 2011-2012



Despite the setbacks, the area under flower production has been expanded outside the traditional Central Kenya region. Efforts were made to bring flower production to new growing areas in Eastern, Nyanza and Rift Valley. Eleven new groups comprising of 135 farmers were introduced to the flower business and successfully produced 456,271 marketable stems, equivalent to 4.3 percent of total stems marketed in FY 2012.

A total of 2,433 training events comprising three field days, 46 workshops, and 2,369 individual farm visits were carried out benefiting 14,908 farmers (43 percent female). An additional 45 demonstration sites established during the year introduced several new technologies, including:

- Water harvesting that allowed farmers to expand their area under production from 0.05 to 0.20 of a hectare
- New varieties of *Ornis Goblin*, *Agapanthus*, *Ammi Visnaga*, and *Ruscus*, which have higher yields and attract premium prices
- R&D trials with *Molucella* in greenhouse and tunnels, which reduced the level of fungal infections so that only one spray per season was needed
- Drip irrigation and shade netting for *Ornis* production as a result of the financing MOU signed between the exporter and Equity Bank (40 farmers invested Ksh 3.9 million)

During the year, farmers produced 10,791,986 marketable stems valued at Ksh 32,597,101 (\$407,464) at an average farm gate price of Ksh 3.04 (\$0.04). This compares to 13,167,770 stems valued at Ksh 35,082,615 (\$438,533), recorded in the previous year. The difference represents an 18 percent drop in volume and 7 percent drop in value. Fortunately, the average farm gate price increased by 14.3 percent, from Ksh 2.66 per stem last year to Ksh 3.04 (\$0.04) this season.

A total of 385 farm group leaders were trained through courses in group governance, gender and youth integration, farming as a business, financial literacy (savings and credit), recordkeeping, and the formation of production and marketing committees. Complementary training to 133 managers and staff working with Wilmar Flowers strengthened the business management teams and the quality assurance processes.

3.5.2 Chilies

USAID-KHCP's priority interventions in chilies this year included:

- a) Improving seed systems, including variety development, multiplication, and accessibility
- b) Scaling up transplanting technology
- c) Designing and implementing agronomic blueprints
- d) Improving postharvest management, particularly drying technology

Kenya has several processing companies that specialize in production and drying of a variety of chilies for the European food ingredient market. Overall market demand remains strong given Kenya's reputation for superior quality and standards compliance. The core challenge for Kenyan processors is meeting the growth in orders and price competition from suppliers in Uganda, Malawi, India, and Pakistan.

USAID-KHCP activities in this value chain included on-farm technical assistance and extension training provided to 9,300 farmers to raise productivity and quality so that farmers provide consistent supply to the processors. As a result, one of the leading processors, Mace Foods, has been able to increase the farm gate prices by 20 percent. Detailed marketing strategies to add value with new products and expand into new markets are the key for survival and are a focus of USAID-KHCP capacity building with processors and exporters.

Kenyan export of fresh chilies to Europe and the Gulf States as part of the 'Asian Vegetable' category have been on the decline in recent years due to stiff price competition and limited opportunities for value addition. The situation is slowly improving with a resurgence of supermarket interest and superior quality available from Kenya. The improved supply of high-quality seedlings and resulting planting consistency supported by the USAID-KHCP extension activities with commercial partner WONI Exporters has stabilized farm gate prices on a seasonal basis.

Mace Foods Ltd, another key commercial USAID-KHCP partner, sources sundried chilies from more than 1,000 smallholder farmers in the HRI region and processes them into premium quality food ingredients for export throughout Europe. Mace Foods has spent this year in recovery from a disastrous slump in export volumes during 2011. USAID-KHCP project interventions focused on overhauling the extension system and improving traceability and farm payment systems through mobile banking. A cost-share investment in new high-technology packing machinery has improved revenue streams as part of a new strategic business plan that places much greater emphasis on daily monitoring of raw material supply and quality. The resulting jump-start in the overall business has seen export volumes increase enough to supply two containers to Europe in 2012, after more than 10 months with no shipments.

Table 10: Production and Sales of Chili, October 2011 through September 2012

	Area (ha)	Production (kg)	Gross Sales (\$)	Gross Sales (Ksh)
African Birds Eye (Dry)	1.84	3,729	4,687	374,956
African Birds Eye (Fresh)	10.90	22,578	16,686	1,334,880
Total	12.74	26,307	21,373	1,709,836

3.5.3 Peas and Beans

USAID-KHCP's priority interventions in peas and beans include:

- a) Increasing use of drip irrigation technologies
- b) Introducing greenhouse and tunnel technologies for medium growers
- c) Improving market compliance infrastructure
- d) Promoting household utilization

The Kenyan vegetable export business, worth some \$369 million in sales per year, has built its reputation and commercial success with peas and beans as the flagship products over the last 30 years. The power of leading supermarkets to dictate prices, combined with a rapid rise in

production costs over the last three years, has brought the industry to a point of crisis. Leading exporters are closing down packhouses, moving away from smallholder production because of chemical residue issues, and consolidating market share into fewer profitable product lines. They are also guilty of poaching crops from each other's outgrower schemes and paying farmers unsustainable prices during periods of adverse weather (Table 11).

Table 11: Peas and Beans, Farm Gate Price Variations, 2012

	Lowest (Ksh/kg)	Highest (Ksh/kg)	Average (Ksh/kg)
Peas	35	300	80
Beans	20	270	45

The net effect has been a reduction in Kenya's competitiveness and a missed opportunity to gain market share given Egypt's decline as the leading supplier of beans to the European markets. Overall exports of vegetables (primarily peas and beans) declined by 2.6 percent from \$379 million in 2011 to \$369 million in 2012.

In response, USAID-KHCP is providing significant strategic, financial, and technical resources for farmers and exporters in the following areas:

- Introducing poly tunnels and drip irrigation for pea production, which has improved smallholder yields by 47 percent and reduced crop quality rejection rates by 30 percent. Resulting farm incomes for pea farmers have improved by 20 percent in dry weather and over 100 percent in wet weather
- Introducing alternative high value rotational crops such as herbs
- Improving seed supply and accessibility for beans and peas for more than 3,600 growers
- Providing a sustained package of business training courses to 1,968 groups working with exporters concentrating on contractual discipline and transparency
- Sponsoring the national 'Soma Lebo' campaign with FPEAK and the MOA to educate farmers on pesticide restrictions and safe use of agro-chemicals
- Upgrading farm infrastructure, renovating postharvest laboratories, and developing new training materials at the Horticulture Practical Training Center in Thika
- Disseminating the Intra-Regional Market study identifying opportunities within Africa



Photo by Fintrac Inc.

A farmer working with USAID-KHCP partner Canken International Ltd harvesting French Beans for export in Uasin Gishu County.

The resulting sales performance for the farmers participating in these activities has been encouraging as detailed below:

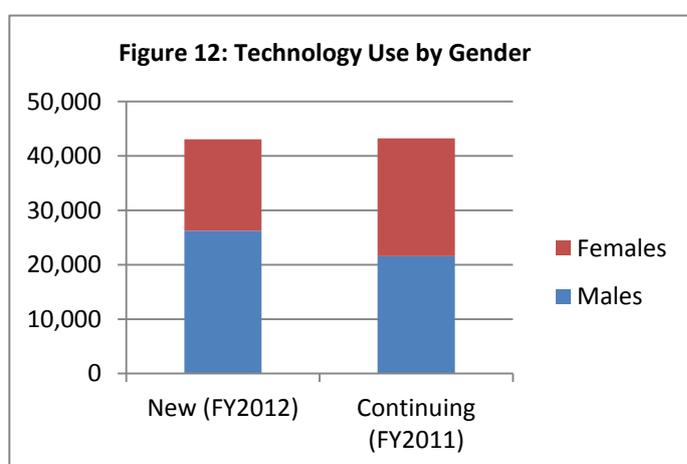
Table 12: Production and Sales of Beans and Peas, October 2011 through September 2012

	Area (Ha)	Production (kg)	Gross Sales (\$)	Gross Sales (Ksh)
Beans	208	130,852	190,162	15,212,988
Peas	176	1,252,555	910,679	72,854,338
Total	384	1,383,408	1,100,842	88,067,327

4. CROSS-CUTTING THEMES

4.1 GENDER

USAID-KHCP's Gender Integration Strategy is quickly increasing opportunities in commercial agriculture that promote income generation and increase food security for both sexes. Technologies have been introduced to help women increase production (and therefore income from sales), decrease workloads, and enhance the food security of the entire household. These technologies include drip irrigation, seedling nurseries, and improved access to water. Female farmers and entrepreneurs are also targeted with technologies to scale up value-added processing activities in order to meet local and export market demands. This, in turn, enables women to improve on product quality, gain access to new markets, and increase their households' incomes. The result has been rapid adoption of technologies by women (Figure 12).



Currently, 35 percent of partner organizations working with USAID-KHCP are managed by women. The proportion of female farmer-partners that have been reached through project interventions is over half (52.4 percent); and 49 percent of farm groups are led by women. These specific gender integration results to date show a positive and widespread level of female participation.

This year, USAID-KHCP has worked with local partners in addressing and challenging constraints posed by

customary systems, norms, or social institutions that limit choices, decision-making, and relationships. This includes the encouragement of more equitable control over resources among family members, asset allocation, and improving intra-household relations and reducing domestic conflict. A wide range of capacity building initiatives, listed below, have been successfully implemented during the year.

- Institutional assessments of 26 USAID-KHCP partners were conducted, focusing primarily on the involvement of women in leadership of the organizations, the ratio of men to women members, and the roles women play in those organizations.
- Training Needs Assessments of 12 USAID-KHCP partners took place, identifying factors that hinder women's and youth participation in agribusiness, and core training needs with regard to integrating women and youth into commercial agricultural value chains. Ten partners have since developed detailed training plans and gender action plans.
- Training manuals covering Market Development & Commercialization, and Gender Integration were developed to provide a standardized curriculum on the basic concepts of gender equality, integration, and monitoring and evaluation.
- Four training of trainer sessions have been held using these manuals to train partners on strategies for market-led production, as well as tactics for involving women and youth in agro-enterprises.

As a result 255, local market traders have joined the project as clients, 59 percent of whom are women. To date, the project has sensitized 263 partner staff, 1,023 farmer groups, and 2,991 farmer group leaders on gender and youth issues.

4.2 YOUTH

To achieve a highly competitive, sustainable and smallholder-inclusive Kenyan horticulture industry, new opportunities for youth in commercial agricultural production must be created. During this reporting year, USAID-KHCP supported youth involvement across agricultural value chains from production to processing to marketing. Over 16.31 percent of the project's beneficiaries are youth.

“We grew up in Ganze with the belief that no agricultural activity can ever take place due to erratic rainfall and lack of knowledge on agricultural technologies. However, thanks to USAID-KHCP's technical assistance, horticultural farming is now a reliable means for our livelihood and a form of employment.”

- Amos Mwalatha
Secretary, Mwaeba East Youth Group

USAID-KHCP's interactions with youth fit into four broad categories supported by specific interventions:

- Establishing institutional links with schools, colleges and universities, including Jomo Kenyatta University of Agriculture and Technology (JKUAT), Moi University, and the University of Nairobi, where local partnerships create awareness of profitable opportunities for youth within the horticulture industry, and change the negative perception that farm work is “punishment” and drudgery with very little reward.
- Stabilizing those youth groups who have often been formed for social reasons and lack any cohesive focus, who tend to remain unstable with high membership turnover. USAID-KHCP seeks out groups that demonstrate the capacity to take farming as a business seriously, and guides them towards becoming living examples of successful horticultural entrepreneurship.
- Encouraging the participation and motivation of youth members within the more established and stable farm groups. Creating opportunities for these youth to become leaders will provide added momentum for technology adoption and market linkages. To date, 512 youth group leaders in Rift Valley, Central, and Eastern regions have received training on youth mainstreaming, farming as a business and group governance; this represents 17 percent of the total of 2,998 farm group leaders who have benefitted from the program.
- Generating economic growth in agriculture that creates jobs for those youth with limited education and no access to their own land. New investments from the established farming community, from agribusinesses, processors, and exporters, will be the driving force behind this economic growth. Enhancing job training with supplementary business skills training will enable these laborers to become entrepreneurs.

4.3 NUTRITION

USAID-KHCP is implementing a project-wide Nutritional Framework by integrating nutrition, food utilization, and food production components into project activities. An updated Nutrition Action Plan has been developed that provides clear guidelines for a comprehensive range of activities to expand the nutritional impact of the project in rural households. Key components of the plan are:

- Basic nutritional training to all project beneficiary farmers at project field days and other events, organized by an established network of community health workers who will be provided with a training toolkit.
- Incorporating a nutritionist into business development service organizations who can provide a training of trainers function as well as closely monitor the effectiveness of the grassroots nutritional messaging.
- Developing more effective crossover linkages within local partnerships for ag-nutrition synergies, including varietal analysis for nutrient content, cooking demonstrations for new products or recipe ideas, and institutional links.
- A focus on a few key commercial opportunities with large-scale food processing companies to incorporate natural ingredients in place of artificial food fortificants. Key examples are

sweet potato flour and sweet banana flour mixed into a wide range of popular mainstream products such as mandazi and chapatti, as well as more specialized lines such as baby food.

The plan incorporates lessons learned from the existing pilot project with 30 positive nutrition gardens. Farmers partnering with USAID-KHCP provided a programmed supply of vegetables to institutions, such as schools, hospitals, and prisons, which improved the nutritional balance within their menus and provided basic nutritional training to 2,398 participants. Crop protocols for leafy vegetables, legumes, banana, moringa tree, and root crops have been distributed alongside training manuals for bag gardens and composting.

USAID-KHCP has also completed the design of an innovative commercial ag-nutrition model that is intended to harness private sector approaches with the greatest potential for large and sustainable impact. The business model integrates three key supplier relationships: smallholder producer farmers supplying raw material to micro-processing companies, who in-turn supply the semi-processed raw material to commercial companies involved in product and market development. One success achieved this year includes Stawi Foods, whose new banana flour products have been successfully placed and are now sold in three major local supermarkets. With technical assistance from USAID-KHCP, the company has rebranded the plain plastic bag into a new carton containing nutritional analysis and two recipe suggestions, which improved the retail pricing points for the new packs. Sales into three leading supermarket chains now average 840 cartons per month worth Ksh 294,000 (\$3,750), with projected annual sales turnover of \$45,000 for one product.

A range of dehydrated African indigenous vegetables have been successfully launched into local retailers, stimulating a feasibility analysis with the World Food Program. Initial trials with banana chips processed into flour and mixed into commercial food brands for infants, young children and consumers with special dietary needs have been successfully completed. Similar trials with orange fleshed sweet potato flour incorporated into composite maize and wheat flours have met with resistance from the millers because of changes to the color and appearance of the final product. Given the high potential, trials of new composite flours are under development.

4.4 VALUE ADDITION

USAID-KHCP provided technical training to a total of 10,881 participants (63 percent female). These trainings focused on postharvest management, including crop quality and grading, hygiene, food safety and standards, and processing. Specialized food technology expertise was provided to a number of micro-processors as part of 25 detailed agro-processing needs assessments conducted. Nine larger processing groups received advanced skills training in food processing backed up by the launch of postharvest and technical manuals that cover the following topics:

- Sweet potato processing equipment and procedures
- Bio-fortification of staple foods with nutrient-rich vegetables and tubers
- Banana processing technologies
- Passion fruit beverages
- Dehydrated mango product development

Initial results from the first set of orange fleshed sweet potato harvesting trials for export in Eastern and Coastal regions were mixed, with only an average of 26-31 percent of overall harvests earning the Grade I quality standard required for export. This was mainly due to mechanical damage at harvest, bruising during transportation, and pest attacks during storage. Variety trials with an additional 100 smallholders in Kibwezi using furrow irrigation are being benchmarked against a large-scale commercial crop under center-pivot irrigation.

USAID-KHCP conducted a detailed research study into the postharvest behavior of three orange fleshed sweet potato varieties targeted for the export market. The varieties were tested for turgidity and moisture loss in storage, break of dormancy, ease of cleaning, uniformity of size and

shape, and other related factors that the European consumers would be looking for. Although solutions to the postharvest shelf life challenges caused by 40 days of storage during sea freight need further refining, according to the study, confidence is high that the target of a 60 percent Grade I pack-out will be achieved.

Market linkages for 2,000 kg of the second grade sweet potato sold to a local micro-processor, Huruma Women's Group, earned the group KSh 240,000 (\$2,960) from their sales of sweet potato flour. USAID-KHCP provided three groups with motorized sweet potato chippers to increase quantity and quality. Another ten micro-processors in Western region received initial technical and capacity building training in preparation for the first set of trial harvests. The most advanced of these groups, Siwongo Agro-processors, now supplies at least one MT per month of sweet potato flour to local markets, and netted Ksh 1,611,740 (\$18,900) of additional income during the year. In the specialized chili sector, 235 farmers received advanced training on the use of 100 portable, locally made, solar driers to enhance the quality and hygiene of the dry chilies.

4.5 CAPACITY BUILDING AND ORGANIZATIONAL DEVELOPMENT

USAID-KHCP provides a comprehensive package of capacity building services to strengthen commercial partners using specialized business development service organizations. For example, business services provided by Blue Rhino Consult (BRC) to farmer group leaders and individuals for the reporting period is presented in Table 13.

Table 13: Farmer Group Leader Trainings, by topic, gender and region.

BDS Activity	Central Region			Rift Valley Region			Eastern Region			Total
	F	M	Total	F	M	Total	F	M	T	
Group Governance	228	321	549	389	554	943	235	229	464	1,956
Farming as a Business	218	373	591	44	60	104	141	114	255	950
Financial Literacy	37	55	92	-	-	-	-	-	-	92
Gender mainstreaming	483	749	1,232	433	614	1,047	376	343	719	2,998
Youth mainstreaming	483	749	1,232	433	614	1,047	376	343	719	2,998

Source: Blue Rhino Consult (BRC)

A total of 2,906 group leaders were trained on group governance and farming as a business. The leaders as trained trainers will be expected to disseminate the lessons learned to their respective members, and to improve group cohesion, governance, and performance.

Other initiatives to strengthen organizations include a detailed financial and accounting systems review process with recommendations and follow up on corrective actions, and structured training on grants management procedures including procurement and invoicing.

The new priority areas for capacity building involve a national campaign to provide nutrition awareness training to all farm groups and stakeholders supported by the project. Similar ramping up of capacity building initiatives is being implemented in gender integration and youth participation.

Institutional capacity building is being conducted through the public-private partnership mechanism with three private sector trade associations and all of the key government regulatory agencies involved in marketing, standards and compliance.

“Through capacity building by BRC, Wilmar has changed a lot in the way it does its business. The trainings have strengthened our operations, human resources, and operating systems. Our new business plan will be our compass to guide us in achieving our set goals for the next three years. Wilmar now does not have to struggle to survive.”

- Ruth Muiruri
Operations Director, Wilmar Flowers

5. Policy, Standards, Trade & Marketing

5.1 POLICY

The participation of USAID-KHCP as an affiliate member of the Ministry of Agriculture National Task Force on Horticulture is geared towards resolving policy and institutional issues to achieve an overall industry growth rate of 10 percent through the following policy interventions:

- The Horticulture Competent Authority provides a single cohesive voice and contact point for the Kenyan horticulture industry within the international and domestic marketplace. The new structure provides an effective and integrated approach towards strategic food safety issues by combining the regulatory functions of both the Ministry of Agriculture and the Ministry of Public Health and other supporting agencies. USAID-KHCP is working effectively with the Authority through its support for standards awareness and agrochemical risk assessments.
- The National Exporters Forum in June provided extensive emphasis on the strategic need to “anchor Kenya as the export driver country.” The horticulture industry plays a key role in generating \$1,035 billion in exports during the period October 2011 to September 2012, virtually unchanged from the previous year with an increase of only \$10 million. The partnerships between USAID-KHCP, FPEAK, and its members are impacting 140,000 farmers through improved crop productivity and enhanced training capacity.
- USAID-KHCP is supporting the implementation of Horticultural Crops Development Authority (HCDA) order Legal Notice No 190 of 2011, which promotes standardization for labeling, packaging, grading, transporting, and storing horticultural produce in compliance with national and international standards. The key initiative for broker registration and the attempt to enforce traceability systems is helping to stabilize farm gate prices and improve contractual disciplines between outgrower schemes and exporters.
- USAID-KHCP is participating in the panel of experts, which includes MOA, KARI, and KEPHIS in reviewing the National Sweet Potato Draft Strategy. The draft is incorporating the best practices on vine multiplication developed by USAID-KHCP partnerships in Western and Nyanza regions in collaboration with local KEPHIS inspectors.
- Through FPEAK, USAID-KHCP has made its recommendation on the proposed Climate Change Authority Bill. The authority will provide a framework for mitigating and adapting to the effects of climate change on various sectors of the economy, including horticulture.

5.2 STANDARDS AND COMPLIANCE

Improving the consistency of compliance to standards with dedicated export crops, and also with the informal and poorly regulated domestic market, is one of the key challenges facing the industry. USAID-KHCP activities this year focused on the following:

- Maximum Residue Limits (MRLs). The unacceptable level of interceptions for Kenyan fruit and vegetable export shipments that tested positive for high levels of pesticide residues in late 2011 posed a serious threat to Kenya’s entry into the European Union marketplace. In response, USAID-KHCP worked closely with FPEAK to implement the Pesticides Monitoring Plan and the ‘Soma Lebo’ (read the label) campaign. The campaign collaboration with FPEAK, Agrochemicals Association of Kenya, Pest Control Products Board (PCPB), KEPHIS and HCDA has provided awareness to an estimated 55,000 farmers of the restriction against the use of a wide range of common, effective, and cheap pesticides

containing the active ingredient Dimethoate. As a result of these corrective actions to restore confidence with all consumers, foreign and domestic, the most recent meeting of the EU phytosanitary commission held in March 2012 decided not to impose additional and costly pre-shipment inspections on Kenyan fresh produce exports.

- Advanced chemical risk assessment training provided specialized expertise to evaluate international risk assessment reports from the European Food Safety Authority (EFSA) and apply this information to nationally relevant data. Participating organizations included the National Food Safety Coordination Committee (NFSCC), KEPHIS, MOA, University of Nairobi, Jomo Kenyatta University of Agriculture and Technology, EDES Secretariat, Ministry of Public Health and Sanitation, Kenya National Bureau of Standards, PCPB, and the HCDA.
- Information dissemination on the European Union requirements for fruits and vegetables provided the latest data in regards to food safety legislation. Participants from KEPHIS, HCDA, USAID-KHCP, FPEAK, and nine fresh fruits and vegetables exporters developed a common risk analysis and corrective actions for the industry.
- USAID-KHCP, in partnership with USAID-COMPETE and KEPHIS, sponsored an OECD workshop on commercial quality standards for fruits and vegetables in Eastern Africa. The 67 delegates from 12 countries across Africa, Europe, and the United States learned how to mitigate implementation risks for additional regulatory procedures well in advance. This system involves issuing certificates that indicate postharvest treatments, phytosanitary considerations, hygiene and contaminants, and residue analysis of plant protection products.
- A training course on GLOBALGAP Version 4 provided field-based skills on good agricultural practices to improve traceability, and product quality to 23 agronomists and lead farmers selected from USAID-KHCP partners in Eastern Region. The course was adapted to local conditions for carrying out farm risk assessments as a preliminary step towards achieving full GLOBALGAP compliance and certification.
- USAID-KHCP and Vegpro Kenya Ltd delivered an advanced Integrated Pest Management (IPM) training curriculum in Nanyuki to strengthen the technical capacity of 17 partner agronomists to better serve farmers at the local level. IPM can significantly increase productivity while reducing costs and minimizing negative environmental effects. The training included the latest field and greenhouse IPM techniques absorbed by Vegpro's lead agronomist during a USAID-KHCP sponsored study tour to Israel focused on high-technology horticulture.

5.3 TRADE PROMOTION

Opportunities for Kenyan exports of orange fleshed sweet potato were boosted by the survey of international buyers commissioned by USAID-KHCP during the massive Fruit Logistica Trade show in Germany. The resulting detailed information on specifications and packaging and retail price points for the European and Gulf markets was presented at the National Sweet Potato Forum in March and informed the national sweet potato action plan.

New business from Dubai customers for an additional 12 MT per week of mango, avocado, French beans, and peas was the outcome of Canken International's successful participation in the Gulf Food Fair. This will directly benefit the 2,500 farmers supported under their partnership with USAID-KHCP.

Improved market access for smallholder flowers into the Tesco, Waitrose, and Sainsbury Supermarket chains resulted from the visit to the United Kingdom by Mercy Kinuthia, the Business Development Manager of Wilmar Flowers. The trip helped her better understand market demand in

terms of product quality, range and specification, and efficiency in doing business with the supermarkets as compared to the auction. USAID-KHCP has co-sponsored the position of the Business Development Manager in collaboration with the Bill and Melinda Gates Foundation working through the International Institute for Environment and Development.

Wilmar Flowers CEO, Wilfred Kamami, was honored by Her Majesty Queen Beatrix of the Netherlands for making a special contribution in the European flower industry. The ceremony coincided with the 100th Anniversary of the FloraHolland flower buying organization and was part of a European market-linkage tour co-sponsored by USAID-KHCP and Wilmar Flowers to develop new business linkages targeting direct sales in Japan, Germany, and Scandinavia.

5.4 HORTICULTURE VALUE CHAIN COORDINATION

In August, USAID-KHCP launched the “Progress report on Kenya’s Competitive Position in Horticulture” that examined the comparative and competitive advantages of Kenya’s industry in selected horticultural crops, benchmarked against competitors such as Uganda, Tanzania, Ethiopia, Egypt, and Ecuador. The study looked at value chains including French beans, chili, sweet potato, and summer flowers, and identified key areas of reform necessary to maintain Kenya’s leading position and brand reputation in the export markets. The launch event included key public and private industry stakeholders, and was presided over by Ministry of Agriculture’s Permanent Secretary, Dr. Romano Kiome. The report was hailed as a significant step forward in improving Kenya’s global competitiveness given the export challenges Kenya is facing with rising costs and a depressed Eurozone market.

A ‘Crop Pillar Strategy’ adopted by USAID-KHCP concentrates horticultural value chain activities across a selected range of core food crops comprising potato, passion fruit, banana, and local market vegetables alongside specialized cash crops for export.

Improved prices of 27 Ksh/kg (\$0.32/kg), up 33 percent from last season, and new orders for 49 MT of sweet potato resulted from the roundtable discussion with 109 farmers from Makueni County and nine major sweet potato buyers from Nairobi’s main Gikomba Market. These market linkages are facilitated through the package of business development services provided by USAID-KHCP.

More than 500 farmers in Uasin Gishu, Trans-Nzoia, and Nandi Counties benefitted from new farm gate orders for fresh purple passion fruit worth Ksh 480,000 (\$5,644) per week as a result of the National Passion Fruit Forum organized by USAID-KHCP held in Eldoret in May. The forum provided the linkage for the agreement between Equatorial Horti Fresh to supply East African Growers with new orders for six MT per week of high-quality purple passion fruits at a fixed price of Ksh 80/kg (\$0.97/kg). Equatorial Horti Fresh is the region’s largest exporter of passion fruit to Uganda. Also between July and October, four additional exporters began sourcing passion fruit from farmers in the three regions. These connections are providing farmers with a diversified and year round market at competitive prices. Consequently, more farmers in the regions are embracing passion fruit farming.

Four commercial nurseries established by USAID-KHCP were launched in Kakamega County by the office of the Provincial Director of Agriculture as part of a Banana Forum with local government agencies and farmers. The nurseries have a capacity of up to 100,000 tissue culture banana plants annually - enough to supply 2,000 smallholder farmers with high-quality planting material. A value chain analysis summary for the Kenyan banana industry has provided new insight on the need for improved rootstock and marketing channels.

5.5 MARKETING SYSTEMS

USAID-KHCP continued its participation within the Technical Validation Committee under the National Horticulture Production Data Validation exercise coordinated by HCDA. The final report

for 2011 was distributed to 650 District Agricultural Offices throughout the country with a project contribution towards the printing costs.

Market bulletins on passion fruit, green beans, sweet potato, and pigeon peas that include detailed product specifications, production costing and pricing trends were released to stakeholders. The bi-monthly Market News Service provided by USAID-KHCP is now reaching a much wider audience of 471,000 subscribers through website links with the Horticultural News Trade magazine and 18,205 direct subscribers.

Market development services provided by USAID-KHCP have resulted in a total of 255 business partnership agreements in HRI between wholesalers, brokers, processors, and retailers. This is covering sweet potatoes, capsicum, watermelon, exotic vegetables, traditional vegetables, potatoes, mangoes, and passion fruits. These linkages are being strengthened through business forums across the three regions where markets have been identified and specific sales programs developed.

A comprehensive baseline survey of the banana sub-sector in Nyeri County refined the specific indicators relevant to the pilot project impacting more than 15,000 banana farmers. The market research survey for local market vegetables in Kilifi County involving farmers, wholesalers, hotels, and retail chains has strengthened direct sales for the coming season.

The first phase of the project's innovative Retail Audit Survey successfully came to a close, having provided valuable monthly information on the sales of fresh fruits and vegetables for domestic markets. The audit measured market flow, consumption trends, constraints, and strategies for enhancing domestic consumption of passion fruit, mangoes, bananas, potatoes, sweet potatoes, cabbages, tomatoes, kales, and green maize. The data summary for the period of June 2011 to March 2012 defines a local market retail industry with total fruit sales of \$451 million and vegetables of \$1.1 billion.

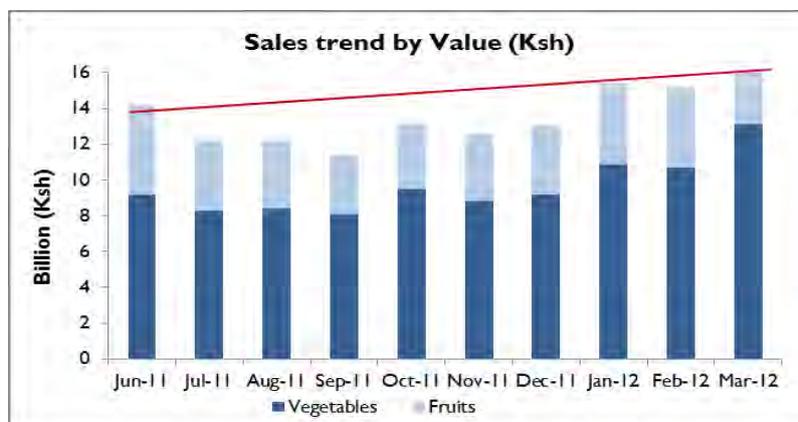
“USAID-KHCP Horticulture Retail Audit Report shows it is possible to focus domestic growth for the big volume commodities like cabbage, sukuma wiki, tomato, potato, and mango.”

- Cited in the National Task Force's Strategy to Sustain and Accelerate Growth of the Horticulture Sub-Sector, 2012.

Figure 13: Volumes of Fruits and Vegetables Traded June 2011 – March 2012



Figure 14: Value of Fruits and Vegetables Traded June 2011–March 2012



The Ministry of Agriculture is developing a national market information system (MIS), primarily targeting domestic horticulture value chains. MOA’s action plan calls for: conducting a detailed assessment of existing market information models impacting the industry; evaluating international market information systems; promoting more effective marketing of horticultural produce in the domestic, regional, and international markets; utilizing synergies between the public and private sector actors; and developing operational guidelines and coordinating mechanisms for a national MIS. A 15-member steering committee with representation from key horticultural players including USAID-KHCP is working to present a draft national model by end of November 2012.

“In partnership with our development partners, we are promoting an innovative, commercially-viable, and competitive agriculture sector. In so doing, we are substantially investing in the horticulture market information systems.”

- Dr. Romano Kiome
Permanent Secretary, Ministry of Agriculture

ANNEX I: FINANCIAL SUMMARY

The financial summary covers USAID-KHCP expenditures from project inception through September 30, 2012. Total funds expended during this fiscal year (October 1, 2011 through September 30, 2012) were \$7,226,673. A balance of 60 percent of total contract funding remains. Of the current obligation, 45 percent of the funding remains. Financial summary submitted as separate attachment.

ANNEX 2: USAID-KHCP PERFORMANCE AGAINST INDICATORS

#	Indicators	Results	Targets	Results	Unit
		Year 1	Year 2	Year 2	
1	Number of rural households benefiting directly from USG interventions	19,228	27,500	21,662	M
		19,211	22,500	26,055	F
2	Number of individuals who have received USG supported short-term agricultural sector training	45,103	82,500	85,327	M
		44,436	67,500	98,846	F
3	Number of firms receiving USG assistance to improve their management practices	32	2	9	
4	Percent change in annual production per unit of output	25	2	13.97%	%
5	Percent change in cost of production per unit	-13	-2	17.80%	%
6	Gross margin per unit for targeted commodities from USG assistance	105	2	92%	%
7	Number of policies/ regulations/administrative procedures analyzed as a result of USG assistance	9	1	5	
8	Number of new technologies or management practices made available for transfer as a result of USG assistance	9	2	4	
9	Number of farmers using improved technology	21,592	27,500	26,232	M
		21,631	22,500	16,836	F
10	Adoption of targeted technologies from USG assistance	6,079	25,000	14,763	
11	Number of farmers adopting NRM practices for sustainable agricultural production	4,296	11,000	39,365	M
		4,292	9,000	29,323	F
12	Number of public-private partnerships formed as a result of USG assistance	33	25	5	
13	Number of firms receiving capacity building assistance to export	13	3	16	
14	Volume and value of intra-regional exports of targeted agricultural commodities as a result of USG assistance	3,419	3,400	4,654	Vol (MT)
		432	425	624	Val (Million Ksh)
15	Volume and value of international exports of targeted agricultural commodities as a result of USG assistance	22,438	20,740	17,818	Vol (MT)
		4,536	4,160	4,754	Val (Million Ksh)
16	Competitiveness from USG assistance (Volume and value of purchases from smallholders of agricultural commodities targeted by USG assistance)	42,817	33,700	104,790	Vol (MT)
		1,169	5,910	3,067	Val (Million Ksh)
17	Number of users accessing MISs	5,975	8,000	18,205	
18	Number of targeted firms achieving international standards from USG assistance	4	3	9	
19	Total number of business service providers participating in the BDS program target areas	17	8	9	
20	Number of producer organizations, water users associations, trade and business associations, and CBOs receiving USG assistance	1,194	2,000	1,206	
21	Number of women's organizations assisted as a result of USG supported interventions	585	800	629	

ANNEX 3: UPDATED WORK PLAN

	Activity	Results	Targets	Results
		Year 1	Year 2	Year 2
1	Project Administrative Activities			
	Communications & Reporting			
1.3	Meetings with stakeholders/other projects		-	10
1.4	Environmental Monitoring and Mitigation Report	1	1	0
1.5	PERSUAP reviewed and updated		-	0
1.6	Project Newsletters	9	12	48
1.7	Success Stories	4	8	6
1.8	Market News Bulletins	7	4	11
1.9	Quarterly Reports	3	3	3
1.10	Annual Reports	1	1	1
1.11	Annual Work plan	1	1	1
1.12	Final Report	0	-	-
2	Monitoring & Evaluation			
2.1	USAID Regional M&E/staff field visits		2	23
2.2	M&E System developed and installed	1	-	8
2.3	Staff training in M&E methodology	4	3	6
2.4	Baseline Data report completed	1	1	2
2.5	Productivity Survey	1	2	2
2.6	Indicator data verified	1	1	1
2.7	PMP indicators reviewed	2	1	4
2.8	Quarterly progress review with USAID		4	3
2.9	Mid-Term evaluation		1	-
3	Productivity Enhancement and Food Security			
3.1	Partner sub-grant awards developed	20	8	4
3.2	Demonstration plots established	572	310	1,260
3.3	Technical assistance field visits	6,491	2,250	14,201
3.4	Agricultural productivity field days	93	155	236
3.5	Crop production guides produced/updated	4	8	7
3.6	Crop budget reports developed	4	8	7
3.7	Training workshops held (GAPs, irrigation etc)	21	11	55
4	Enhanced Value-Addition			
4.1	Review of micro- and commercial processing activities	2	8	49
4.2	Partner sub-grant awards developed	1	2	-
4.3	Processing/value-added feasibility studies	1	12	-
4.4	Technical assistance visits at factory/client sites	65	50	73
4.5	STTA assistance provided	1	1	1
4.6	Training workshops held (standards, HACCP, etc.)	49	3	18
4.7	Processing/value-added technical manuals	2	12	18

	Activity	Results	Targets	Results
		Year 1	Year 2	Year 2
4.8	New value-added products introduced	1	1	2
5	Value Chain Coordination, Marketing and Trade Promotion			
5.1	Partner subgrant awards developed	6	3	5
5.2	National Crop Forums		7	3
5.3	STTA support for MIS and market linkages	1	2	11
5.4	MIS training workshops/seminars held	2	2	23
5.5	Market Information Training		3	32
5.6	Market analyses for crops/value added products	6	9	14
5.7	Value chain studies for products w. potential	6	4	5
6	Business Environment & Institutional Capacity-Building			
6.1	Participation in National Taskforce on Horticulture	4	6	3
6.2	Horticulture Industry Competitiveness Roundtable		2	-
6.3	Partner subgrant awards developed	6	2	-
6.4	Partnership-GDA proposals evaluated		3	1
6.5	Support for wholesale marketing systems	3	3	5
6.6	Adoption of international & domestic standards	4	4	20
6.7	Training workshops in standards compliance	52	2	18
6.8	STTA support in capacity building & bus. environment	3	5	3
6.9	Strategic analysis of industry policies and constraints	4	2	4
7	Gender, Youth and Nutrition			
7.1	Gender, Youth & Nutrition ToTs		3	7
7.2	Gender, Youth & Nutrition ToT evaluations		4	14
7.3	Gender & Youth value chain case Studies		3	6
7.4	National Stakeholder events (G,Y&N)		3	8
7.5	Gender & Youth communications		4	5
7.6	Integrated Nutritional Framework developed		1	1
7.7	Nutrition-related capacity building activities		4	44
7.8	Nutrition Partnership developed		1	3
7.9	Nutrition cook book release		1	0

ANNEX 5: ADMINISTRATION AND GRANTS

Sub-award Number	Partner Name	Approval Date	Budgeted \$	Expended \$	Expended %	Balance \$	Balance %
PF 01	Wilmar Agro Ltd	21-Oct-10	477,850	414,263	87%	63,587	13%
PF 02	Pwani Projects Development Consultants (PPDC)	21-Oct-10	301,000	189,812	63%	111,188	37%
PF 03	Sunripe 1976 Ltd	21-Oct-10	254,325	133,539	53%	120,786	47%
PF 04	Dryland Seeds Company	21-Oct-10	169,107	111,185	66%	57,922	34%
PF 05	Business Initiatives for Survival and Eradication of Poverty (BISEP)	21-Oct-10	294,574	170,624	58%	123,950	42%
PF 06	Ukamba Christian Community Service (UCCS)	21-Oct-10	216,323	143,407	66%	72,916	34%
PF 07	Agricultural Technologies & Information Program (ATIP)*	21-Oct-10	74,516	74,516	100%	-	0%
PF 08	Animal Draft Power Programme (ADPP)	21-Oct-10	499,260	359,516	72%	139,744	28%
PF 09	KENGAP*	21-Oct-10	126,496	126,496	100%	-	0%
PF 10	Good Neighbours Community Programme (GNCP)	21-Oct-10	422,134	344,158	82%	77,976	18%
PF 11	Mace Foods	20-Apr-11	366,546	144,903	40%	221,643	60%
PF 12	VEEMA	20-Apr-11	343,395	141,935	41%	201,460	59%
PF 13	Canken International	20-Apr-11	388,705	236,903	61%	151,802	39%
PF 14	Blue Rhino Consult	20-Apr-11	362,887	218,301	60%	144,586	40%
PF 15	KENFAP	20-Apr-11	485,305	74,836	15%	410,469	85%
PF 16	Kenya Rainwater Association (KRA)	20-Apr-11	507,239	301,214	59%	206,025	41%
PF 17	CREADIS	20-Apr-11	440,469	194,836	44%	245,633	56%
PF 18	Africa Harvest	20-Apr-11	440,428	163,077	37%	277,351	63%
PF 19	WONI Exporters	20-Apr-11	270,838	84,394	31%	186,444	69%
PF 20	VEGPRO	20-Apr-11	264,150	153,690	58%	110,460	42%
PF 21	Syngenta	21-Sep-11	588,743	73,154	12%	515,589	88%
PF 22	ACKWRCCS	21-Sep-11	466,795	118,941	25%	347,854	75%
PF 23	ARDAP	21-Sep-11	565,484	186,964	33%	378,520	67%
PF 24	Siboti Foods*	21-Sep-11	298,765	2,596	1%	296,169	99%
PF 25	Earth Oil	21-Sep-11	349,514	119,564	34%	229,950	66%
PF 26	FPEAK	9-May-12	950,183	79,888	8%	870,295	92%
PF 28	Green Zone Agencies (GZA)	20-Jan-12	296,561	193,893	65%	102,668	35%
PF 29	Community Mobilization Against Desertification (C-MAD)	20-Jan-12	315,038	131,560	42%	183,478	58%
PF 30	Crop Nutrition Laboratory Services (CNLS)	20-Jan-12	392,723	161,425	41%	231,298	59%

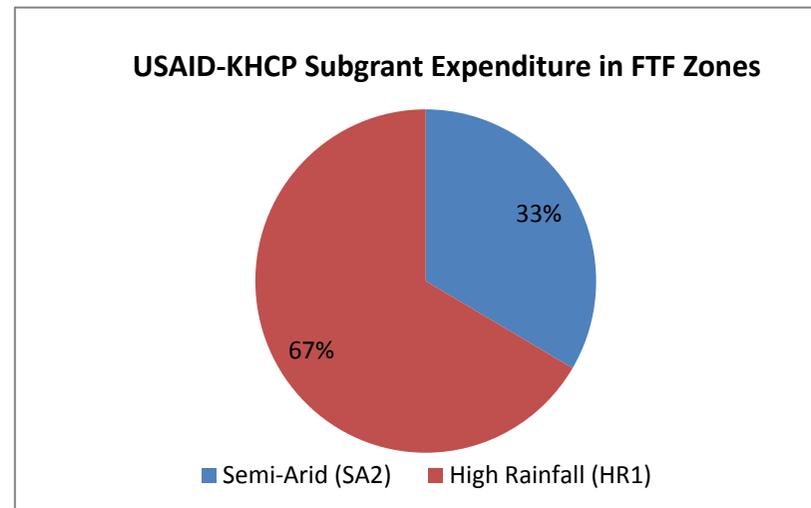
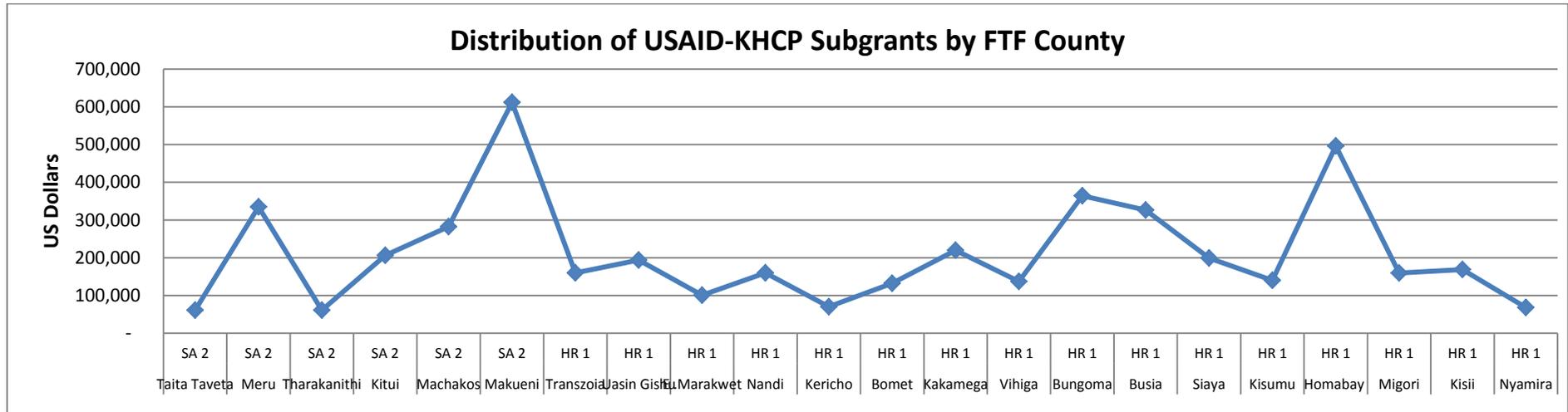
Prepared by Fintrac Inc.

TF 01	Real Impact	20-Apr-11	321,102	212,272	66%	108,830	34%
FPC 01	Analysis Strategies	21-Oct-10	46,121	46,121	100%	-	0%
FPC 02	TNS Research	16-Mar-11	180,963	180,963	100%	-	0%
FPC 03	Dr. Alice Mwangi	3-May-11	39,078	39,078	100%	-	0%
FPC 04	Streamlined Solutions Ltd	24-Aug-11	88,600	72,110	81%	16,490	19%
FPC 05	QSM	16-Sep-11	470,735	82,215	17%	388,520	83%
FPC 06	AS&A	16-Sep-11	158,035	158,035	100%	-	0%
FPC 07	Farm Concern International	24-Aug-11	598,580	243,417	41%	355,163	59%
FPC 08	Monsanto	16-Aug-11	210,295	-	0%	210,295	100%
Total			13,042,863	5,883,803	45%	7,159,060	55%

*Subgrant closed

ANNEX 6: USAID-KHCP ASSISTANCE BREAKDOWN

USAID-KHCP has established partnership agreements with over 30 companies, NGOs and business service providers, totaling \$13,042,863. Activities are implemented in 22 Feed the Future focus counties in the High Rainfall (HR1) and Semi-Arid (SA2) zones of influence. Project expenditures in those two regions reached \$4,654,308 this year, with 67 percent in HR1 and 33 percent in SA2.



ANNEX 7: SNAPSHOTS



SNAPSHOT

Value addition dramatically impacts farmers' yield and incomes

Access to simple and low-cost value addition technologies provides high returns and food security to farmers



Photo: Fintrac Inc.

A group of farmers learning about various value-added products on display by the Huruma Women Group during a field day in Nzai village, Mukaa District, Makueni County in October, 2011.

“Our members have been empowered to improve their income and standards of living through purchase of a solar drier, trainings in value addition technologies, and technical assistance in market linkages.”

—Rehema Madega, Coordinator, Huruma Women Group.

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The Huruma Women Group is diversifying into value-added products that are improving farmers' incomes, standards of living and employment opportunities. In fact, in under a year, the group has tripled its income from Ksh 40,667 (\$508) to Ksh 122,000 (\$1,525).

Despite this success, the story has not always been so positive for the group. Since its inception in 1998, the mission of the Huruma Women Group has been to practice environmental conservation and generate income for women through value-added processing. Unfortunately, the 31-member group faced enormous challenges stemming from a lack of knowledge in processing, product development, food quality and safety control, micro-processing and marketing. For years, the group was struggling to stay in business.

This all changed in June 2010, when the USAID-funded Kenya Horticulture Competitiveness Project (USAID-KHCP), through its partner, Business Initiatives for Survival & Eradication of Poverty (BISEP), began working with the women. As a way of building the group's capacity, BISEP offered technical assistance and low-cost value addition technologies to improve product development, food safety and quality control, micro-processing and market linkages.

With the acquired skills and knowledge, the group is now processing fortified flour from Orange Fleshed Sweet Potato (OFSP), pumpkin, butternut, green grams, cowpeas and pigeon peas. They process OFSP and yam crisps, and dried vegetables for the domestic market. In addition, they sell a number of baked goods to domestic buyers.

BISEP has also linked the group to OFSP farmers who provide them with a steady supply of the crop. The traditional variety is harvested once a year, while OFSP is harvested four times a year, providing year-round production, ultimately improving food security and household income.

In October 2011, the group bought 800 kilograms of OFSP tubers from local farmers valued at Kshs. 16,000 (\$200) and produced 368 kilograms of flour worth Kshs. 44,160 (\$552). Farmers' incomes have nearly tripled from selling value-added OFSP products, compared to what group members used to earn from selling fresh tubers. And from their own initiative, the group has bought a grinding mill. As a result, they have been contracted by two local institutions to grind 9,000 kilograms of maize flour, providing additional income of Kshs. 36,000 (\$450) per month. The group now plans to scale-up their production by acquiring a bigger solar drier to meet the increasing demand for their value-added products.



SNAPSHOT

Trellising Benefits Yellow Passion Fruit Farmers

Trellising is a simple, low-cost way to increase yields, prevent disease, and reduce postharvest losses.



Photo by Fintrac Inc.

Veronica Kalondu displays her harvest of yellow passion fruit in Shimba Hills, Kwale County. She has embraced the trellising technology on her farm and has seen her yields more than triple.

“Since the interventions of USAID-KHCP through VEEMA, the quality and quantity of yellow passion fruit has greatly improved in Shimba Hills region.”

– John Mutisya, Regional Supervisor, Frigoken Ltd, Shimba hills

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With high market demand and good climatic conditions, the potential for yellow passion fruit in Kenya’s Coast region is great. Unfortunately, production has been uncompetitive due to poor crop husbandry techniques, inadequate access to quality seedlings, and unreliable markets.

In response, USAID-KHCP has facilitated a public-private partnership between Vision for Economic Empowerment in Africa (VEEMA) and the Kenya Agricultural Research Institute (KARI-Matuga). The partnership is working to improve the production, supply, and accessibility of clean planting material to farmers in Shimba Hills, Kwale County. KARI-Matuga undertakes rapid vine multiplication to produce certified seedling, and VEEMA links smallholders to these seedlings. VEEMA also promotes simple, low-cost technologies to improve yellow passion fruit production while linking farmers to new marketing opportunities.

In the traditional method of passion fruit farming, vines grow uncontrolled up a tree or shrub, and farmers have to climb the tree to shake down the fruit. This results in a thick, over-crowded crop where yields are low, pests and disease run rampant, and postharvest losses abound. To address this challenge, VEEMA is introducing a trellising system – a simple, low-cost innovation made from bamboo and wire grid, which controls pests and diseases and enables easy harvesting. It also extends the life of the crop to five or six years (traditional farming crops live less than three years), thereby increasing farmer productivity and incomes.

Previously, farmers were planting around 300 vines per acre on shrubs or trees, producing an average of 1,200 kilograms per season valued at Ksh 24,000 (\$300). Trellising has increased the average vines planted per acre to 600, producing an average of 7,800 kilograms a season worth Ksh 156,000 (\$1,950) – an increase in sales of more than 600 percent. Through demonstration sites and field days, more than 200 farmers in Shimba Hills have adopted the trellising innovation, and VEEMA plans to help an additional 1,300 smallholders adopt improved technologies.

In anticipation of increased reliable production, juice processors such as Milly Fruit Processors, Sunny Processors and Frigoken are already providing new marketing opportunities to farmers. Frigoken, for instance, has since built a juice processing plant in the region with the capacity to process 3,000 metric tons of fruit per month bound for the export markets. This will provide a reliable market and increased incomes for smallholders.



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FROM THE AMERICAN PEOPLE

SNAPSHOT

Natural Resource Management Improving Sustainable Farming

Simple environmental conservation techniques improve farmers' yields and incomes



Photo by Fintrac Inc.

William Mugo examines his ornis flowers. With technical assistance from USAID-KHCP, youth are taking up smallholder flower farming with the incorporation of natural resource management as a sustainable option for employment and income generation.

“Having been jobless for close to seven years after dropping out of school for lack of school fees, I am glad that I can have a good income and be happily self-employed by simply planting flowers and conserving the environment.”

– William Mugo, smallholder flower farmer.

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Farmers in Kiambogo Village, Nyeri County face a number of environmental challenges, including soil erosion, deforestation, charcoal burning, water mismanagement, and erratic rainfall. These issues impact the climatic conditions of the area, thus limiting agricultural productivity, food security, and income.

The United States Agency for International Development's (USAID) Kenya Horticulture Competitiveness Project (KHCP) is working to reduce these trends by teaching farmers simple Natural Resource Management (NRM) techniques that not only help conserve the environment, but also help improve their incomes.

In June 2010, USAID-KHCP began working with Wilmar Agro Ltd, a major exporter of Kenyan flowers, which contracts more than 3,500 smallholder farmers. USAID-KHCP provides technical assistance to Wilmar Agro, which in turn, trains smallholders in NRM and sustainable farming. Trainings are conducted in collaboration with the Ministry of Agriculture, and include demonstration plots, field days, and farmer-exchange visits.

William Mugo, a 24-year-old smallholder farmer who grows flowers for export in Kiambogo Village, started receiving training from Wilmar Agro early last year. He quickly adopted several NRM techniques, such as water harvesting to control water usage and proper soil preparation to prevent erosion. These allowed him to save money on resources while increasing production. By the end of the year, he had sold flowers worth KSh 100,000 (\$1,250) from just a quarter acre of land. He's now using his profits to further increase his income by diversifying into onions, Irish potatoes, and local market vegetables. In addition, he is able to support his family and educate his siblings.

William says he now understands that NRM is the only way to make his farm – and income – sustainable, and is now leading efforts towards conserving the environment in his community.

NRM is a concept that brings together sustainable land use, participatory planning, integrated water management, biodiversity conservation, and planning for future sustainability. To date, more than 400 farmers working with Wilmar Agro have planted over 11,887 trees and adopted NRM techniques such as tree nurseries, water conservation, reforestation, crop diversification, and soil erosion controls. As a result, farmers are now benefiting from reliable rainfall and good climatic conditions for horticultural farming, thus increasing their yields and incomes.



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FROM THE AMERICAN PEOPLE

SNAPSHOT

From Food Relief to Sustainable Agricultural Production

Adoption of simple, low-cost agricultural technologies makes a difference in entire community



Photo by Fintrac Inc.

Members of Muchui Women Group accompanied by USAID-KHCP Central Region Field Manager, Lydia Njuguna (second right) celebrating their greenhouse tomato harvest.

“Thanks to the technical assistance from USAID-KHCP we no longer depend on relief food from the government. In fact, our members are now not only food secure but also have a reliable means of income.”

— Grace Muriuki, Chairlady, Muchui Women Group.

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Agriculture in the northern parts of Meru County in Central Kenya has been characterized by erratic rainfall, poor agronomic practices, limited information, and weak market linkages, all of which create the conditions for food insecurity. In response, among other initiatives, the government has been providing food relief to the residents for the last couple of years.

Against this background, the Muchui Women Group in the Buuri District of Meru County was formed in 1994 to enable its 100 members to utilize their resources sustainably through improved agricultural practices, natural resources conservation, and stronger market linkages. However, the group has struggled because they lacked critical knowledge of good agricultural practices, such as pests and disease management and access to certified seeds.

Farmers Helping Farmers (FHF), a charitable organization with financial support from the Canadian International Development Agency (CIDA), began working with the group in 1997 to improve their lives. FHF introduced shade nets, kitchen gardens, greenhouse technology, and drip irrigation to the women's group. Each member of the group now owns an average of 0.40-2 hectares of land and has a kitchen garden to grow local market vegetables for nutritional home consumption and to sell for additional income.

To further build up the technical capacity of the group, USAID's Kenya Horticultural Competitiveness Project (KHCP) commercial partner Syngenta East Africa Ltd began working with the group early this year. Syngenta provided the group trainings in pesticide use and nursery management, as well as provided access to seeds for the very latest hybrid tomato variety. In April 2012, the group hosted a field day facilitated by Syngenta where 107 farmers received hands-on training in modern farming techniques, including improved seed stock, drip irrigation, nutrition and safe pesticide use. The daylong event featured a demonstration farm where Tylka F1 tomato variety was successfully grown under greenhouse/drip irrigation.

“Thanks to the technical assistance from USAID-KHCP we no longer depend on relief food from the government. In fact, our members are now not only food secure but also have a reliable means of income,” Grace Muriuki, Chairlady of the Muchui Women Group, said.

The assistance from Syngenta in providing technical training on tomato seedling production, grafting and integrated pest management techniques in a greenhouse environment and access to improved seedlings is improving the group's production. Group members are also adopting the technologies on their individual farms as well as diversifying to other local market vegetables like kales, spinach and eggplant.



SNAPSHOT

A retired nurse now nursing seedlings to feed her community

Access to quality passion fruit seedlings improves farmers' yields and incomes



Photo by Fintrac Inc.

Irine Zippy Kalamai inspects the grafted passion fruit seedlings at her group's nursery. The group has been trained in grafting and nursery management and is using the knowledge and skills to the benefit of the whole community.

"This project (seedlings propagation) brought hope back into our community, for no one was going to try and plant any new crop after what happened with the bad seedlings. I now believe that if farmers can easily access quality seeds, they will have better yield and ultimately high incomes."

— Irine Zippy Kalamai, Chairperson, Chepterit Horticultural Growers Organization

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Irine Zippy Kalamai, a 62 year old retired nurse in Nandi County, has been farming maize and wheat all her life. She is now using her knowledge in the health sector and in agriculture to transform her community. In her fight to improve the income and nutrition of women, most of whom were battling HIV/AIDS and were producers of illicit brew, Irine formed the Chepterit Horticultural Growers Organization to help women set up income generating activities, such as seedling propagation and microfinance.

In 2010, the 42-member group raised Ksh 160,000 (\$1,951) half of it being from Irine's own contribution, and bought 4,000 passion fruit seedlings for planting. Unfortunately these uncertified seedlings were of poor quality and most of the farmers lost their crop. This was a huge loss to the community as they had invested heavily with the hope of increasing their income.

However, when all hope seemed to have been lost, in October 2011 the group was introduced to Good Neighbours Community Programme (GNCP), an organization working with the USAID-funded Kenya Horticulture Competitiveness Project (KHCP) to promote smallholder passion fruit production. In collaboration with the Ministry of Agriculture, GNCP helped the group set up a certified passion fruit nursery, introduced them to various agricultural technologies such as drip irrigation and integrated pest management, and linked them to markets. Irine donated her land where the group has established a nursery with a capacity to produce 75,000 seedlings a year. The nursery has been registered by the Horticultural Crops Development Authority (HCDA) and certified by the Kenya Plant Health Inspectorate Services (KEPHIS).

As a result of USAID-KHCP's interventions and technical assistance, the group sold seedlings worth Ksh1.3 million (\$15,854) last year. They have also sold 7,500 kilograms of passion fruit worth Ksh 300,000 (\$3,659) to the local market. In addition, more than 304 farmers from Nakuru, Nandi, and Uasin Gishu counties have directly benefitted by buying high quality seedlings from the group. The group is now using the table banking system to save money among themselves, with several members combining their savings to purchase more land for horticulture farming.

USAID-KHCP's Gender Mainstreaming Strategy aims to promote income generation and increase food security while at the same time contributing to the responsible management of natural resources and the environment. Passion-fruit production and seedling nurseries are examples of high value crops and improved technologies that the project promotes to help women increase production, decrease workloads and enhance food security for the entire household.

In the last year, more than 2,000 farmers (48 percent women) working with USAID-KHCP in Rift Valley region have harvested over 750,000kg of passion fruit valued at Ksh 60 million (\$731,707) from 94 hectares. At the moment, 408 hectares of passion fruits is under production in the region.

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