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**INCREASE IN MANGO EXPORTS DUE TO PROJECT
INTERVENTIONS**



MARCH 2014

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CONTEXT

Feed the Future West/WINNER Project reflects the Post-Earthquake USG Haiti Strategy: Toward Renewal and Economic Opportunity, the USG Presidential Feed the Future Initiative and the USAID/FORWARD initiative. In line with these Strategies and the current results framework Initiatives, FTF WEST/WINNER seeks to sustainably increase incomes for rural households in the Cul de Sac and the Matheux corridors by focusing investments on five targeted value chains: four domestic (corn, rice, beans and plantains) and one export (mango). For the mango value chain, the project was authorized to work in the Mirebalais/Saut d'Eau areas in addition to the Cul de Sac and Matheux corridors.

This report presents the activities undertaken by FtF West/WINNER in the mango value chain and their impact on mango exports in the project's areas of intervention.

THE MANGO VALUE CHAIN IN HAITI

Mangoes are an important agricultural product for Haiti. Haiti is the sixth largest exporter of mangos to the US market, representing about 2.5% of US mango imports. Annual mango exports, primarily to the US, exceed 2 million 10 lb boxes (of about 4.5 kg) per year. Haiti's mango sector is represented by 15 grower groups (FENAPCOM) and 10 exporters (ANEM) who are working to upgrade and expand the value chain. Almost all the mangoes exported from Haiti are of the francisque variety, which accounts for 15% of national production.¹

Table 1 presents a summary of mango exports to the US from the six major exporters from 2010 – 2012.

Table 1. Three year trend for US mango imports by country and by month (2010 – 2012)

Country	Mango exports to US (10,000 lb units)			
	2010	2011	2012	Average
Mexico	47,519	51,842	53,859	51,073
Peru	7,093	9,961	5,946	7,667
Ecuador	5,652	6,694	8,338	6,895
Brazil	5,371	5,464	5,338	5,391
Guatemala	2,795	3,945	3,745	3,495
Haiti	1,423	2,033	1,763	1,740
Total	68,852	79,939	78,989	76,260

Source: www.mango.org

From the Haitian perspective, most mangos exported are to the US, though not exclusively. The main areas mangos are exported from include the Artibonite and the central plateau. Table 2 presents the quantity of mangoes exported in 2012 by area in Haiti.

¹ MarChe mango bulletin, March 2010

Table 2. Mango exports by area (2012)

Commune	Quantity of mangos exported (dozen)	Number of cases of 4.5 kg	Volume of exports (MT)
Cabaret	40,384	48,461	218
Arcahaie	19,371	23,245	105
Montrouis	4,082	4,898	22
Cul de Sac plain	71,781	86,137	388
Leogane	22,474	26,969	121
Total Ouest	158,092	189,710	854
Gros Morne	815,806	978,967	4,405
Terre Neuve	79,117	94,940	427
Jean Rabel	2,338	2,806	13
Gonaives	94,770	113,724	512
Ennery	52,820	75,384	339
Saint-Michel	98,325	117,990	531
Total Haut Artibonite	1,153,176	1,383,811	6,227
Jacmel/Cayes Jacmel	26,221	31,465	142
Marigot	1,470	1,764	8
Total Sud-Est	27,691	33,229	150
Marchand	39,604	47,525	214
Petite Riviere	236,320	283,584	1,276
Lascahobas	22,713	27,256	123
Mirebalais	156,721	188,065	846
Saut d'Eau	273,210	327,852	1,475
Boucan Carre	127,746	153,295	690
Verrettes	119,261	143,113	644
Grande Place	44,604	53,525	241
Hinche	2,294	2,753	12
Total Bas Artibonite and Plateau Central	1,022,473	1,226,968	5,521
Grand Total	2,361,432	2,833,718	12,752

Source: ANEM

In 2012, Haiti exported 12,752 metric tons of mangos. Of this amount, 3,054 tons (24 %) came from areas supported by FTF West/WINNER (Cabaret, Arcahaie, Montrouis, Cul de Sac plain, Mirebalais, and Saut d'Eau).

Key constraints in the mango value chain in Haiti include:

- 80% of the mango trees are old
- They are wild harvested
- The yields are low
- There are few mango orchards
- There is little upkeep and knowledge of modern agricultural techniques

- There is no legal framework for the mango sector
- There is weak infrastructure and poor road and transportation conditions
- There is a lack of sorting facilities
- There are virtually no regulations for the sector
- There is no traceability system for mangos

FTF WEST/WINNER ACTIVITIES IN THE MANGO VALUE CHAIN

Since being tasked with intervening in the mango value chain in 2011, the FtF West/WINNER project undertook several activities to alleviate some of the constraints in the value chain.

Production

The FtF West/WINNER project provided assistance to farmer associations in setting up mango nurseries in the areas of Mirebalais, Saut d'Eau, and the Matheux corridor. The project also provided training to farmers on grafting mango francisque with other mango varieties; and on pruning mango trees to increase production. Finally, the project worked on the transplantation of mango trees as part of its agro-forestry campaigns. Overall, about 550,000 mango tree seedlings were transplanted from 2011 to 2013 in the project's areas of intervention.



Post harvest

Most of the FtF West/WINNER interventions in the mango value chain concerned the reduction of post-harvest losses. The assistance provided to mango farmer associations by the project included the provision of materials to reduce post-harvest losses and training on harvesting, selection, packing and transportation. Specifically, the following technologies were made available to farmers:

- Cutting poles to reduce the bruising of the fruits in the harvesting process;
- Mobile collection centers including tents and tables to provide a sanitary and efficient environment for sorting and packing mangos;
- Drums for washing mangos;
- Tarps to avoid placing harvesting mangos directly on the soil where they can be contaminated;
- Crates to facilitate transport and avoid crushing and bruising of the fruit; and
- Donkey pack frames to facilitate the transport of crates on donkeys from remote production areas to collection and aggregation centers.

The pictures below illustrate the change in practices due to the project's interventions in reducing post-harvest losses.

Cutting poles



Mango washing



Donkey pack frame



Overall, the project provided technical assistance to 82 mango producer associations representing over 20,000 members. The impact of the project's interventions resulted in a significant reduction in post-harvest losses and a commensurate increase in exported quantities. In order to gauge the impact of new post-harvest techniques and technologies on rejection rates by exporters, we conducted a survey of members of nine producer associations that benefitted from

FtF West/WINNER support. Their appreciation of post-harvest techniques introduced by the project on mango rejection rates is as follows:

- *Cutting poles* intended to harvest mangos with stems and to minimize rejection rates from latex burns. According to interviewees the cutting poles resulted in a reduction of rejection rates due to latex burns from 5% to 20%.
- *Tarps*. All farmers interviewed acknowledge that tarps are an inexpensive way to protect harvested mangos from wet grass, soil and dirt.
- *Pack frames with plastic crates*. According to farmers, the pack frames with plastic crates have reduced the rejection rates due to bruising by 25% to 35%.
- *Mobile collection centers*. The farmers claim that the mobile collection centers reduce the mango rejection rates from latex burns by an average of 35%.

Based on this survey, mango producers rank the use plastic crates as the most significant practice to reduce post-harvest losses, followed by mobile collection centers.

IMPACT ON EXPORTS

The impact of FtF West/WINNER interventions on the reduction of post-harvest losses and increases in exports in its areas of intervention has been significant, as shown in Table 3.

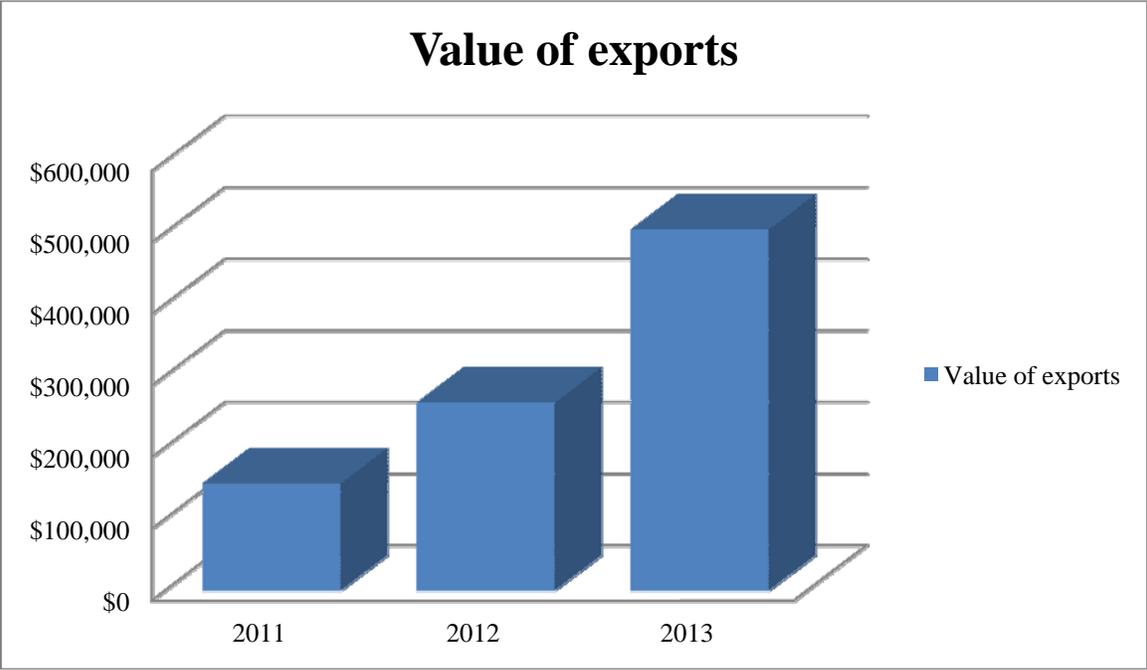
Table 3. Impact of FtF West/WINNER interventions on mango exports (mango units)

Associations	2011		2012		2013	
	Purchased by associations	Sold to exporters	Purchased by associations	Sold to exporters	Purchased by associations	Sold to exporters
RAPCOM	102,000	90,000	40,800	40,800	46,228	41,028
SAPKO	240,000	180,000	184,008	193,608	192,444	152,386
COEPDA	192,000	173,628	166,980	160,560	342,104	325,000
CETPA	240,000	180,000	156,000	156,000	231,406	197,600
AJBS	-	-	84,000	60,000	98,420	70,044
CODAF	-	-	36,708	3,600	65,002	39,000
MJPM	-	-	175,068	138,216	-	-
OFPDD	-	-	126,708	126,000	264,600	227,500
KDMC	-	-	126,000	60,024	-	-
APWOMOPA	-	-	4,116	4,116	-	-
VDC	-	-	133,512	120,000	154,000	140,140
MOSOPA	-	-	37,656	30,708	-	-
MPSM	-	-	-	-	44,114	-
OPADH	-	-	-	-	65,220	59,176
Total	774,000	623,628	1,271,556	1,093,632	1,503,838	1,251,874

We used the change in the rejection rate in order to quantify the impact of the project on exports. In the absence of the tools provided to producer associations by FtF West/WINNER, there are two types of losses: (1) losses from the production areas to the aggregation centers of the associations; and (2) losses in transport from the association’s aggregation units to the exporter’s facilities. In 2010 the average rejection rate reported by mango producer associations from mangos bought from farmers was 25%. In addition, exporters reported a rejection rate of 30% of the mangos received from associations. Based on the data presented in Table 3, we see that the rejection rate from mango producer associations supported by FtF West/WINNER dropped to 25.2% in 2011, 20.7% in 2012, and 16.8% in 2013. This impact is directly attributable to project interventions.

The value of mango exports from producer associations supported by the project was \$149,671 in 2011; \$262,472 in 2012; and \$504,169 in 2013. Figure 1 below presents the estimated increase in the value of exports due to the FtF West/WINNER project.

Figure 1 Value of mango exports attributable to FtF West/WINNER



OTHER IMPACTS

In addition to increased exports, the FtF West/WINNER project also built a mango drying unit in Mirebalais to add value to rejected mangos. The facility was built on land owned by ADAIM, a mango producer association, and is equipped to dry mangos and other fruits. The facility has been tested and has begun operations. As the project ends, the facility will be managed by a food company specialized in the promotion of local products.

The project also hired local firm Solutions SA to implement a pilot project for the traceability of mangos and plantain. The traceability system used GIS and cell phone technology to track the origin of mangos sold to exporters and uses a zip code system to identify areas of production. This traceability system has been presented to the Ministry of Agriculture and, if adopted, will constitute a major step forward in modernizing the Haitian mango value chain.

CONCLUSIONS AND RECOMMENDATIONS

The FtF West/WINNER project supported the development of the mango value chain through the introduction of improved post-harvest techniques to reduce losses; assistance to producers with mango tree planting, pruning and grafting; the implementation of a mango drying facility in Mirebalais; and the implementation of a pilot system for the traceability of mangos. These efforts have resulted in an increase in mango exports from farmer associations supported by the project and in significant reductions in post-harvest losses.

However, there is still much work to be done to fulfill the potential of the mango value chain in Haiti. Key tasks to undertake in the near term include:

- Complete and expand the mango traceability system;
- Continue to set up nurseries and to plant large areas of hillsides with mangos in targeted areas;
- Expand the distribution of mobile collection centers, crates, and post-harvest materials to mango producer associations;
- Improve roads and transportation conditions from mango producing areas;
- Increase and diversify the number of processing facilities to capitalize on unsold mangos (dried mangos, juice, preserves, etc.); and
- Modernize the value chain by training intermediaries to be more efficient.

Annex 1

List of associations supported by FtF West/WINNER in the mango value chain

#	Associations	# of members	Nurseries	Training	Transplantation	Commercialisation
<i>Mirebalais/Saut d'Eau</i>						
1	APDD	65	X		X	
2	AAPGB	120	X		X	
3	ACCM	100		X		
4	AJBS	60				X
5	AJPD	75		X		
6	AKPN	35		X		
7	APDF	40	X		X	
8	APDK-MA	200	X		X	
9	APDL	60	X			
10	APDS	105		X		
11	APDW _r	266		X		
12	APN	100		X	X	
13	APZES	115	X		X	
14	ASPCM	100		X	X	
15	CETPA	500			X	X
16	CODAF	78				X
17	COEPDA	850		X		X
18	COFAR	64		X		
19	FDIS	35		X		
20	FORCE	75		X		
21	GJADS	50		X		
22	GPDC	150		X		
23	KDMC	90	X			X
24	KOKODEN	90		X		
25	KOPB	125	X		X	
26	KOPLA	125		X		
27	KPDRG	110	X		X	
28	MFDKM	65	X		X	
29	MJPM	215				X
30	MOFADEG	53	X	X	X	
31	MOPACMAS	100		X		
32	MOPADA	75		X		
33	MOPADEM	70		X	X	
34	MOSOPA	200				X

#	Associations	# of members	Nurseries	Training	Transplantation	Commercialisation
35	MPDS	55		X		
36	MPSM	210			X	X
37	ODCPHA	200			X	
38	ODEEDF	200		X		
39	ODPP	35	X		X	
40	ODSEC	75				X
41	ODSEG	150				X
42	OFPDD	102				X
43	OPCS	250		X		
44	OPDMAK-SO	223	X		X	
45	RAPPCOM	254				X
46	RPG	220		X		
47	SAPKO	555				X
48	SKS	190	X		X	
49	UFSAG	900	X		X	
50	UPDM	190	X		X	
51	UPS	95		X	X	
<i>Matheux corridor</i>						
52	ACOP	105		X		
53	AFLA	200			X	
54	AIPA	200		X		
55	AIPD	20		X		
56	AIPM	75		X		
57	AJADCO	267			X	
58	APAM	200				X
59	APC	1,500		X		
60	APWOMOPA	500				X
61	ASCUDEC	140				X
62	AT6	900			X	
63	ATAIB	60				X
64	CODCOA	200		X		
65	CPIM3SM GAD	40		X		
66	CAZALE	206		X		
67	GVADK	72			X	
68	KAPABE	450		X		
69	KAPPG	200			X	
70	KEBJ3A	200			X	

#	Associations	# of members	Nurseries	Training	Transplantation	Commercialisation
71	KODEP	1,000			X	
72	KOFAM	9		X		
73	MCDG	1,113			X	
74	ONADEV	250			X	
75	OPADH	152			X	
76	OPD8	3,000		X		
77	OSPDECS	58		X		
78	OTDOC	70			X	
79	PVADAC	50		X		
80	RACADAMA	938			X	
81	REIDEC	17			X	
82	VDC	97			X	X
	TOTAL	20,754				

Annex 2. Materials and equipment for mango handling provided to farmer associations

#	Associations	# Mobile collection centers	Tarps	# Scales (50 kg)	# Crates	Sorting tables	Water drums
Mirebalais-Saut d'Eau							
1	AJBS	2	2	1	1000	2	4
2	CODAF	2	2	1	500	2	4
3	MJPM	2	2	1	300	2	4
4	OFPDD	2	2	1	500	2	4
5	KDMC	2	2	1	500	2	4
6	ASCUDEC	2	2	1	500	2	4
7	APWOMOPA	5	5	1	1000	5	10
8	VDC	2	2	1	500	2	4
9	APAM	3	3	1	1000	3	6
10	MOSOPA	4	4	1	1000	4	8
Matheux corridor							
	Subtotal	26	26	10	6800	26	52
1	APWOMOPA	5	5	1	1000	5	10
2	ASCUDEC	2	2	1	500	2	4
3	APAM	3	3	1	1000	3	6
4	VDC	2	2	1	500	2	4
	Subtotal	12	12	4	3000	12	24
	Grand Total	38	38	14	9800	38	76