

**“INCREASING CASSAVA PRODUCTIVITY IN SELECTED STATES IN
NIGERIA”**

USAID Nigeria Maximizing Agricultural Revenue and Key Enterprises in Targeted Sites
(MARKETS)

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IITA, USAID - MARKETS

GLOBAL FOOD SECURITY RESPONSE (GFSR) PROGRAM ON INCREASING CASSAVA PRODUCTIVITY IN SELECTED STATES IN NIGERIA:

COMPLETION REPORT

NOVEMBER 2010

Executive Summary

In response to the serious food crisis experienced by developing countries in the past couple of years, the United States Government supported a Global Food Security Response Program (GFSR) in five focal African countries (Nigeria, Ghana, Liberia, Mali, and Senegal). The main contractor for implementing this initiative in Nigeria was MARKETS (through USAID), and IITA was selected as one of the partners to develop the cassava value chain. On this basis, MARKETS and IITA initiated a holistic commodity development chain approach in 2009 in close collaboration with selected cassava agro-processors in the south-west and south-east of Nigeria. These are EKHA Agro (specializes in glucose syrup), MATNA (starch production) both in the south-west, NSM (industrial starch), in the south-east, and NOVUM (cassava flour) in the Middle Belt of Nigeria. The major constraint they faced was lack of sufficient fresh cassava roots to feed their factories that were operating below 30% of their installed capacity. The difficulty in sourcing enough cassava was partly due to the high demand for traditional food items and partly to the subsistence nature of farming with inherently low productivity. IITA was therefore given the role of ensuring that the farmers grew and managed efficiently the new high yielding varieties (developed by IITA) to supply the much-needed raw materials. To achieve this objective required a series of activities.

Around the large-scale processors, the project successfully mobilized and clustered 1085 farmers directly and more than 3000 indirectly. Farmers were empowered with improved cassava varieties and encouraged to use best agronomic practices. Their capacities were
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enhanced through indoor and outdoor training programs, demonstration events, and the supply of extension publications to over 4000 farmers. They were also linked to input dealers, who provided the cultivators with agro-chemicals at affordable prices, and also to financial institutions for loans. Demonstration trials/plots compared improved vs. local management practices and were used as a platform for training the farmers. Commercial weed control business groups were formed and these are now assisting farmers with cost-effective weed control practices.

Other achievements included the creation of 112 sustainable farmers' groups in the 2009 planting season. This led to the establishment of 1304ha of improved cassava varieties, 40ha of Demo Trials, and the transfer to farmers of 8 production technologies or management practices. The program has successfully increased farmers' yield from the baseline figure of 11.8 t/ha to an average yield of 24.34 t/ha (about 106% increase in yield) in the 2009/2010 planting season (only 20 out of the nearly 1000 farms have yet been harvested). This boost in productivity has led to a steady increase in the flow of raw materials to the mills. For example, in EKHA Agro, the monthly supply of cassava roots to the factory has jumped from 464 t (highest ever recorded in 2009) to 856 t in September 2010. Similarly, the supply of cassava roots to MATNA has increased from 1221 t/month (highest ever recorded in 2008) to 1535 t in the September 2010. Over 200 farmers were organized into 22 weed control business groups (WCBG) and employed as agrochemical sprayers and sellers. Over USD100,000 was realized as income generated from stem sales in the Project States.

Some of the success stories include the request by the agro-processors to expand the area under cassava cultivation in 2010 by 3 times, and a complimentary comment by US Ambassador, Robin Rence Sonder. The Ambassador thanked all the stakeholders for better yields and higher prices. A major constraint in Project implementation was the unavailability of loans for most farmers. The end of project cycle in November 2010 does not allow IITA to continue to collect useful research data for the Demos and farmers' fields. Provision should have been considered for bridging funds. Also, one of the lessons learned was that sites for Demo Trials should be selected jointly and not left to the farmers alone.

Finally, the market-oriented model that boosted farm productivity has guaranteed an effective and sustainable supply of raw materials to the mills. If the scheme continues with the

appropriate service providers, the agroprocessors should be able to operate at full capacity in the next 3-4 years.

1. Introduction

In the past 3 years the whole world, especially the developing countries, experienced a serious food crisis that left many families starving. In response, the United States Government (USG) supported a Global Food Security Response Program (GFSR) in five focal African countries (Nigeria, Ghana, Liberia, Mali, and Senegal). The GFSR program in Nigeria was for 18 months and aimed to increase the productivity of sorghum, rice, cassava, and cowpea, raise rural families' income, and increase the supply of food in the markets. The program supported the National Food Security Program (NFSP), announced by the Federal Ministry of Agriculture and Water Resources (MAWR) in May 2008. In support of the Government of Nigeria's program, the USG, through USAID-Nigeria, provided \$25 million in 2009 to implement an integrated package of agriculture, trade, and transportation. The main contractor for implementing this initiative was MARKETS and IITA was selected as one of the subcontractors to develop the cassava value chain along with other partners, such as the private industries. In particular, IITA was expected to contribute technical expertise in the establishment of demonstration farms and supply of cassava germplasm in partnership with agribusiness firms who would assist in mobilizing farmers' associations for the trials. In addition, IITA was expected to facilitate extension support to farmers and access to production inputs.

Cassava was identified as an appropriate agricultural crop to promote in this scheme. Nigeria produces more than 45 million tonnes (t) of this root crop, thus emerging as the world's largest producer (FAO 2007). Regrettably, the full yield potential has hardly ever been reaped (Nweke et al., 2002) since production is mainly by peasant farmers whose yields never exceed 11 t/ha. The USAID-sponsored Cassava Enterprise Development Project (CEDP) in the Niger Delta Region (NDR) implemented by IITA has increased on-farm yields of cassava to 25.6 t/ha (Tarawali et al., 2008) in the Project areas. Five years after inception, CEDP has improved the lives of people in communities through income generation, job creation, and improved food security. A yield of between 50 and 80 t/ha (CNN, April 2008) has been achieved in special cases (Zimbabwean farmers in Kwara State, Middle Belt) using IITA's

improved varieties with top agronomic management practices, such as the use and timely application of fertilizers and herbicides. To promote the current food security program in Nigeria, IITA transferred its experiences on cassava in the NDR to new Project States (Fig 1) in Nigeria (Ogun, Osun, Oyo, Ondo, Ekiti, Delta, Imo, Anambra, and Nasarawa).

The proposed MARKETS model was different from that used by IITA-CEDP in the NDR in the area of inputs and the role played by the agribusiness firms. Nevertheless, IITA demonstrated its experience on improved cassava production techniques and capacity building. The blend in approaches in the current program was that IITA worked very closely with out-growers to facilitate the deployment of IITA's improved cassava varieties, provide technical backstopping, train farmers, and link them to service providers (where necessary) while MARKETS linked farmers to Bank loans. This means that the expenses for the inputs were borne by the beneficiaries, not the Project. An important outcome of this investigation will be to document the lessons learned in the adoption of the IITA varieties and the sustainability of the proposed strategies in this combined model. This lesson-learning element is one of the key benefits of IITA's involvement in this Project.

1.1 Funding Agency

A total of \$25 million was provided by the USG to the FGN through USAID/Nigeria. USAID-MARKETS was the main contractor for implementing the 18-month Project. IITA was selected as a subcontractor to MARKETS and provided with the sum of US\$1.5 million to implement the cassava value chain project using the market-led and demand driven model.

1.2 Project goal

The project goal was to attain food security and increase the economic opportunities through sustainable and competitive cassava production, marketing, and agro-enterprise development in selected industries in the South-West and South-East of Nigeria.

1.3 Objectives

1. To facilitate the dissemination of improved high yielding (for food security), commercially viable (with high starch content), and disease resistant varieties to clustered farmers and industries.
2. To introduce improved cassava management practices which would address common agronomic errors that keep root yields below 12 t/ha.
3. To train staff from companies, ADPs, Cassava Growers Association of Nigeria (CGAN), farmers, and processors on competitive cassava production techniques and enterprise development.

1.4 Activities

1. Identify and select existing large-scale industries such as EKHA, MATNA, NSM and NOVUM for improving the cassava supply chain and cluster formation.
2. Coordinate stakeholders' meetings involving the key partners and collaborators in all the Project States/communities.
3. Hire project staff, including the cassava value chain coordinator, and enlist service providers.
4. Assist Agroprocessors in the identification, mobilization, and formation of clusters around selected industries.
5. Participate in the deployment of stems to clusters, to provide the high yielding and disease resistant cassava varieties from IITA for distribution to farmers and the establishment of demonstration trials.
6. Assist with the development of package of practices and other extension materials on cassava production, harvesting, and post harvest handling.
7. Conduct on-farm training of extension agents, farmers, and partners on competitive cassava production techniques, harvesting, and post harvest handling.

8. Demonstrate farming equipment/implements, such as planters and harvesters. Encourage the adoption of the whole package through training, demonstrations, and field days.
9. Establish 20 (one-ha each) Demonstration Trials for EKHA, at least 10 (one-ha each) for MATNA, and 10 (one-ha each) for NSM, showcasing the best cassava production practices.
10. Monitor and evaluate Demonstration Trials and farmers' fields. These activities would be carried out both separately and jointly with MARKETS to ensure the adoption of IITA's improved varieties and recommended practices, and the collection of data.

2. Achievements/ Results

2.1 Large scale industries identified and selected

Project implementation commenced by selecting/identifying the large-scale industries (through visits and discussions) which would provide a market for cassava raw materials produced by small-scale cassava farmers. Six large-scale industries were surveyed in January/February 2009 (EKHA-Ogun State, MATNA-Ondo State, Zimbabwean Dairy Farmers-Kwara State, Grand Cereals-Plateau State, Nigerian Starch Mills (NSM)-Anambra/Imo States, and Miragate-Rivers State). Out of these, EKHA, MATNA, and NSM (Fig. 1) were recommended for participation in the GFSR program during this initial period. A fourth agroprocessor (NOVUM) in Nasarawa State was later included.

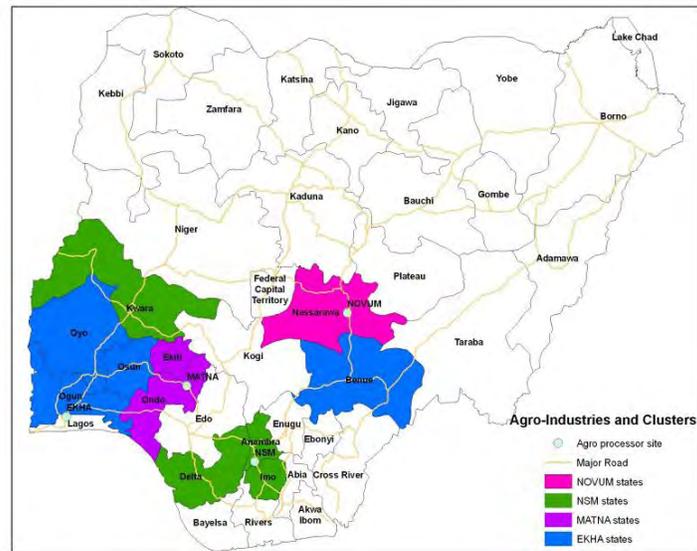


Fig 1: Location of agroprocessors

The status of the agro-industries were as follows: EHKA has a capacity of 400t/day of fresh cassava roots but it barely received 25% of the requirement. The capacity of MATNA is 100t/day but produces starch at about 35% of this capacity. NSM requires 250 fresh root/day but currently operates below 30%. NOVUM requires 60t fresh root/day but yet to start processing activities.

2.2 Several stakeholders’ meetings coordinated

Following the identification of the large-scale industries, several joint stakeholders’ meetings were held between IITA and MARKETS. The first meeting was held in April 2009 with the agroprocessors to finalize issues relating to business plans and ascertain the suitability of the processing facilities. MATNA promised 400 farmers, EKHA 400, and NSM 200, (making a total of 1000 direct farmers) enlisted into the out-growers’ scheme. Each farmer was entitled to 1 ha of improved cassava varieties. This translates to 1000 ha of land under improved cassava varieties which, if well managed, would lead to that 60% improvement in the productivity of cassava per unit area expected in the target indicators and agreements. In addition, EKHA mentioned that they had up to 3000 additional farmers, MATNA 500, and NSM 200, who could benefit from the project through training programs, extension

publications, and germplasm. The team agreed to meet the recommended needs of these 3700 beneficiaries.

On 8 June 2009, MARKETS, IITA, International Fertilizer Development Company (IFDC), and West African Seed Alliance (WASA) also met in the MARKETS office at Abuja to develop strategies for sourcing and deploying improved cassava stems under the cassava value chain. A major outcome of these deliberations was that WASA and IFDC, who were originally contracted to supply cassava cuttings to out-growers, said they did not have the capacity to do so in the 2009 growing season. This responsibility was transferred to IITA in the end.

On 11 June 2009, the IITA-MARKETS team met with representatives of the agroprocessors (mainly agronomists) at IITA Ibadan to refine the supply chain work plan and review partners' roles and responsibilities following the mobilization exercises and the signing of the contract between IITA and MARKETS on agreed deliverables. At this forum IITA's representatives re-affirmed that they had the capacity to supply and supervise the planting of improved cassava varieties to farmers with well prepared land and to provide subsequent technical backstopping. Agroprocessors were urged to encourage their farmers to open up their farmlands for sustainable cassava production and facilitate their participation in large numbers at the forthcoming training activities.

Visits were planned to three of our potential large-scale agro-processing partners, visits were planned to EKHA, MATNA, and NSM (Fig. 2). Prior to these outreach activities, the teams from MARKETS and IITA had one of their joint meetings at IITA Ibadan on 18 February 2009 to discuss the Project's objectives and funding with the IITA Directorate and Management. Members of the MARKETS Team were Niels Hanssens, Kayode Faleti, and Damian Ihedioha while members of the IITA team were Robert Asiedu (Director Research for Development), Dave Watson (Director, Project Development and Management), Hilde Koper (Contracts and Grants Office), Gbassey Tarawali (Project Manager, IITA-MARKETS Cassava Value Chain Project), Melba Davis-Mussagy (Enterprise Development Specialist), Paul Ilona (Agronomist), and Chyka Okarter (Monitoring and Evaluation Specialist).

The previous day, 17 February 2009, the joint team (excluding the two Directors and Hilde Koper) were in EKHA (near Lagos) to interact with their Managing Director, Mrs Iranloye

Oluyemisi, and her key staff on the role they were expected to play in this partnership. These included key areas, such as the identification and selection of clusters of farmers to participate in the project, the provision and preparation of land for testing the improved cassava germplasm, support provision of training programs and field days, and provision of other complementary resources where possible. The draft business plan was also thoroughly discussed/reviewed and the processing facilities were inspected by the team.

On 18 February 2009 (after holding discussions with IITA), the team visited the MATNA agro-processing industry where we met the Managing Director (Mr Ogunlade) and members of staff with the same objectives as at EKHA. MD Ogunlade also took the opportunity to inform the team that his management believed in excellence, as exemplified by several awards that had been won by his company both at national and international levels. The team rounded up the visit by inspecting the processing plant.



MATNA



NSM



EKHA

Fig 2: Inspection of mills and Stakeholders' interactions

The last meeting was made with NSM senior officials who are based in Lagos. In particular, we met with Mr Chris Okeke, MD, Dr K.S. Krishnan (Chief Executive Officer and Agronomist) and various consultants. At the meeting, MD Okeke confirmed his commitment to the partnership and looked forward to signing the MoU/Agreement. A follow-up visit was made on 3 March 2009 to inspect the processing facilities at Ihiala (Anambra State) and the NSM cassava research/multiplication site at Egbema (Imo State). Niels Hanssens, Damian Ihedioha, and Kayode Faleti represented MARKETS, Udensi Udensi and Okarter Chyka stood in for IITA, and our hosts were represented by K.S. Krishnan (CEO, NSM) and Mr Usuwa (Farm Manager former member of IITA staff).

2.3 Project staff hired and service providers enlisted

The engagement of key project staff was pursued actively. For instance, the secretary Mrs Olufunke Bamgboye-Maina, was recruited on 1 July 2009. Sixty-eight applications were received and six candidates were short-listed for interview.

The Cassava Agri-business Coordinator (Mr Charles Iyangbe) was also identified/selected and he commenced work on Monday, 3 August 2009. A total of 95 applications were received for this position and the two short-listed candidates, Mr Charles Iyangbe and Mr Emmanuel Azaino were interviewed.

Two Monitoring and Evaluation Specialists were recruited. One of them commenced work on 1 July 2009 while the other assumed duty 15 September 2009. The drivers (3) were recruited on 1 July 2009 while the Agronomists (3) and field technicians (5) commenced work on 3 August 2009. Relevant service providers/resource persons were also identified and enlisted. They included Mr Godspower Usuwa (NSM, Ihiala), Mr J.O. Onugha (Director, Anambra ADP, Awka-Marketing, Credit & Group Development & Management), Mr Barnabas Adaghara (Syngenta), Patem Global Marketing Manager, Eastern Zone, and all the ADPs from the Project States.

2.4 Agroprocessors assisted in the formation of clusters

At the inception of the Project, IITA worked closely with MARKETS to link farmers to output markets. These markets initially comprised the three large-scale processors, EKHA in Ibafo, Ogun State, MATNA Foods in Akure, Ondo State and NSM in Ihiala, Anambra State. A fourth link (NOVUM) was later established in Nasarawa State. Following several formal and informal meetings between IITA and the large scale Agroprocessors to develop strategies for improving the supply of raw materials to optimize the performance of their centers, a series of mobilization workshops were held in various locations in the Project States (Fig 3). This activity resulted in 1085 direct farmers being mobilized into out-growers schemes between April and June 2009 this total exceeded the target figure of 1000 farmers. In addition, more than 3000 farmers were also mobilized indirectly through various promotional activities such as trainings, demonstration events and the receipt of extension publications through the Project.



EKHA clusters *NSM clusters* *MATNA clusters*

Fig 3: Clusters formed/mobilized

This activity was very worthwhile because it encouraged all the stakeholders (farmers, agroprocessors, researchers, agro-dealers, service providers) involved in the Cassava Value Chain to interact positively, leading to viable outputs which fed into the implementation process. In particular, the mobilization exercises in all the locations were a great success, as the farmers attended en masse. Very productive joint meetings were also held between IITA, MARKETS, MATNA, EKHA, NSM, WASA, and IFDC. All these achievements laid an excellent foundation for Project implementation.

2.5 Germplasm distributed/deployed to clusters of farmers

The objectives here was to establish a system for providing stems to networked farmers (1000) that would adequately plant 1000 ha of land.

The first step was to identify the source of the cassava germplasm and those that could thrive in the respective regions. IITA embarked on an extensive mission of identifying its sources for planting materials and the IITA out-growers who would provide these improved varieties to the clusters. Visits were made to five States of South-Eastern Nigeria (Anambra, Enugu, Ebonyi, Imo, and Abia) and the Northern part of Cross River State (Godilogo farms) to source for cassava stems while individual farmers in Osun, Oyo, and Ogun States were visited to also source for cassava stems for MATNA and EKHA. Farmers' organizations and individuals were identified for the supply of cassava stems.



Fig 4: Land preparation/Inspection and farmers witnessing the event

This exercise was also able to ascertain the varieties that could thrive in the South-East and South-South (TME 419, TMS98/0505, TMS 97/2205, TMS 98/510, and TMS 98/8581) and South-West (TME 419, 98/0505, 98/8581, 92/0326, 91/023224, 96/1632, 95/0289, and M98/0068).

The logistics of stem distribution to farmers/farmers' fields and the collection point for stems arriving from IITA multiplication centers were taken into consideration. In view of the amount of materials required and the unavailability of good farm roads for trucks/trailers. For clusters close to MATNA, MATNA's premises were used as the depot. In the same manner, Lanlate and Ila were used for the EHKA clusters. Record keeping from this exercise and the fact that recipients must be in a group or cooperative were stressed. The strategy for data collection was identified and conveyed to the field technicians. A template was designed to show the quantity of cassava cuttings delivered to agro-processors, where representatives of these Agroprocessors had to sign and acknowledge receipt. Another form of template was also design to capture the number of farmers that actually received these cuttings for planting. All the field staff were deployed to the field to obtain the information under the supervision of the Cassava Value Chain Coordinator.

The roles of the Agroprocessors in this agenda were that of identifying farmers, and preparing the land or sites for planting, and notifying IITA for stem distribution to the farmers immediately good land preparation had been completed.

An intensive stem distribution exercise commenced in July 2009 (Figs. 5 to 8) and a total of 73,740 bundles of improved cassava stems were supplied to farmers clustered around NSM,

MATNA, and EKHA factories. An additional 4500 bundles were supplied to farms owned by NSM to establish 75 ha. This brought the total area under improved technologies and management practices to 1304 ha in the following order: MATNA 448 ha, EKHA 708 ha and NSM 148 ha (Table 1). Some of the harvested yields from these plots are shown in Table 2. An average of 24.34t/ha was obtained for 20 harvested farmers field compared to the national average of 11.8t/ha.



Fig 5: Stems in sachets



Fig 6: Loading of cassava cuttings



Fig 7: Delivery of cassava cuttings



Fig 8: Stem distribution to farmers

Table 1: Delivery of stems by Project States

Cassava Processors	Number of Farmers	Male	Female	Youths	Number of bundles	Number of Hectares
EKHA						
Oyo	181	136	45	34	10860	181
Ogun	110	91	19	32	6600	110
Osun	417	320	97	70	25020	417

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Sub-Total	708	547	161	136	42480	708
MATNA, Akure						
Ondo	364	327	37	63	21840	364
Ekiti	84	66	18	7	5040	84
Sub-Total	448	393	55	70	26880	448
NSM						
Anambra	16	12	4	4	960	16
Imo	4	3	1	0	4740	79 (plus 75Ha for NSM)
Delta	53	40	13	6	3180	53
Sub-Total	73	52	21	10	8880	148
Grand Total	1229	995	234	216	78240	1304

Table 2: On farm yields realized by the farmers

	Name of Farmers	Location	State	Yield (tons/ha)
1	Ojebiyi Johnson	Igbooga	Oyo	28.55
2	Olosiji John	Ilua	Oyo	29.07
3	Popoola Amos	Ilero	Oyo	21.24
4	Mr. Wasiu	Kajola	Oyo	28.52
5	Oba Onagoruwa	Odogbolu	Ogun	17.98
6	Wasiu Oladipupo	Okeho,	Oyo	27.99
7	Omolade Farms	Ogbese,	Ondo	28.01

8	Ruth Ojebiyi	Igbogaa	Oyo	30.10
9	Adaramola Lucas	Ore	Ondo	20.66
10	Obajimi Felix	Ore	Ondo	26.58
11	Sunday Abosede	Ore	Ondo	24.20
12	Timothy Akomolafe	Odigbo	Ondo	23.97
13	Micheal Olasukanmi	Ajue	Ondo	22.60
14	Adedayo Kemi	Ore	Ondo	27.80
15	Olaniyi Joseph	Oshogbo	Osun	25.00
16	Jelili Suliaman	Lanlate	Oyo	18.20
17	Akeem Adams	Lanlate	Oyo	25.53
18	Olukayode Ojedokun	Lanlate	Oyo	23.42
19	Mrs. Adeyefa	Igbooga	Oyo	18.69
20	Chief Iwani	Ila	Osun	18.69
Average				24.34

2.6 Six extension guides developed and distributed

To complement capacity building activities and demonstration events, IITA developed and distributed comprehensive extension materials targeted at improving knowledge and transferring technologies to farmers. One advantage of the extension materials was that farmers could refer to them at any time. Six different technologies were transferred to farmers through extension publications on soil fertility management, stem handling techniques, weed management, harvesting and post harvest handling, zero input technologies, and cost-efficient

mechanization practices. Fig. 9 and Table 3 show the extension leaflets and the number of beneficiaries.



Fig 9: Samples of extension publications and distribution

Table 3: Delivery of extension publications to beneficiaries

S/n	Extension leaflets	Beneficiaries	Males	Females	Youths
1	Managing soils for sustainable cassava production	3411	2415	996	321
2	Cassava stem handling for increasing yield	3450	2689	761	415
3	Weed control in cassava production	3341	2450	891	650
4	Harvesting and post harvesting handling of cassava	2937	2250	687	445
5	Zero input technologies to increase yields in cassava production	3510	2640	870	339
6	Cost-efficient mechanization in cassava production	2662	2019	643	319

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2.7 On-farm training on competitive cassava production conducted

The majority of farmers producing cassava depend on inherited knowledge mostly from parents or neighbors. Extension agents do not also update knowledge frequently and their efficiency is constrained by a farmer-extension agent ratio estimated at over 2000:1 in Nigeria. Therefore, improved practices for enhancing yield, though developed, remain on the shelf, partly due to inefficient extension systems and the lack of desire for information among farmers. As a result, the strategies for enhancing yields among small holder cassava farmers in the Project included capacity building. More than 3700 farmers were exposed to various trainings (Table 4) ranging from pre-planting and pre-harvest agronomic practices, cost-efficient use of herbicides, land clearing and soil fertility managements and enterprise development. The trainings which included both field and classroom presentations (Fig. 10) were meant to enhance agronomic skills and the profitability of cassava production.

Table 4: Breakdown of training activities

Training programs	Number of participants	Male	Female	Youths
Pre-planting and pre-harvest operations in cassava cultivation	4049	2893	1156	657
Pre-and post-emergence weed control	3867	2802	1065	880
Step-down training for emerging weed control for the weed control business groups (WCBG)	216	197	19	92
Good land preparation practices and soil fertility management	2053	642	141	279
Use of herbicides in weed control	1952	1475	477	335



Fig 10: On-farm and classroom training of farmers

2.8 Three demonstration events coordinated

For competitive and commercial cassava production, the introduction and demonstration of the use of cost-effective and time saving machinery for farming operations are important. The events included the use of the mechanical planter, brush cutter, mechanical harvester as well as stem handling techniques. This effort would not only replace or complement human labor with machines but it also ensured that farmers performed their farm operations within a short period of time. Most farmers do not have access to these machines, thus the project demonstrated their use and ensured linkages with service providers. Three demonstration events (Table 5 and Fig. 11) were carried out to show case the use of mechanization in cassava production.

- i. Demonstration event on the use of mechanical planters, sprayers and brush cutter
- ii. Demonstration event on the use of mechanized harvester
- iii. Demonstration event encouraging private service providers to include mechanical planters and harvesters in their pool of equipment

Table 5: Breakdown of demonstration events

Demonstration Events	Number of participants	Male	Female	Youths
Demonstration events on the use of mechanized planters, sprayer and brush cutters in cassava production.	1137	793	344	216

Demonstration events on the use of mechanized harvesters in cassava production.	1249	899	350	289
Demonstration event encouraging private service providers to include mechanical planter and harvesters in their pool of equipment	75	72	3	9



Figure 11: Demonstration events (cassava planter)

2.9 Forty Demonstration Trials established

The project was also highly responsive to emerging opportunities that enabled the value chain to be efficient, as exemplified by the establishment of Demonstration Trials (Demo Trials) for farmers' training. A total of 40 on-farm Demo Trials (as shown in Table 6 below) managed by selected farmers and closely supervised by IITA technicians, were established to ensure that the recommended practices were followed. These practices included optimal plant spacing, cost-effective weed control practices, soil fertility management, mechanical harvesting, and postharvest handling.

Table 6: Distribution of Demo Trials by Agro-processors

Partners	No. established
EKHA	20
MATNA	10

NSM	10
Total	40

The sizes of the demonstrations were between 0.5 and 1.0 ha, depending on the land available to the farmer. The trial was demonstrated in such a way that half of the plot received farmers' practices while the other half demonstrated improved technologies (Fig 12). These on-farm demonstrations were used during field days and other training events to illustrate and discuss improved practices in an interactive way with farmers. IITA provided inputs, including cassava stems, fertilizers, and the CPPs needed for the demonstrations while agro-processors/farmers as partners provided tractors for land preparation.

Data generated from the Demo Trials as at October 2010, showed a significant difference in yield between the current farmers' practices which gave an average yield of 27 t/ha at 12MAP t/ha, while the improved practices introduced by IITA gave 44t/ha at 12MAP at the same period of growth.



Fig 12: Demonstration trial and advanced vegetative growth

2. 10 Farmers linkages to service providers

IITA facilitated linkages between the service providers (Figs. 13 and 14), such agro-dealers and mechanization providers, especially those close to the farmers, to ensure easy access to their services. In the same vein, the formation and training of commercial weed control business groups (WCBG) who could assist farmers with cost-effective weed control practices were brought into the arrangement. Major input dealers provided agro-chemicals to these WCBG at affordable prices, and loans from financial institutions were facilitated. These

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linkages led to the creation of new jobs for about 216 farmers. The incentive stimulated farmers to patronize the input dealers and this has led to the establishment of 22 village shops in the participating communities, and ten of them are already functional (Table 7). Various chemical companies have established close contacts with the farmers and are willing to deliver their inputs to farmers on time. The cost of the inputs has also become competitive and farmers now have the liberty to chose.



Fig 13: Established weed control groups

Fig. 14:

Tractor services

Table 7: Weed control business groups created and established

	Location (State)	Name of WCBG
1	Oshogbo, Osun	Ifesowapo Farmers Center
2	Oshogbo, Osun	Union Baptist Church Farmers' Association
3	Iwoye-Ijesha, Osun	Ikotun Weed Control Group
4	Ode-omu, Osun	Ode-Omu Ayedade Ekha-Agro Multipurpose Weed Control Group
5	Kobape, Ogun	Get Precious Farm Support
6	Igbogaa, Oyo	Igbogaa Weed Control Group
7	Okeho, Oyo	Okeho (Kajola) Agbedoro Multipurpose Co-Operative Society Ltd

8	Ogbese, Ondo	Ogbese Weed Control group
9	Uso, Ondo	Onward Weed Control Services, Uso
10	Ado, Ekiti	Cassava Farmers Associations Weed Control Group

2.11 Monitoring and Evaluation

IITA has in place a Monitoring and Evaluation system that follows up Project activities to ensure that all the stakeholders, particularly the farmers, are properly carried along and to facilitate proper linkages and extension services (Fig. 15). The system also guarantees timely collection, management, and reporting of valid and reliable data that meet donors' reporting requirements.



Fig 15: On-site monitoring and evaluation activities

3. Summary of achievements

Table 7 gives a summary of the Project's achievement. The scheme which started in April 2009 has so far distributed cassava stems sufficient to plant more than 1000 ha to more than 1000 farmers, established 40 Demo Trials in strategic locations, trained over 4000 farmers on different competitive cassava production techniques (including demonstration events on the mechanical planters, sprayers, stem and brush cutters), linked farmers to services providers such as agro-dealers and mechanization service providers, and developed and distributed to farmers, six extension publications on competitive cassava production. A total of eight production technologies associated with land clearing, soil fertility management, stem handlings, weed management, spacing, herbicide application, fertilizer application, and

harvesting and postharvest handling. In addition to these, 22 WCBG were established, resulting in job creation for 216 farmers. The program successfully increased yield from the baseline Figure of 11.8 t/ha to an average yield of 24.34 t/ha (about 106% increase in yield) in the 2009/2010 planting season, though less than one-third of the farmers have fully harvested their farms. See Table 8 below. These capacity building efforts would not only encourage cassava productivity at the farm level for the industries (producing mainly glucose syrup and starch) operating far below their optimum capacity but would also generate more income and jobs for the farmers. Following the successes of this program, the Agroprocessors requested an additional 2700 ha (EKHA 2000; MATNA 2000; NSM 200 and NOVUM 200), which was implemented for the 2010 planting season.

Table 8: Summary of achievements in IITA-MARKETS cassava value chain project

Activity	Output
Number of farmers mobilized/networked for large scale industries	1085
Number of trainings conducted	5
Number of Demonstration events	3
Number of farmers trained	>3700
Number of Demo Trials established	40
Area under improved management practices established	1304 ha
Number of farmers who received improved cassava cuttings	1229
Number of WCBG created	22*
Number of jobs created as a result of WCBG	216
Number of extension publications developed	6
Number of farmers who received extension publications	>4000
Number of improved management practices made available to farmers	8

Number of farmers adopting new technologies or management practices as a result of project intervention	>4000
Number of people trained on private sector development training.	291
Change in productivity of cassava using a baseline figure of 11.8 t/ha	106%

4. Success stories

- This cassava value chain development approach, built on the efficiency of private-led businesses, encouraged the best agronomic practices *and* guaranteed an effective and sustainable supply of raw materials to large-scale industries (Figs 16 and 17).



Fig 16: Before IITA's intervention (2008)



Fig 17: After IITA's intervention (2010)

- The provision of high yielding cassava varieties and intensive capacity building resulted in increased yields per unit area. Linking the producers to large-scale Agroprocessors provided these farmers with ready markets for their tubers at competitive prices. Johnson Ojebiyi and Olasiji Ajelani, farmers from Kajola Local Government Area of Oyo State, claimed that their farms yielded 28 and 27 tons, , from are hectare of land. and they sold the tubers to EKHA, Ibafo, for N9,000/t (about US\$60). The duo said that part of the proceeds from their farms would be reinvested in cassava production, while the rest would be spent on their children's education and the up keep of their homes. They also mentioned that all the farmers in their locality had decided to go into cassava production to take advantage of the improved farming techniques and available market.

- Benefiting farmers testified that the Project had changed their farming orientation from traditional low input/output subsistence farming are oriented to improved technology and commercial. According to them, the complete technology package, consisting of cassava stems, trainings, linkage to finance, and ready markets, has resulted in the best crop performance ever witnessed on their fields in their long history of farming.
- IITA’s weed control technologies brought about outstanding breakthroughs for the clustered farmers. Before the intervention of this project, farmers found it difficult to cope with the cost of weeding, due to the dearth of farm labor. The introduction and adoption of weed control technologies not only reduced the cost of weeding, but also reduced the drudgery associated with weed control, thereby encouraging farmers to increase their holdings. This breakthrough also led to the establishment of more than 30 commercial weed businesses trained to provide services to farmers in the Project States and beyond. No less than 200 youths were employed in this initiative.
- The Project’s intervention resulted to a gradual pick-up of activities by the agro-processors especially in MATNA and the factory began to operate on a daily basis. Nearby farmers took the factory as a ready market for their produce and now there are long queues of trailers waiting to off load tubers (Fig. 18). There may be need to start thinking of batch harvesting.



Fig. 18: Trucks queing with tubers at MATNA, Akure

- The US Ambassador Robin Renee Sonder, during her visit to EKHA Agro factory, and MATNA made the following complimentary statement: “*small-scale farmers will double*

their productivity and increase their net income by over 150%, thanks to better yield and higher prices”.



Fig. 19 The US Ambasssador in MATNA



Fig. 20. In EKHA

5. Challenges

In the cause of implementing this activity, a lot of challenges were encountered.

- Problems associated with loans: On the issue of the loan that was promised, the Bank was insisting on 25% deposit of the amount being requested. This did not augur well with the farmers. Some of the farmers made attempts to obtain the forms but this proved difficult because of these requirements.
- Readiness of land: One major issue common to the clustered farmers in all the project locations was the untimely availability of well prepared land. Most of the farmers were relying on the promised loan by USAID-MARKETS to enable them to prepare their land for planting.
- WASA and IFDC were originally contracted to supply stem cuttings to out-growers. However, following the meeting of 8 June, 2009 in Abuja to develop strategies for sourcing and deploying improved cassava stems under the cassava value chain, this responsibility was transferred to IITA since WASA/IFDC did not have the capacity to do so in 2009 growing season. This therefore, contributed to the slow start of this activity.
- There were slight conflicts of interests in project implementation. For instance, the project cycle ends in November 2010, when harvesting in both the Demos and the farmers' fields is still in progress. In addition this early closure of the project does not permit IITA to

adequately monitor the flow of raw materials from the farmers to the mills. Provision should have been considered for bridging funds.

6. Lessons learned

- The mechanism put in place for extension activities and monitoring ensured that all farmers were carried along. Personnel were always available to proffer solutions to emerging problems on farmers' fields. This went a long way in ensuring that technologies were properly disseminated and utilized.
- Focusing on supply has had important results in small holder productivity growth: it is time to focus more on demand and work backwards to link supply.
- Farmers' perception of the Project was wrong. Though farmers were supplied with cassava stems, trainings and linkages to loans, most of them felt bad that they had to repay their loans. They were after quick gains and thought that these could be provided for them free of charge. In future, the objectives of the Project should be communicated to the beneficiaries.
- The value chain acknowledged effective linkages between major actors along all the segments, with the demand (market) playing the most significant role in driving supply (production using the right technologies) on a sustainable basis.

7. The past, present and future scenarios

This cassava value chain development approach built on the efficiency of private-led businesses encouraged the best agronomic practices *and* guaranteed an effective and sustainable supply of raw materials to large-scale industries. If the scheme continues with the appropriate and transparent service providers, the agroprocessors should be able to operate to full capacity within the next 3-4 years.

References

FAO, 2007. Food and Agriculture 2007 production statistics. FAO, Rome, Italy

Nweke F.L., D.S.C. Spencer, and J.K. Lynam. 2002. The cassava transformation: Africa's best-kept secret. Michigan State University, Michigan Press, USA.

Tarawali G., A.G.O. Dixon, R.U. Okechukwu, C. Ezedinma, L. Sanni, and G. Asumugha. 2008. Cassava commercialization in Nigeria: achievements, challenges, and future prospects. A poster presented at the Global Cassava Partnership Workshop, Institute of Plant Biotechnology for Developing Countries, Ghent, Belgium, 21-25 July 2008.