

Project Startup for Agricultural Input Market Development

USAID Nigeria Maximizing Agricultural Revenue and Key Enterprises in Targeted Sites
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Short-Term Consultancy Report

Project Startup for Agricultural Input Market Development

**Submitted to the
MARKETS Project in Nigeria**

by

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Table of Contents

Acronyms and Abbreviations	ii
1. Introduction.....	1
1.1 Draft TOR for the IFDC STTA Project startup advisor—October and November 2005.	1
1.2 Agri-Input Market Development Staffing	3
2.0 Relevance of DAIMINA to Markets Activities	3
2.1. How MARKETS Can Use and Build on DAIMINA Achievements	4
3.0 Strategy for Input Market Development and Actions Initiated During Startup Operations	7
3.1 Commodity Production Sites (CPS)	8
3.2 Development of Input Markets.....	11
4.0 Some Baseline Information on Input Supply.....	16
4.1 Role of Agri-Inputs in Commercialization of Agriculture	16
4.2 Removal of Plant Nutrients by Crops.....	17
4.3 Fertilizer Recommendations	19
4.4 Estimated Requirement of Fertilizer in Nigeria.....	19
4.5 Estimated Requirements of Improved Seeds in Nigeria.....	20
4.6 Fertilizer Production, Importation, and Consumption—Nigeria	20
4.7 Fertilizer Production Trends in Nigeria.....	21
4.8 Fertilizer Import Trends in Nigeria.....	22
4.9 Fertilizer Import Costs, Nigeria, as of June 2003	23
4.10 Fertilizer Procurement by the Government of Nigeria	23
4.11 Fertilizer Subsidies in Nigeria	24
5. Recommendations.....	26

Acronyms and Abbreviations

ADPs	Agricultural Development Projects
AFAN	Apex Farmers Association of Nigeria
BASAIDA	Bauchi State Agri-Input Dealers Association
BDS	Business Development Services
BPO	Business Promotion Office
CFA	Co-operative Financing Agency—Central Bank of Nigeria
CPPs	Crop protection products
CPS	Commodity Production Sites
DAI	Development Alternatives, Incorporated
DAIMINA	Developing Agri-Input Markets in Nigeria
DGIS	Directorate General for Development Cooperation
FAO	Food and Agriculture Organization of the United Nations
FCT	Federal Capital Territory of Abuja
FDCO	Fertilizer Development and Consultation Organization
FECAIDA	FCT State Agri-Input Dealers Association
FEPSAN	Fertilizer Producers and Suppliers Association of Nigeria
FFD	Federal Fertilizer Department
FGN	Federal Government of Nigeria
FMARD	Federal Ministry of Agriculture and Rural Development
FMSP	Fertilizer Market Stabilization Program
FSFC	Federal Superphosphate Fertilizer Company
IAR	Institute for Agricultural Research
IFDC	An International Center for Soil Fertility and Agricultural Development
IITA	International Institute for Tropical Agriculture
IQC	Indefinite quantity contract
KASAIIDA	Kano State Agri-Input Dealers Association
KRA	Key Results Area
MANR	Ministry of Agriculture and Natural Resources
MARKETS	Maximizing Agricultural Revenue and Key Enterprises in Targeted Sites
MIR	Marketing Inputs Regionally
MIS	Market Information System
MISTOWA	Market Information Systems and Traders' Organizations in West Africa
MSME	Micro, Small and Medium Enterprise
NACRDB	Nigerian Agricultural Cooperative and Rural Development Bank
NAFCON	National Fertilizer Company of Nigeria, Ltd.
NAMIS	National Agri-Market Information System

NCRI	National Cereals Research Institute
NITEL	Nigeria Telecommunications Limited
NSPFS	National Special Program for Food Security
OYSAIDA	Oyo State Agri-Input Dealers Association
PCU	Projects Coordinating Unit
PME	Planning, Monitoring, and Evaluation
PRISMS	Promoting Improved Sustainable MSME Services
REFORMS	Restructured Economic Framework for Openness, Reform, and Macroeconomic Stability
RFP	Request for Proposal
RIFAN	Rice Farmers Association of Nigeria
RUSEP	Rural Sector Enhancement Project
SG 2000	Sasakawa-Global 2000
SOW	Scope of Work
SPFS	Special Program for Food Security
STTA	short term technical advisor
TOR	Terms of Reference
USAID	United States Agency for International Development
WARDA	West Africa Rice Development Association

Short-Term Consultancy Report

Project Startup for Agricultural Input Market Development

1. Introduction

Although a subcontract was not yet in place, prime contractor Chemonics asked IFDC to engage its designated two long-term Nigerian staff and an expatriate short-term technical advisor (STTA) on the Maximizing Agricultural Revenue and Key Enterprises in Targeted Sites (MARKETS) project beginning the first week of October in order to help launch startup of the project. IFDC agreed to do so on the basis of a letter authorizing preliminary expenses and the assurance from Chemonics that there were no issues in relation to the draft Scope of Work (SOW) for the Task Order to the indefinite quantity contract (IQC) subcontract, and that they would be forthcoming within a short time. The purpose of the consultancy of Dr. Singh was to assist in project start-up by drawing on his extensive experience in Nigeria with IFDC and to help the project set the stage for implementation of the IFDC SOW and the MARKETS Work Plan. Unfortunately, neither the subcontract and Task Order SOW nor the MARKETS Work Plan was approved and concluded during the 2-month consultancy ending in early December (nor even by the end of December). IFDC provided MARKETS with a draft Terms of Reference (TOR) for the consultant for comment. In the absence of comment on the TOR or other instructions for the consultancy, a formal agreement between MARKETS and IFDC, approval by the United States Agency for International Development (USAID) of a MARKETS Work Plan for fiscal year 2006 (which was significantly revised during November), the consultant proceeded along the lines of the TOR and responded to informal guidance and requests from the project's Managing Director.

1.1 Draft TOR for the IFDC STTA Project Startup Advisor—October and November 2005

The STTA Project Startup Advisor will report to the Chief of Party/Managing Director of the MARKETS project in Abuja. The STTA will represent IFDC, in consultation with IFDC Headquarters, in helping MARKETS to develop work and action plans for year one and the quick impact phase related to the IFDC role and responsibilities as an anticipated subcontractor in the project. The SOW submitted to Chemonics on September 13 serves as the overall guide.

The Start-up Advisor will also provide technical supervision and guidance to the two long-term Nigerian staff that will be working on the project as agri-input market coordinators and will prepare SOWs for them.

1. Participate in the work planning for year one and define the activities related to agri-input market development within the context of the proposed IFDC SOW for the Task Order.
2. Provide technical assistance to existing and newly formed commodity alliances in the development of agri-input supply, market information, and crop production.
3. Assist in finalizing the market distribution arrangements for the seed production program for the 2006 dry season crop in collaboration with the commodity alliances, agri-input dealers, processing companies, and others.
4. Assist in the formulation of and gather information for the baselines to serve as benchmarks for monitoring and evaluation purposes.
5. Participate in the assessment of performance of the Rice Alliance and make recommendations for improvements.
6. Participate in the assessment and development of a strategy for the selection of production sites, farmers/farmer groups, agri-input delivery, Business Development Services (BDS) providers, credit institutions, extension workers, and storage facilities in the target areas.
7. Assist in the preparation of a training curriculum and calendar related to agri-input market development.
8. Propose ways and means to coordinate MARKETS objectives and activities with those of the Market Information Systems and Traders' Organizations in West Africa (MISTOWA), Restructured Economic Framework for Openness, Reform, and Macroeconomic Stability (REFORMS), and other projects in the areas of agri-input market development, market information systems, and leveraged partnerships.

Deliverables include:

- Paper on how MARKETS can build on and move forward from the work of the USAID-funded, IFDC-implemented Developing Agri-Input Markets in Nigeria (DAIMINA) project.
- Paper on selection criteria for commodity production sites.
- Draft baseline information and reporting plan for the SOW for the IFDC Task Order.
- Consolidated report within 30 days of the conclusion of the consultancy.

1.2 Agri-Input Market Development Staffing

Dr. H. B. Singh started working from October 3, 2005, reporting to Dr. Dick Cook, Managing Director of the MARKETS project. Since the MARKETS Project's office in Abuja was still being furnished, the consultant was permitted to operate from the IFDC-Nigeria office in Abuja and could also use the MARKETS office provided for consultants.

Bola Ajadi and Ibrahim Suleiman were supposed to join MARKETS as input supply coordinators for the Federal Capital Territory (FCT) Abuja Middle Belt and Kano North Belt respectively. Mr. Ajadi joined on October 4. Due to contractual issues with his current employer and in the absence of a subcontract between Chemonics and IFDC, Ibrahim Suleiman joined the project the first week of December. He worked as a private consultant on a 50% time allocation basis during the month of November.

During the 2-month STTA consultancy period, MARKETS key personnel remained preoccupied in completing the initial startup formalities, including negotiating subcontracts with most of the project partners. Nevertheless, the assignment was completed. During this period the consultant Startup Advisor participated in the relevant meetings organized by MARKETS with stakeholders, particularly those in the Rice Alliance, Sorghum Alliance, Cowpea Alliance, Fertilizer Producers and Suppliers Association of Nigeria (FEPSAN), National Agri Market Information System (NAMIS), and MISTOWA.

Useful discussions were held on several occasions with Dr. Cook and Technical Services Director Neils Hanssens. Bola Ajadi and Ibrahim Suleiman were available for work planning and discussions on all important input supply matters, and they made satisfactory contributions. Mr. Robert Groot and Mr. Dan Waterman of IFDC provided valuable guidance. The MARKETS Administration Manager and Finance Officer extended the expected cooperation.

2.0 Relevance of DAIMINA to MARKETS Activities

A target for the supply of 2.5 million mt of fertilizers by the private sector in Nigeria over the 5-year period ending in September 2010 has been assigned by USAID as an important

performance indicator for the MARKETS project. The target, though achievable, demands well-planned efforts that can activate private sector investment in input marketing. A comparison of the pattern of fertilizer sales for the last 15 years (1991-2005) is shown in the table below.

Fertilizer Sales in Nigeria 1990 to 2005 and Projected to 2010

Period	Total sales (Million mt product)	Percentage Change Over Previous 5-Year Period
1991-1995	2.1	-
1996-2000	1.0	-47.6
2001-2005	2.2	+120.0
2006-2010	2.5	+13.6

It is important to note that during the period 1991-95, National Fertilizer Company of Nigeria, Ltd. (NAFCON) was in production, and Nigeria produced about 3 million mt of fertilizer during this period. NAFCON is being rehabilitated and may start production sometime in 2006. The DAIMINA project, funded by USAID/Nigeria and implemented by IFDC during a 3-year period in 2001-04, contributed to increasing the input supply by the private sector. In any event accomplishment of this performance indicator will require special focus on removing some of the major constraints that inhibit the availability and use of fertilizers in Nigeria.

In the MARKETS Request for Proposal (RFP) project document, USAID/Nigeria noted the following as a key constraint to enhanced productivity and transformation of smallholder agriculture:

“The farm utilization of yield enhancing inputs such as fertilizers, seeds and agrichemicals is inadequate. Current fertilizer use is estimated at 7 kgs/ha. Farmers face a recurrent problem of not having access to inputs in a timely fashion. Farmers use current production of grains as their source of seeds for the next planting season.”

2.1. How MARKETS Can Use and Build on DAIMINA Achievements

An IFDC-led study in 2000, followed by a National stakeholder workshop, made recommendations for the creation of a conducive policy environment, private sector capacity building, and strengthening of the Market Information System (MIS) to improve the availability of agri-inputs in rural markets in Nigeria, through active participation and investment by private

sector. Accepting the recommendations, the Federal Government of Nigeria (FGN) approached USAID to fund an agricultural input market development project in Nigeria. DAIMINA began in October 2001 as a pilot project in the states of Kano, Oyo, Bauchi and FCT Abuja, with collaboration of the Federal Ministry of Agriculture and Rural Development (FMARD) and the state governments. Key objectives of DAIMINA included: (a) facilitation of policy reforms and regulations, (b) private sector capacity building in input marketing, and (c) strengthening of the MIS.

The encouraging response shown by the private sector in the supply of fertilizers, expansion of the network of retail input dealers in rural markets, capacity building through formation of trade associations, and creation of NAMIS are some of the important activities that have a close relevance to the MARKETS project and can be capitalized and expanded by MARKETS for the benefit of its clients.

Similarly, private sector investment in input supply can be increased by enhancing the capacity of private entrepreneurs in agribusiness through training and networking. This will contribute to increasing the crop productivity, sales, and jobs in the agriculture sector—key objectives of MARKETS. Some important outputs of DAIMINA with relevance to MARKETS, and their scope of expansion in the project areas, are summarized below:

- 1. Expansion of the Input Supply Chain**—Strong networks of 360 importers, wholesale and retail agri-dealers were established in the states of Kano, Oyo, Bauchi, and FCT Abuja. This area includes much of the Middle and North hubs of the MARKETS project.

The dealer's networks can be linked with farmers, out-growers, farmer groups and commodity companies for the supply of improved seeds, fertilizers, and CPPs in the rural markets.

- 2. Promotion of Economical/Efficient Input Use Technologies**—Promotion of economical agri-inputs and efficient technologies was carried out by DAIMINA in collaboration with SG 2000, agricultural development projects (ADPs), and input dealer associations. The use of high-analysis fertilizers and better methods of fertilizer application, recommended seed varieties, safe use of CPPs, and use of urea supergranules in rice production were demonstrated by DAIMINA through field demonstrations and supply of educational literature to farmers and agri-dealers.

With an emphasis on transfer of technology to participating farmers and on market competitiveness, MARKETS can build on the above activities to enhance crop productivity and reduce the cost of production in the project areas.

- 3. Preparation of Training Materials and Educational Literature**—DAIMINA prepared a variety of training materials and educational literature for farmers as well as agri-input dealers (some of which was translated into Hausa).

The materials can be upgraded, duplicated and supplied to agri-enterprises and farmers as a part of the technology transfer activity.

- 4. Development of Agri-Input Dealer Trade Associations**—DAIMINA facilitated the formation of trade associations at the national, state, and market level. The associations have been well recognized and are making good contributions in policy dialogue, business promotion, and development of their members.

The services of FEPSAN, Kano State Agri-Input Dealers Association (KASAIIDA), Oyo State Agri-Input Dealers Association (OYSAIDA), Bauchi State Agri-Input Dealers Association (BASAIIDA), FCT State Agri-Input Dealers Association (FECAIDA), and 40 retail dealers associations can be suitably utilized in policy advocacy, promotion of competitive businesses, appointments of new dealers, and networking the agri-dealers with farmer organizations.

- 5. Strengthening of the MIS**—DAIMINA assisted the reorganization, upgrading, and strengthening of the MIS in Nigeria. In collaboration with the Projects Coordinating Unit (PCU) and Food and Agriculture Organization of the United Nations/Special Program for Food Security (FAO/SPFS), the market information system was strengthened and reorganized in the form of NAMIS. An efficient system of collection, processing, and dissemination of market information has been developed. The electronic, print and mass media was used to disseminate the market information.

MARKETS can build on and collaborate with NAMIS and MISTOWA in further expanding the MIS. Some additional information may be added for dissemination to clients according to their needs.

- 6. Private Extension Services**—Farmer business relations and promotion of private extension services through trained input dealers were important activities. Approximately

750,000 farmers visited DAIMINA-trained agri-dealers in four states in the year 2004 to procure agri-inputs and seek advice on input use technologies.

Increasing farmers' access to extension services, in line with MARKETS objectives, by utilizing the services of trained dealers can be developed as a tool for technology transfer in MARKETS areas. Some additional information needs to be added for the education of networked farmers and enterprises.

- 7. Business Promotion Meetings**—DAIMINA started an innovative method of business promotion by organizing monthly meetings of input suppliers and commercial banks for negotiations on terms of sale, price and delivery, and finalization of business deals. Such business meetings led to better appreciation of the needs of different players in the input supply chain.

The system of on-the-spot business negotiations can be extended in MARKETS areas and may include commodity alliances, processing companies, and farmer groups in addition to input dealers. Trade associations, credit providers, and farmer leaders may also be invited to such meetings.

- 8. Credit Mobilization**—DAIMINA facilitated the agri-dealers in securing finance from commercial banks and other credit providers like Nigerian Agricultural Co-operative and Rural Development Bank (NACRDB), wealth windows, Bauchi State Co-operative Financing Agency (CFA), wholesale agri-input suppliers and fertilizer importers. While commercial banks provided formal credit, the wholesale dealers and importers provided short-term credit in kind to their retailers as business credit.

A similar credit mobilization and repayment system with some modifications can be extended to MARKETS areas.

3.0 Strategy for Input Market Development and Actions Initiated During Startup Operations

The target of sales of 2.5 million mt of fertilizers by the private sector in a period of 5 years envisages about a 15% increase in existing fertilizer sales in Nigeria. Private sector importation and sales in the past have remained sluggish and below expectations, due to

inconsistent government policies. The private sector was able to achieve a market share of 60% in the year 2004 as a result of DAIMINA efforts. To achieve the target of 2.5 million mt of fertilizers by the private sector by the end of project, a two-pronged approach is suggested for MARKETS for the establishment of input supply linkages and input market development—**Commodity production sites and peripheral potential markets.**

3.1 Commodity Production Sites (CPS)

These areas will consist of selected commodity production sites sponsored by commodity alliances and selected for enhancement of productivity of selected crops. Approximately 450,000 farmers are expected to be networked as project beneficiaries in a period of 5 years. A target to increase the crop productivity by 100% has been fixed for rice, sorghum, cowpea, soybean, and some other crops. Approximately 500,000 ha of potential agricultural land, grouped into about 2,500 commodity production sites of about 200 ha each, is likely to be targeted for the promotion of high-input, high-output crop production and input use technologies. The central and northern states of Nigeria form the major part of the MARKETS implementation area. These no doubt have the best potential in the country. The cultivated land is low to medium in soil fertility and is deficient in most plant nutrients. The soils however respond well to the application of fertilizers and other yield-enhancing inputs and improved farm technologies. The average crop yield, at existing rates of application of fertilizers and other inputs, is about 1 mt per ha of rice, sorghum, cowpea, and soybeans (combined average). To achieve a 100% increase in crop productivity, almost an equal increase in the use of inputs will be required in addition to adoption of improved farm practices. *This certainly is not an easy task.*

The CPS will become the centers of major project activities. Increased crop productivity, enhanced incomes, and additional jobs are expected to come from additional crop yields and agribusiness activities. Therefore, it is necessary to focus on improving farmers' access to fertilizer and other inputs.

Actions Initiated—This consultant prepared a concept note on the CPS objectives, selection criteria, and a plan of action in the second week of November 2005 and discussed the document with the project Managing Director and relevant MARKETS staff. The CPS concept note was well received and accepted in principle. It was agreed that the next step was to be

detailed discussions with key players in the target commodities and alliances. The process of selection of sites should be led by commodity processing companies after the approval of the work plan and SOWs of implementing partners by USAID.

3.1.1 Determining the Requirements of Agri-Inputs for CPS—To plan the procurement and delivery of agri-inputs by the importers/producers and retail dealers, it is important to work out the projected demand of agricultural inputs in the CPS and periphery markets. This will also help the agri-input dealers do their advance business planning.

Actions Initiated—The projected demand of yield-enhancing inputs based on the agronomic requirements of crops grown and recommendations by FMARD, have been calculated. Fertilizer demand projections, prepared by Prof. Ango Abdullahi (ex-Vice Chancellor of Ahmadu Bello University Zaria and previous special assistant of President on Food Security), have been taken into consideration. The demand estimates of improved seeds, fertilizers, and CPPs for rice, sorghum, and cowpea have been worked out on a 1-ha basis in consultation with Bola and Ibrahim.

3.1.2 Benchmarks for Input Use—MARKETS proposes to conduct benchmark surveys on several aspects of agriculture to gather current information and fix benchmarks for various Key Results Areas (KRA). This work is being attended by the project monitoring and evaluation unit, and a consolidated benchmark survey is proposed to be conducted in December 2005/January 2006.

Actions Initiated—It was suggested that the Planning, Monitoring, and Evaluation (PME) unit should include in the survey the questions on factors affecting agri-input use and supply constraints and some other related issues. Technical assistance was provided in designing the questionnaire. In a meeting held in mid-November, contributions were made in finalizing the design of the proposed benchmark survey. The meeting was chaired by a consultant from the Chemonics home office. The benchmark survey is expected to provide a fair idea of the major constraints in the use of recommended agri-inputs and supply bottlenecks that impede the adoption of commercial farm technologies.

3.1.3 Identification of Reliable Sources of Input Supply—Presently, the total requirement of fertilizers in Nigeria is imported. NAFCON has recently been privatized but may take more than a year to restart production. Seed production and marketing is carried out for a very limited quantity. The CPP market is dominated by private multinational companies, and products of many brands and formulations are available in the market. The federal and state governments also sell fertilizers and other inputs at subsidized prices. The limited supply of quality products, on time and in required quantity, in rural markets is a major constraint. For the selected crops targeted for processing, it is essential that farmers have easy access to quality inputs at the right time, price, and place. To enhance competitiveness and production of better quality finished products, the food processing companies like to use quality raw material. This will relate to the quantity, amount, and type of inputs used by the farmers.

It is therefore important that MARKETS facilitates the availability of recommended inputs of good quality to out-growers. Reliable sources of inputs will need be identified, trained and patronized. A mechanism of quality assurance and inspection may be developed in consultation with the commodity associations, input trade associations, and farmer groups. The input suppliers should be provided with desired specifications, quantity required, time of delivery and other business terms, etc., sufficiently in advance to help them to plan for timely procurement/production and delivery of inputs.

Actions Initiated—To discuss input supply arrangements, a meeting was held with 10 selected input suppliers in the first week of October 2005 at Zaria. Another meeting was held with KASAIIDA at Kano in the second week of November 2005. A third meeting was held with FEPSAN at Abuja in the third week of November 2005. The input supply coordinators also visited and discussed with some dealers the issue of timely supply of quality inputs to farmers networked by the project. Taking into considerations the past performance and views expressed in the meetings/personal visits, a list of some dependable input suppliers (importers/producers) willing to supply required inputs has been prepared.

3.1.4 Establishing Retail Dealers Near CPS—In the commodity production sites, planting of crops on time and application of agri-inputs, particularly under rainfed agriculture, will be the most important requirement. With poor logistical and transportation infrastructure in

rural areas, it becomes extremely difficult for farmers to travel to urban markets to buy inputs. To enhance farmers' access to the inputs near the farm settings, a network of dealers needs to be established in the rural markets near the selected commodity production sites. Approximately 360 agri-input dealers have been trained by the DAIMINA project. Most of these dealers can be linked with out-growers and other farmers networked by MARKETS/commodity alliances. In the potential commodity sites, where satisfactory arrangements of input supply do not exist, some new agri-dealers may be added.

Actions Initiated—As a result of delay in the selection of CPS by related MARKETS staff, the dealer locations could not be finalized by the first of December. The methodology of selection of new dealers was properly discussed with the input supply coordinators. The design of the refresher training workshops has also been discussed. The following additional topics may be added to the refreshed training workshops: (1) concept of MARKETS project, (2) technologies of commercial crop production, (3) food processing and post-harvest care, and (4) logistics management and environmental issues, etc.

3.2 Development of Input Markets

The farmers in CPS, numbering about 450,000 and cultivating approximately 500,000 ha with 100% adoption rate of fertilizer recommendations, are expected to use less than 500,000 mt of fertilizers in 5 years. Sorghum, cowpeas and soybeans are low nutrient-consuming crops, and farmers generally do not exceed the recommended quantity. Fertilizer sales of about 2.0 million mt therefore need to be made outside the CPS areas to reach the project target. Taking into consideration the infrastructural and logistical constraints, it is suggested that MARKETS select 10-12 potential agriculture states to enhance fertilizer supply and use to achieve 2.5 million mt sales by the private sector by the end of project period. In each state, 8-10 potential areas should be identified around commodity production sites for development as private sector-led agri-input markets. Increased investment by the private sector, improvement of farmers' access to input supply, and private sector development are cross-cutting problems for ADPs. MARKETS should therefore seek collaboration of other related donor-funded projects and government initiatives in improving the input supply. Some activities that may be started with the collaboration of other projects are suggested as follow.

3.2.1 Technical Assistance in the Formulation of National Agri-Input Marketing Policy (Lead Partners—REFORMS and MIR)—The National Council on Agriculture in its meeting held in February 2005, approved a DAIMINA/FEPSAN-initiated memo for the formulation of a National Agricultural Input Marketing Policy. As a followup to previous USAID investment (through DAIMINA) in the policy reform process, MARKETS may coordinate and provide technical assistance, in the formulation of proposed National Agricultural Input Marketing Policy for Nigeria. The REFORMS (USAID/DAI) and MIR (DGIS/IFDC) projects are expected to be lead partners in this activity. FMARD, state governments, NAFCON, FEPSAN, fertilizer importers, Apex Farmers Association of Nigeria (AFAN), and Rice Farmers Association of Nigeria (RIFAN) should be engaged in the formulation of a competitive, private sector-led inputs marketing policy for Nigeria.

Some important policy reforms initiatives, e.g., amendment of fertilizer board (1970) act and agriculture seeds act (1992) facilitated by DAIMINA are still in the process of approval. A followup action may expedite the approval and enforcement of policy reforms. It will be advisable for MARKETS to work with REFORMS, MIR, and others to develop a plan of action and provide technical assistance/guidelines in this direction.

Actions Initiated—A preliminary/brainstorming meeting was organized by this Startup Advisor in the last week of November. Another meeting of FEPSAN was held in the MARKETS office in the same week. In both meetings, emphasis focused on policy reforms and development of agri-dealer networks. The participants offered support in this direction. The next meeting is slated for January 2006.

3.2.2 Development of the Agri-Input Dealers Networks—Most Nigerian states (except Kano, Oyo, Bauchi, Niger and FCT) do not have organized, well-informed entrepreneurs in input supply. Farmers largely depend on government sources and private traders, who sell some inputs (mainly fertilizers and CPPs) as a side business. Most traders lack product knowledge and business management skills and are unable to provide farmers with the right products and technical information. This contributes to low and inefficient use of fertilizers and other inputs in Nigeria.

MARKETS, jointly with FEPSAN, CropLife Nigeria, and NAFCON, may facilitate the development of dealers in selected states. Training and networking of input dealers and grain agents should be undertaken in a planned manner on a cost-sharing basis. MARKETS can support the provision of training materials, resource persons, and technical assistance in input market development. Collaboration of other donor-funded projects—particularly ProOpCom, SPFS, and Fadama III—and fertilizer importers, trade associations, and FMARD should be secured.

Actions Initiated—Some state governments, such as Zamphara, Plateau, Gombe, Jigwa, and Sokoto have shown interest in training dealers on a cost-sharing basis. A meeting was held with REFORMS and other projects on November 24, 2005. The participants showed willingness to join in such an activity. Training material prepared by DAIMINA (lists of trained agri-dealers and executives of the state-level dealers associations) has been discussed with FEPSAN and the input supply coordinators.

3.2.3 Promotion of Sustainable Crop Production and Input Use Technologies (Lead Partners—World Bank Fadama III and SPFS)—Increased yields and economic returns are the best attractions for adoption of sustainable technologies and use of yield-enhancing inputs by farmers. Approximately 25%-30% of applied fertilizers are wasted through improper application methods and by the use of inappropriate products. The existing extension services are inefficient, constrained by resources, and cannot cope with the demands of commercial agriculture.

There is, therefore, a need to promote the best-bet farm technologies in collaboration with other partners to demonstrate the economic benefits, including economical and efficient methods of use of selected fertilizers, improved seeds, and safe use of CPPs. To accelerate the process of technology transfer, provision of private extension services through trained agri-dealers, distribution of printed materials, and establishment of e-Choupals may be undertaken. The application of high-analysis fertilizers (based on soil analysis and applied through appropriate use methods) and use of urea supergranules in rice production can be promoted as important technologies. Technical knowledge of some ADP extension workers will require upgrading through training workshops. The collaborating partners may include SG 2000, ADPs, National Special Program for Food Security (NSPFS), Institute for Agricultural Research (IAR)-Zaria,

International Institute for Tropical Agriculture (IITA), West Africa Rice Development Association (WARDA), IFDC, National Cereals Research Institute (NCRI)-Badeggi, and others.

3.2.4 Promotion of Ethical Business Practices (Lead Partner—CropLife International and FEPSAN)—Mistrust of small and medium rural traders, underdeveloped business linkages, and unethical trade practices are some of the major bottlenecks in the development of agribusinesses in rural markets. MARKETS should consider holding business meetings for education on business ethics and strategies of competitive trade in agri-input commodities. This may be attempted in collaboration with trade associations and government regulatory authorities. Training of BDS providers in business management and fair business practices is likely to emerge as an important requirement in Nigeria.

3.2.5 Credit Mobilization (Lead Partner—Promoting Improved Sustainable MSME Services [PRISMS] and Private Credit Providers)—Access to macro and micro finance is one of the major bottlenecks in the promotion of agribusiness in rural Nigeria. MARKETS, in collaboration with REFORMS and some private credit providers, may facilitate credit mobilization for the benefit of food processing micro, small, and medium enterprise (MSMEs); input dealers; outgrowers; and farmer groups. Credit schemes such as hypothecation (credit against stored goods) may be considered. A selected number of business entrepreneurs may be trained in the preparation of bankable proposals and credit management, with particular reference to credit repayment.

The experiences of the Rural Sector Enhancement Project (RUSEP), DAIMINA, and the Rice Alliance can serve as guides. Special emphasis may be given to the provision of credit through private credit providers, e.g., wholesale input suppliers, co-op credit societies, grain merchants, and commodity companies, which generally provide credit in kind. Collaborators may include Central Bank of Nigeria (CBN), Union Bank, NACRDB, and cooperative credit societies. DAIMINA successfully facilitated micro finance for the dealers with a recovery rate of 98.5%.

3.2.6 Strengthening of Input Trade Associations (Lead Partner REFORMS and National Level Trade Associations)—To support capacity-building activities in policy

advocacy and business development, MARKETS can help strengthen the agri-input dealer trade associations. Training of executive members to develop the professional capabilities and business networking may be facilitated by organizing study tours, seminars, and group discussions. Markets may consider linking the farmer groups and commodity associations with the existing dealer associations for business development in the target areas.

3.2.7 Strengthening the MIS (Lead Partner—MISTOWA)—Access to reliable and current market information continues to be a major constraint in the growth of competitive agribusinesses in Nigeria. In collaboration with NAMIS, MISTOWA, and private information providers, MARKETS should enlarge the base of MIS to promote trade in processed commodities, basic crop produce, and agri-inputs.

Actions Initiated—Preliminary meetings have been held with NAMIS and MISTOWA to explore the possibility of collaboration in the collection and dissemination of market information. MARKETS also approached Nigeria Telecommunications Limited (NITEL) to assist in telecommunications.

A summary of activities, expected outputs and potential collaborators is shown in Table 1.

Table 1. Proposed Activities, Outputs, and Collaborating Partners

S/N	Proposed Activities	Expected Outputs	Collaborating Partners
1	Formulation of a National Agri-Input Marketing Strategy	A private sector-led agri-input marketing strategy, attracting investment from private sector, improving the availability of inputs in rural markets	<i>Lead Partner—REFORMS, FMARD, State MANRs, PropOpCom, SPFS, MIR, FEPSAN, importers of fertilizers, NAFCON, and other input companies</i>
2	Development of agri-dealer network	A developed network of agri-input dealers, linked with suppliers and buyers of inputs	<i>Lead Partner—MARKETS, NAFCON, trade associations, State Governments, and FMARD</i>
3	Promotion of sustainable/commercial crop production and input use technologies	Increased adoption of best-bet technologies resulting in increased yields and economic returns from crop production	<i>Lead Partner—FAO/SPFS, MARKETS, IITA, SG 2000, IFDC, ADPs, IAR-Zaria, NCRI-Badeggi</i>
4	Facilitation in promotion of ethical business practices and trade promotion	Heightened confidence, cordial business relations, and increased trade among various tiers of input supply chain	<i>Lead Partner—CropLife International, Input Supply Companies, NAFCON, Premier Seed Ltd., CPP companies, CANDEL Co., Golden Fertilizer Co.</i>
5	Assistance in credit mobilization from commercial banks and private sources	Agri-dealers' improved access to short-term micro finance for inputs and crop marketing business	<i>Lead Partner—PRISMS, commercial banks, NACRDB, CFA, co-ops, wholesale dealers, importers, seed companies, community banks, cooperative credit societies, and money lenders</i>
6	Strengthening of input trade associations	Heightened skills of leadership in group management, policy advocacy, and business promotion	<i>Lead Partner—MIR, MARKETS, PropOpCom, SPFS, FADAMA III</i>

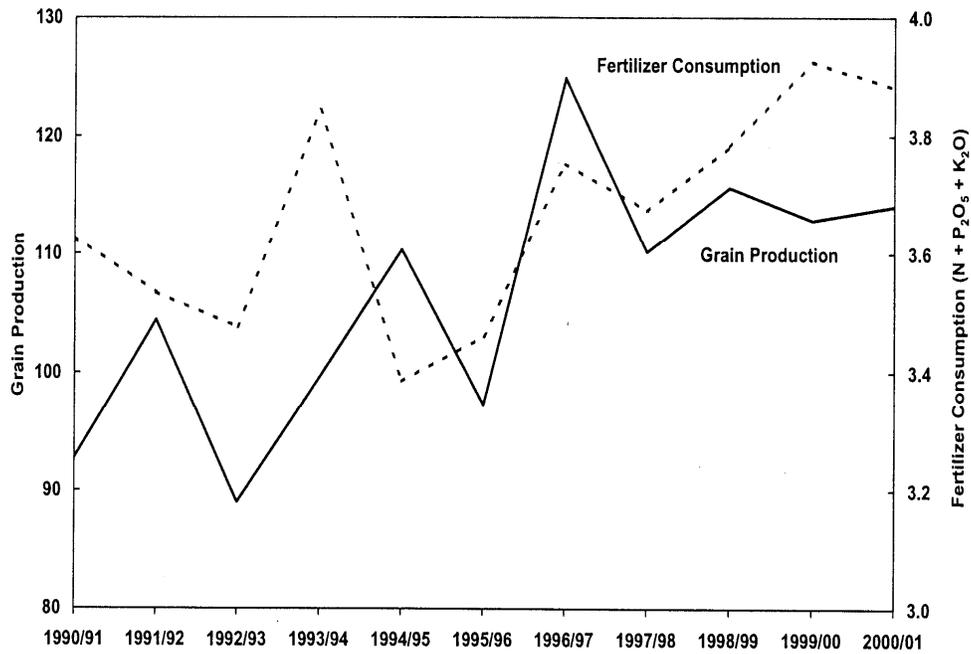
4.0 Some Baseline Information on Input Supply

4.1 Role of Agri-Inputs in Commercialization of Agriculture

The judicious and balanced application of yield-enhancing inputs (improved seed varieties, mineral fertilizers, and CPPs) have the greatest potential to transform the existing subsistence farming to commercial agriculture. Fertilizer use and crop yields have shown a direct relationship in almost all regions of the world (Figure 1). It is estimated that 1 kg of plant nutrients, on average, enhances the crop yield by 8–10 kg. The use of agricultural inputs is

directly related to timely availability and farmers' knowledge of the products. The availability of agri-inputs further depends on the participation and investment by the private sector in agribusiness.

Figure 1. Africa: Total Grain Production and Total Fertilizer Consumption 1990/91 - 2000/01 (million mt)



Source: Derived from FAO data.

4.2 Removal of Plant Nutrients by Crops

The amount of plant nutrients removed by different crops from soil is shown in Table 2. To obtain the desired crop yields, maintain soil fertility, and protect the environment, it is essential that the farmers replenish the soil with nutrients removed by the crops.

Table 2. Primary Nutrients Removed by Crops

Crop	Amount Removed (kg/mt of Crop Produced)			
	N	P ₂ O ₅	K ₂ O	Total
Maize	84	14	89	187
Wheat	125	22	92	239
Sorghum	170	35	175	380
Groundnut	65	10	48	123
Cotton	125	43	101	269
Potato	180	26	270	476
Cassava	170	30	110	310
Tomato	202	32	286	520
Tobacco	84	21	185	290

Source: Tandan, H.L.S. 1991. *Secondary and Micronutrients in Agriculture*, Fertilizer Development and Consultation Organization (FDCO), New Delhi, India.

4.3 Fertilizer Recommendations

Fertilizer recommendations are shown in Table 3.

Table 3. Fertilizer Recommendations

Crop	Agri-Ecological Zone (Nigeria)	Recommended Application Rates			
		N	P ₂ O ₅	K ₂ O	Total Nutrients
		(kg/ha)			
Maize	Sahel, Sudan Northern Guinea Savannah	120	60	30	210
	Southern Guinea Savannah	100	50	30	180
	Forest	70	50	0	120
Sorghum	Sahel, Sudan Northern Guinea Savannah	64	32	30	126
	Southern Guinea Savannah	32	16	15	63
Millet	Sahel, Sudan Northern Guinea Savannah	60	30	30	120
	Southern Guinea Savannah	30	15	15	60
Upland Rice	Sahel, Northern Guinea Savannah	70	50	40	160
	Southern Guinea Savannah and Forest	60	30	30	120
Groundnut	All Zones	0	54	25	79
Cowpea, Soybean	Sahel, Sudan	20	40	25	85
	Guinea Savannah and Forest	10	36	20	66
Yam	All zones	50	25	-	75
Cassava	All zones	60	20	60	180

Source: Federal Fertilizer Department—FMARD.

4.4 Estimated Requirement of Fertilizer in Nigeria

It is estimated that, according to current agronomic fertilizer recommendations, Nigerian farmers need to apply approximately 8.0 million mt of fertilizer products annually to meet the nutritional requirements of cultivated crops. Estimated NPK fertilizer requirements are shown in Table 4.

Table 4. Estimated NPK Fertilizer Requirements, Nigeria

Crop	Area	Recommended Rate			Potential Demand			Estimated Requirements NPK
		N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	
	('000 ha)	(kg/ha)			(mt)			(million mt)
Maize	5,000	100	50	30	500	250	150	2.50
Millet	5,500	50	25	25	275	138	138	1.38
Sorghum	6,000	40	20	20	240	120	120	1.20
Rice	2,000	65	30	20	130	60	40	0.65
Root crops	5,000	50	20	30	250	100	150	1.25
Pulses	5,000	10	40	30	50	200	150	0.25
Cotton	500	25	20	10	14	10	5	0.70
Total	30,000	340	165	165	1,454	553	554	7.93

Source: Federal Fertilizer Department (FFD), Nigeria.

Note: These estimates are based on agronomic requirements and do not reflect estimates of market demand.

4.5 Estimated Requirements of Improved Seeds in Nigeria

The crop yields are directly dependent on the yield potentials of the planted seeds. Application of fertilizers, herbicides, or CPPs cannot increase the yields beyond maximum yield potentials of a seed variety. Table 5 shows the estimated requirements of improved seeds in Nigeria. Only 5%-10% of farmers use improved seeds in the country.

Table 5. Estimated Requirements of Improved Seeds in Nigeria

Crops	2000	2001	2002	2003	2004	2005
	(mt)					
Maize	85,000	90,950	97,317	104,129	111,418	119,217
Rice	40,000	42,800	45,796	49,002	52,432	56,102
Sorghum	45,000	47,250	49,613	52,093	54,698	57,433
Millet	38,000	39,900	41,895	43,990	46,189	48,499
Cowpea	77,000	80,850	84,893	89,137	93,594	98,274
Soybean	10,750	11,395	12,193	13,046	13,959	14,937
Wheat	18,750	20,063	21,066	22,119	23,225	24,387
Total	314,500	333,208	352,773	373,516	395,515	418,849

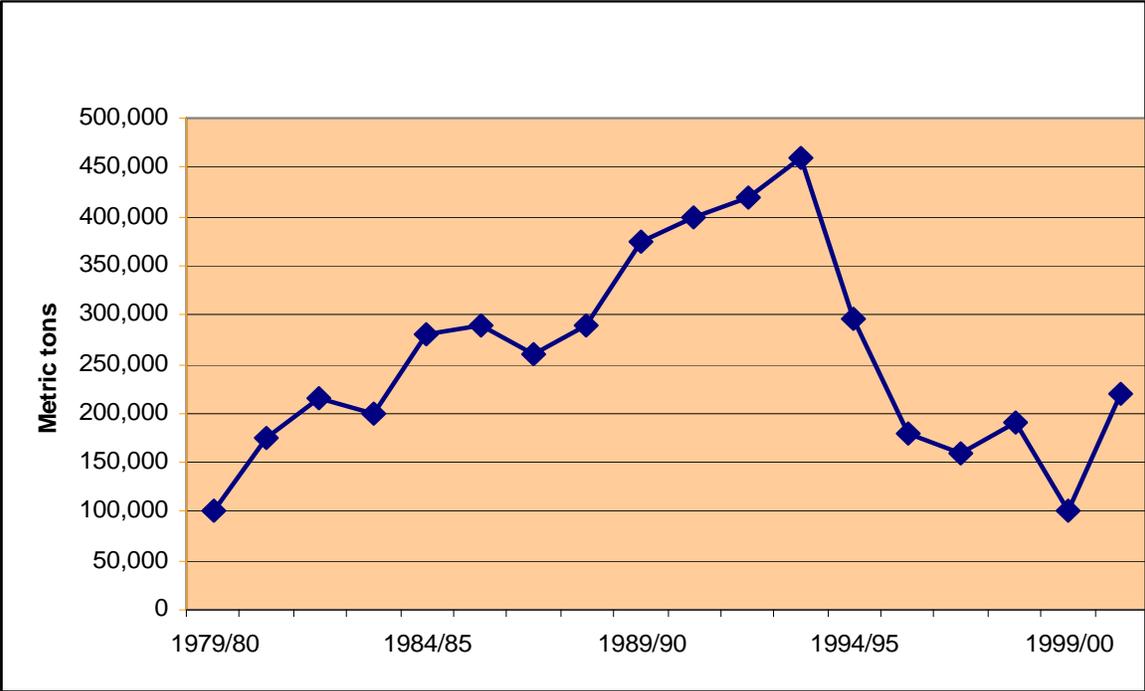
Source: Assessment of Seed Subsector Policy in Nigeria, IFDC/IITA.

4.6 Fertilizer Production, Importation, and Consumption—Nigeria

The actual use of fertilizers in Nigeria has shown a drastically declining trend in the last decade (Figure 2). The current use of about 220,000 mt (nutrients) or 7 kg/ha has not only

reduced the yields (less than 1,000 kg/ha) but is also leading to mining of the soils. Such a low application of fertilizers and use of improved seeds by only 5%-10% of the farmers is a clear indication that farming in Nigeria is a long way from smallholder commercialization.

Figure 2. Fertilizer Consumption (Nutrients) in Nigeria



4.7 Fertilizer Production Trends in Nigeria

1. NAFCON has a urea manufacturing plant in Port Harcourt, with an annual production capacity of 1.2 million mt. NAFCON ceased production in 1997, and the plant has recently been sold. A rapid assessment study conducted in December 2004 by IFDC concluded that the NAFCON facility could be rehabilitated in 1 year, at a cost of approximately \$150 million. Rehabilitation work should be started immediately to avoid further damage to the machinery.
2. The Federal Superphosphate Fertilizer Company (FSFC) has a phosphate manufacturing plant in Kaduna, with an annual production capacity of 100,000 mt. Since it was opened in 2002, FSFC has operated at a very low capacity utilization, averaging less than 5%.
3. Fertilizer production trends in Nigeria are shown in Table 6.

Table 6. Fertilizer Production in Nigeria

	Urea and SSP
	(mt)
1993	630,000
1994	710,000
1995	720,000
1996	580,000
1997	-
1998	-
1999	-
2000	-
2001	-
2002	15,000
2003	15,000
2004	20,000

Source: FFD/FMARD.

4.8 Fertilizer Import Trends in Nigeria

Most fertilizer used in Nigeria is imported. Fertilizer imports have fluctuated over the years, although in general the trend has been rising (see Table 7). In 2004, over 750,000 mt of fertilizer was imported. The recent growth in fertilizer imports is attributable to strengthening demand, as well as the emergence of a private fertilizer distribution system. The nascent private fertilizer distribution system is being supported by a number of donor-funded projects, including the USAID-supported DAIMINA project being implemented with the help of IFDC and USAID.

Table 7. Fertilizer Imports, Nigeria, 1995-2004

Year	Quantity
	(mt)
1995	102,851
1996	43,314
1997	56,708
1998	239,916
1999	252,861
2000	437,320
2001	643,183
2002	460,745
2003	511,940
2004	758,020

Source: FFD.

4.9 Fertilizer Import Costs, Nigeria, as of June 2003

Table 8. Fertilizer Import Costs, Nigeria, as of June 2003

Cost Item	Urea (US \$/mt)	NPK (US \$/mt)
1. Free on board, bulk (f.o.b.)	140	149
2. Freight charge	40	40
3. Insurance (0.06% of c.i.f.)	0.11	0.11
4. Import Duty (5% of c.i.f.)	9.00	9.45
5. Surcharge (7% of import duty)	0.63	0.66
6. ETLS Custom (0.5% of c.i.f.)	0.90	0.95
7. CISS Custom inspection charges (1% of f.o.b.)	1.40	1.49
8. Stevedoring charges, (5.9 US \$/mt plus 10%)	6.49	6.49
9. Natural Maritime Authority Levy	0.90	0.95
10. Ship dues, berth rent, and other services	2.21	2.21
11. Cargo fees (wharfage, weighbridge)	0.59	0.59
12. Shed rental and royalty	2.77	2.77
13. Shipping agency charges	0.40	0.40
14. NAFDAC charges	0.12	0.12
15. Incentives to dock workers and others	4.00	4.00
16. Demurrage	2.00	2.00
17. Letter of Credit (LC) Charges (1% of c.i.f.)	1.80	1.89
18. Finance Cost (25% per annum for 3 months)	11.25	11.82
19. Warehouse delivering (local haulage)	5.12	5.12
20. Handling losses (5% of 1 to 19)	11.45	12.00
21. Landed cost, bulk, ex-Lagos (sum of 1 to 20)	241.40	252.02
22. Landed cost, bulk, ex-Lagos Naira/mt @ N130 = US \$1	31,348.20	32,762.60
23. Bags, US \$/mt	7.69	7.69
24. Bagging, US \$/mt	8.00	8.00
25. Loading and offloading, US \$/mt	1.23	1.23
26. Total cost, bagged ex-Lagos, US \$/mt	258.32	269.12
27. Total cost ,bagged ex-Lagos, Naira/mt @ N130/US \$1	33,581.60	34,985.60
28. Total cost Naira/bag, ex-Lagos	1,679.08	1,749.28
29. Profit margin (10%)	167.90	174.92
30. Selling rate, Naira/bag ex-Lagos (28 + 29)	1,846.98	1,924.20
31. Actual wholesale rate, ex-Lagos, Naira per bag	2,050.00	2,100.00

Source: IFDC-DAIMINA, 2003.

4.10 Fertilizer Procurement by the Government of Nigeria

In 1999, the FGN launched the Fertilizer Market Stabilization Program (FMSP). Through this program, FMARD procures fertilizer, for sale through public agencies, to small-scale

farmers at subsidized prices. The quantities of fertilizer procured and distributed through FMSP are shown in Table 9.

Table 9. Fertilizer Procurement by FMARD, 2001-04

Year	Metric Tons
2001	120,000
2002	170,000
2003	120,000
2004	248,000

Source: FFD.

4.11 Fertilizer Subsidies in Nigeria

Fertilizer sold through FMARD's FMSP is subsidized. Farmers who receive fertilizer through the program, supposedly only small-scale farmers, are charged a price about 25% below the import parity price. The total cost to the FGN of the fertilizer subsidy program from 1994 to 2004 is shown in Table 10.

Table 10. Cost of Fertilizer Subsidy, Nigeria, 1994-2004

	(million Naira)
1994	8,918
1995	28,979
1996	17,711
1997	0
1998	0
1999	968
2000	0
2001	1,683
2002	1,485
2003	1,188
2004	2,459

Source: Calculated by the author.

Some states also sell fertilizer at subsidized prices ranging from 25% to 50% of the import parity price. Few data are available on the quantities of fertilizer distributed by the states, so it is difficult to estimate the cost of the state-level subsidies.

4.12 Agricultural Potential of Selected States in Nigeria

S/N	State	Land Area (⁰⁰⁰ Ha)	Crops grown	Area cropped (⁰⁰⁰ Ha 1998)	000Ha 04	VEAs -2004	Farming families
1	Adamawa	3,691.70	Rice, Sorghum, Cowpea, Maize, Soybean, Veggies	Rice - 29.60 Sorghum - 55.71 Cowpea - 126.76 Soybean - 1.20	NA	237	344,166
2	Bauchi	6,460.50	Rice, Sorghum, Cowpea, Soybean Veggies	Rice - 182.27 Sorghum - 365.43 Cowpea - 125.27 Soybean - 18.13	Rice - 194 Sorghum - 431 Cowpea - 146	212	345,000
3	FCT	731.5	Rice, Sorghum, Yam, Cassava, Vegetables	Rice - 2.93 Sorghum - 14.33 Cowpea - 0.79	Rice - 3 Sorghum - 17	64	76,000
4	Gombe	NA	Rice, Sorghum, Cowpea, Veggies,	Rice - 39.86 Sorghum - 137.68 Cowpea - 122.27	NA	270	230,640
5	Jigawa	2,315.40	Rice, Sorghum, Cowpea, Yams, Veggies	Rice - 85.05 Sorghum - 255.15 Cowpea - 751.81	NA	305	373,000
6	Kaduna	4,605.30		Rice - 171.15 Sorghum - 301.95 Cowpea - 75.88	Rice - 182 Sorghum - 356 Cowpea - 88	105	551,113
7	Kano	2,013.10	Rice, Sorghum, Cowpea, Yams, Veggies, Cotton	Rice - 37.30 Sorghum - 752.55 Cowpea - 66.75	Rice - 40 Sorghum - 887 Cowpea - 78	271	840,895
8	Kogi	2,938.30	Rice, sorghum, Cowpea, Veggies	Rice - 42.88 Sorghum - 64.67 Cowpea - 31.37	NA	153	228,961
9	Nasarawa	NA	Rice, Maize, Veggies Sorghum, Yam, Cowpea, Cassava	Rice - 66.87 Sorghum - 88.57 Cowpea - 97.08	Rice - 71 Sorghum - 155 Cowpea - 112	127	174,008
10	Niger	7,636.30	Rice, Sorghum, Yam, Cowpea, Veggies	Rice - 272.82 Sorghum - 747.61 Cowpea - 125.58	NA	199	550,550
11	Ogun	1,676.20	Cocoa, Rice, Sorghum, Yam, Cassava, Cowpea	Rice - 13.93 Sorghum - NA Cowpea - 8.09	NA	126	260,000
12	Oyo	2,845.40	Cocoa, Kolanut, Rice, Oil Palm, Sorghum, Cotton Maize	Rice - 29.88 Sorghum - 51.04 Cowpea - 10.14	NA	136	415,030
13	Plateau	5,803.00	Vegetables, Rice, Sorghum, Cowpea, Maize	Rice - 47.45 Sorghum - 237.48 Cowpea - 66.17	NA	148	227,189
14	Taraba	5,447.30	Yam, Sorghum, Rice, Cowpea	Rice - 475.03 Sorghum - 263.57 Cowpea - 40.39	NA	216	230,000

5. Recommendations

1. To establish input supply linkages with networked farmers, MARKETS should take advantage of the existing trained agri-input dealers developed by the DAIMINA project in the states of Kano, Bauchi, Niger, and FCT Abuja. Project staff in consultation with commodity alliances should select an appropriate number of dealers for business networking. The selection can be made from the list provided by DAIMINA. Additional dealers can be appointed and trained in collaboration with KASAJDA, BASAJDA, FECAIDA and selected importers. As a general guideline, at least one agri-input dealer should be developed within a radius of 5 km of the CPS.
2. To improve farmer access to all necessary inputs and farm tools, the agri-dealers should be encouraged to diversify their business and deal in all three inputs (improved seeds, fertilizers and CPPs). In addition, dealers should be persuaded to make available required types of hand tools and implements to farmers. One-stop shops will benefit both the dealer and farmers.
3. In the states of Bauchi, Niger, and FCT Abuja, DAIMINA operated for only 1½ years and did not finish the work of dealer networking. It is therefore recommended that the task of networking of retail and wholesale dealers and importers/suppliers of agri-inputs be continued for at least 2 years (2006 and 2007).
4. The facilitation of business promotion meetings between retail agri-dealers and suppliers at market and state level, particularly during the peak selling months of June-November, should be extended at least for one more year. Representatives of commodity alliances/CPS, BDS providers, credit institutions, and farmer organizations should be invited to such meetings. Business negotiations, role identification, and personal acquaintances are expected to develop confidence and promote business dealings.
5. A monthly demand of agri-inputs should be developed based on general recommendations by ADPs. The dealers and farmer groups should be helped to prepare their own business plans showing requirements of inputs, schedule of delivery, possible sources of funding. Business Promotion Offices (BPOs), credit specialists, and BDS providers should educate farmers and agri-dealers on the importance and methods of preparations of business plans for

crop production and input marketing. This subject may be made a part of the training curriculum for agri-dealers and farmer groups.

6. The agri-dealers should be given refresher trainings and on additional subjects, such as communications, marketing, commercialization of agriculture, business development services, value addition by post harvest care/processing, and environmental protection.
7. There exists good scope for using the dealers' services as private extension agents to provide farmers with the basic information and advisory services on the development of commercial agriculture. The trained dealers can be the best sources of advising farmers on application of agricultural inputs.
8. The services of trained agri-input dealers should be used to disseminate market information to farmers covering a wide range of subjects such as projected demand, availability, and market prices of agri-inputs, crop produce, and processed foods. Markets should collaborate with NAMIS and MISTOWA to explore the possibility of developing independent/private information source of market information.
9. With increased crop productivity, marketing of surplus crop produce may become a major hurdle in substantiating farmers' interest in investing in crop production, particularly the judicious use of inputs. The concept of input supply and procurement of crop produce in a coordinated manner needs to be promoted in the MARKETS areas. This is necessary to handle the additional crop produce that may become surplus as a result of efforts of the project.
10. Storage and logistics planning for the co-op produce at market level should be given due attention. In several countries the inventory credit and crop hypothecation schemes are operating successfully with and without the support of government agencies. Storage of surplus crop produce at the market level outweighs the benefits of storage at farm level. This may be even more relevant under Nigerian conditions where farm lands are fragmented and security of stored goods is a major concern.
11. To facilitate the growth of input supply and commodity value chain, it is strongly recommended that a sense of market discipline should be developed in the project area. The past experiences in Nigeria show that a casual approach to input distribution and taking over

of direct retail functions by importers/wholesale suppliers undermined the role of different tiers of the supply chain. It neither helped the farmers nor the input suppliers. MARKETS, therefore, strengthens the input supply chain by routing the inputs through designated input retail dealers.

12. The transformation of existing subsistence farming to commercial agriculture requires, among other things, the adoption of recommended farm practices. Nigerian agriculture is mostly traditional and based on low input use, low yield practices. The smallholder farmers, although aware of the benefits of improved seeds and fertilizers, have not fully appreciated the real economic gain that can be realized through the adoption of recommended farm practices (including the judicious use of all inputs). To enhance the rate of adoption of recommended inputs and farm practices, a holistic and sustainable approach needs to be adopted. Nigerian smallholder farmers may not come forward on their own to demand high-yielding inputs and improved farm technologies. Demonstration of direct economic benefit, and of products and services, through various extension methods will therefore be necessary to expedite the process of adoption. It is advisable to engage the services of ADP extension staff and trained dealers in this process.

13. Some of the agri-input products and practices that may be included in the technology transfer are:
 - a. Soil testing for primary and secondary nutrients.
 - b. Economic benefit of the use of recommended quantity of fertilizers, at the right time, with correct methods of application.
 - c. Methods of weed control through herbicides.
 - d. Importance of using recommended seed varieties and fresh seed stock.
 - e. Merits of the use of high analysis fertilizers such as DAP, TSP, and MOP, as opposed to low-grade NPKs.
 - f. Use of urea supergranules and urea deep placement in rice production.