

PrOpCom

Making Nigerian Agricultural Markets Work for the Poor

Monograph Series # 29

Commercial Demand for Soybean in Nigeria

By

Omotayo, A. M., V. I. O. Olowe, E. Fabusoro, J. M. Babajide,
D. K. Ojo and D. A. Adegbite

Agricultural Media Resources and Extension Centre
(AMREC)

University of Agriculture,
PMB 2240, Abeokuta, Nigeria

2 March 2007



Funding for this programme is provided by the United Kingdom's
Department for International Development (DFID)

Disclaimer

The PrOpCom Monograph Series seeks to provide a broader dissemination of the information and views collected through the efforts of the various service providers and consultants undertaking work in support of the PrOpCom programme. We believe this information will be useful in informing the policy dialogue in Nigeria and for improving the planning and execution of agricultural and agribusiness activities within the country.

The documents in this series represent the final deliverables as presented by the engaged service providers or consultants in response to terms of reference of contracts let by PrOpCom in execution of its programme. They have not been further edited or editorially polished. Consequently, there is wide variation in the editorial quality of these documents. Nevertheless, the information contained in these documents is deemed useful for policy and planning purposes.

The views and opinions expressed in these documents are solely those of the authors of the document and do not necessarily represent the views of PrOpCom, SAI Associates, Chemonics International or PrOpCom's funding agent, the Government of the United Kingdom's Department for International Development (DFID)

Information from these documents can be freely used and quoted on condition that it is properly sourced to the concerned document.

COMMERCIAL DEMAND FOR SOYBEAN IN NIGERIA

REPORT OF A SURVEY COMMISSIONED

BY

PrOpCom

**(Promoting Pro-Poor Opportunities in the Commodity and
Service Market)**

40, Mississippi Str., Maitama, Abuja, Nigeria

March, 2007

LIST OF ACRONYMS

AID - Agency for International Development
AMREC - Agricultural Media Resources and Extension Centre
APMEU - Agricultural Projects Monitoring Evaluation Unit
B.C. – Before Christ
BNARDA - Benue State Agricultural and Rural Development Authority
CBN – Central Bank of Nigeria
ECWA - Evangelical Church of West Africa
FCT – Federal Capital Territory
FFA - Free Fatty Acid
GNC - Groundnut cake
IDRC - International Development Research Centre
IAR&T - Agricultural Research and Training
IITA - International Institute for Tropical Agriculture
LGA – Local Government Authority
MT – Metric Tonnes
NAERLS – National Agricultural Extension and Research Liason Service
NAFDAC - National Agency for Food and Drug Administration and Control
PLC – Public Limited Company
PrOpCom - Promoting Pro-Poor Opportunities in the Commodity and Service Market Programme
RMRDC - Raw Materials Research and Development Council
SMEs - Small and Medium Enterprises
SMEDAN - Small and Medium Scale Enterprises Development Agency of Nigeria
SON - Standard Organisation of Nigeria
TOR – terms of Reference
UNAAB – University of Agriculture, Abeokuta
US - United States

Executive Summary

Soybean is generally considered as a highly versatile grain which has about 365 applications in the formulation of both human and animal foods and other industrial uses. Thus the demand for soya-based products in Nigeria especially among commercial consumers in the food, paint, pharmaceutical and confectioneries industries is expected to be substantial. These industries utilise soybean in various forms, such as bean, meal, cake and oil. However not much empirical data is available on the commercial demand for soybean and soy-based products across the country. PropCom's proposed catalytic activity in the soya commodity chain in Nigeria would benefit from empirically-based data of what the actual demand situation is in the present market place in terms of quality, form, quantity, and timing of purchase. This is the major reason for the commissioning of this study by PropCom.

The objective of the study is to collect empirical data on the scale, scope, form, and location of domestic demand for soy based products, both imported and locally produced, by commercial buyers in Lagos, Jos, Akure and Kano, Nigeria. Specifically, the study was set to:

- i. Conduct a desk review of soy-based materials in terms of production, utilization demand and supply, processing, marketing and pricing in Nigeria;
- ii. Identify commercial users of soybean in Lagos, Jos, Akure and Kano, the various forms required and their final products;
- iii. Examine the scale and scope of production and demand of these commercial buyers of soybean in terms of quantity (metric tonnes), quality, form (bean, cake, meal, and oil), timing of demand and place of delivery;
- iv. Identify location(s) of domestic demand and the time of need of commercial demand for soybean;
- v. Identify sources of supply, local and imported, of soya-based products and investigate consumers' preferences in terms of price, forms, quantity and quality standards in the study locations;
- vi. Determine the various industrial production uses of soybean products by commercial consumers and the proportion of soya being utilized for each industrial product;
- vii. Develop a commodity chain flow chart to indicate the various stages of production, processing, marketing, estimate of quantities at each stage and final utilization.

The project adopted rapid reconnaissance survey approach in obtaining data from selected commercial consumers of Soya. Sampling of identified commercial consumers was carried out based on industry type, scale of production, scope of soy based products utilization and form. Data were collected using questionnaires on organizational characteristics and demand and supply data. The project was executed in fifteen days with the assistance of trained enumerators at the study locations.

Findings

The key findings are highlighted below:

TOR 1: Desk review of soy-based materials in terms of production, utilization demand and supply, processing, marketing and pricing in Nigeria

- The desk review shows that Kaduna, Benue, Plateau and Niger are the major Soya producing areas in Nigeria. Other Soya producing areas include Nasarawa, Kebbi, Kwara, Oyo, Jigawa, Borno, Bauchi, Sokoto, Taraba, Zamfara and FCT. Kaduna State produced about 53.59 per cent of the national output while Benue, Plateau and Niger States contributed 28 per cent, 4 per cent and 2.2 per cent respectively.
- The estimated demand for soybean in 2004 was 634,000 metric tonnes while the domestic supply stood at 386,864 metric tonnes.

- Soybean has several domestic and industrial uses. The domestic utilizations account for about 25 per cent of the total production. The most important domestic processing forms are ‘dadawa’, soy milk, soy ogi and soy cheese (awara).
- Local price varied from one locality to the other. Local price of soybeans tend to follow international trend adjusted for foreign exchange rate fluctuations. However, actual prices are affected by short term/seasonal disparity in supply and demand. Expectedly prices were higher during off-season than on season.
- Unlike the marketing of other food crops in Nigeria, the Soya marketing chain appear simple but fragmented; it would seem that the business is in the hands of various middlemen who dictate local prices of Soya grain and other soy based raw materials.

TOR II: Identify commercial users of soybean in Lagos, Jos, Akure and Kano, the various forms required and their final products

- Various types of commercial consumers were identified in the four study locations. A total of 46 commercial consumers were identified. Twenty of them were identified in Lagos, eleven in Kano, nine in Jos and five in Akure. Those identified represent the major soybean processors in the cities surveyed. Among these processors, eight produce soy oil; 35 produce soy based livestock feeds, three produce instant foods and only one is involved in infant food production.
- Based on staff strength and production capacity, 88.9 per cent of the commercial consumers are small scale industries. Nestle Foods Nigeria Plc., Lagos had the highest number of staff of 1, 300. About 86.6 per cent of the processors had installed capacity of less than 50 tonnes per day, while only about 2 per cent had between 200-250 tonnes production capacity.
- The soy based products produced by commercial processors are soy oil, soy cake and meal, infant foods, instant foods, soy flour, soy gum and Flax. The oil mills produce soy cake and soy meal as by-products in the production of soy oil. These by-products are utilized by feed mills. The infant and instant foods industries also utilise the bean but in a different way. They are used for producing soy flour, baby foods, breakfast foods, snacks and other confectioneries.
- Soy oil produced by oil mills are identified as 100 percent Soya. However all other products are composites of soy based materials and other ingredients, including additives. Feed mills utilise between 8.5 - 11 per cent soy for poultry mash and between 18-49 per cent for poultry concentrates; Instant food companies utilise between 20 - 80 per cent soy depending on the products while infant food companies utilise 30 per cent soy in their products.

TOR III: Examine the scale and scope of production and demand of these commercial buyers of soybean in terms of quantity (metric tonnes), quality, form (bean, cake, meal, and oil), timing of demand and place of delivery

- The aggregate demand for soy based materials (bean, cake and meal) for the 46 commercial consumers of soybean in the four study locations were **82, 217, 400, 10, 045, 280** and **8, 031, 620** tonnes for bean, cake and meal respectively.
- Jos and Lagos ranked highest in quantity of soybean demand. The high level of demand recorded in Lagos was influenced by soy demand by Nestle Nigeria Plc.
- Soybean demand among processors exceeded supply.
- Soy based materials demanded by processors were in short supply by 57.9, 2.7 and 79.0 per cent for bean, cake and meal respectively.

- This shortage in supply is a product of several factors ranging from low productivity of soybean farmers; cobweb pattern of soybean supply; lack of capital for installing separate processing machines for soybean and inconsistency of government policies regarding importation of vegetable oil and other agro-based raw materials.
- The quality of soy based material is a very important factor that determines quality of products which in turn determines the price value and the marketability of the products.
- Some of the quality requirements as indicated by commercial consumers are percent foreign matter/impurities; percent immature seeds; mould seeds; percent damaged seeds; insect damaged seeds; percent oil content; percent free fatty acid content; moisture content and colour of bean;

TOR IV: Identify location(s) of domestic demand and the time of need of commercial demand for soybean

- Small and medium scale enterprises sell their products close to their locations while the larger ones have nationwide distribution channels.
- Time of demand for soy based product differs among processors depending on the level of utilization, location of processors in relation to location of supplier and availability of storage facilities. Demand for soybean was higher during harvest period (October – December) and low from January – September. About 17 per cent of the processors demand for soybean between October and December.

TOR V: Identify sources of supply, local and imported, of soya-based products and investigate consumers' preferences in terms of price, forms, quantity and quality standards in the study locations;

- A form of inter-dependence was observed between industries, particularly between those utilizing soy bean (oil mills and food industries) and those utilizing cake and meal (feed mills and some food industries).
- Processors using soy bean obtained their supplies from middlemen mainly from the central and northern States of Nigeria: Benue, Kaduna, Plateau, Katsina, Jigawa, Kano and Bauchi while those using soy cake and meal get supplies from oil meals within and around their location.
- Benue, Kaduna and Katsina States are the leading sources of supply for soybean
- Quality of soybased materials, regularity of supply and availability of materials, nearness of the supplier and non-availability of alternative supplier in a location are some of the reasons for patronizing a source of supply.
- Pricing of soy beans and other forms is usually dictated by market forces of demand and supply which in turn is a function of time, level of production, distance from point of delivery, quality and the quantity demanded.
- Prices of soy based products have not been stable over the years because of fluctuations in production and the significant control of the market by middlemen. The price of Soybeans tended to decline (as low as ₦ 45,000 per tonne) at the end of the production season and picked up again between December and January.
- On the average, the price per tonne for soybean was ₦55, 000 in Akure, about ₦ 45, 000 in Kano and Jos and about ₦ 60, 000 in Lagos. Soy meal per tonne was about ₦52, 500 in the south and about ₦ 47, 000 in the north. Soy cake goes for about ₦ 59, 000 in the south and around ₦ 47, 000 per tonne in the north.
- The cost of transportation is often responsible for the wide disparities in prices across locations in the country.

- Since quality is the most important factor in patronizing a source of supply, consumers were willing to pay a premium price for quality products. This additional price ranges from N1, 000 to about N3, 000 per tonne.
- Only one (Life Flour group, Lagos) of these commercial consumers indicated that they imported soy bean and other soy based products to complement their local supply.

TOR VI: Determine the various industrial production uses of soybean products by commercial consumers and the proportion of soya being utilized for each industrial product;

- The soy based products being produced by commercial consumers are soy oil, soy cake and meal, infant foods, instant foods, soy flour, soy gum and Flax. Oil mills produce soy cake and meal as by-products. Food industries utilise the bean to produce soy flour, baby foods, breakfast foods, snacks and other confectioneries.
- Soy oil produced by oil mills was noted to be 100 percent soy. Other products are composites of soy based materials, other ingredients and additives. Feed mills utilised between 8.5-11 per cent soy for poultry mash and between 18-49 per cent for poultry concentrates; Food companies utilise between 20-80 per cent soy depending on the product while infant food companies utilise 30 per cent soy in their products.

TOR VII: Develop a commodity chain flow chart to indicate the various stages of production, processing, marketing, estimate of quantities at each stage and final utilization.

- This study shows that soybean has several industrial and domestic uses and engages several players in the production, processing and marketing chain.
- The commodity chain shows that middlemen play a significant role in the distribution of soybean from farmers' field, the primary markets to the processors. Two categories of middle men were identified; those who buy directly from farmers, re-bag, store and transport to the feeder and central markets; and those who buy from these feeder and central markets and supply to industrial processors.
- Three levels of market were identified in the chain: the primary, feeder and central markets.
- At the processing level, oil mills produced soy oil, meal and cake required by other industries. The other industries involved in the commodity chain are feed mills, food industries (confectioneries, infant and instant foods), pharmaceuticals and cosmetic industries.
- The products of these processors end up, through the middlemen (registered distributors), at the markets (central, feeder and primary markets)

Some of the constraints listed by commercial consumers affecting processing and supply of soy based materials are high price of soy based materials; price fluctuations due to the cobweb pattern of commodity chain; cost of storage; the use of same processing machines for soybean and groundnut; inconsistent government policy on importation of oil and other soy based materials; excesses of middlemen; relative low capital capacity of medium and small scale processors and high interest rate on agricultural loans; irregular electric power supply and lack of continuity of agricultural programmes related to soybean production in Nigeria.

Conclusion and Recommendation

Soybean demand among processors exceeded supply. This suggests that there is a wide window of opportunity for poor producers to increase production and access the ever widening opportunity available in the local Soya market. The shortage in supply is a product of several

factors ranging from low productivity by soybean farmers, the cobweb pattern of soybean supply, lack of capital for installing separate processing machines for soybean and inconsistency of government policies on importation of vegetable oil and other agro-based raw materials. These problems require specific and diverse solutions as they affect groups of actors in the commodity chain. For the poor to benefit from the soya commodity chain a mechanism that guarantees direct access of the poor, creates more opportunity, **greater access to the market and its benefits, greater choice or reliability within the market, and more possibilities for mitigating risk through the market** would need to be instituted.

1.0 INTRODUCTION

1.1 Background

The soybean (*Glycine max* (L.) Merrill) is a specie of legume native to Eastern Asia and introduced into Nigeria in 1908. With improvement in breeding and processing research, soybean cultivation, domestic market, processing and utilization have grown considerably in Nigeria. Soybean has been recognized in the country as an important food crop that contains about 40per cent high quality protein and about 20per cent oil. Industrial and domestic processing of soybean has given rise to numerous products utilized for both human and animal consumption. The importance of soybean in food security especially for the poor in Nigeria cannot be overemphasized. It is the best source of plant protein, substituting the animal-protein sources, which are usually inadequate in supply for poor households.

Soybean is generally considered as a highly versatile grain which has about 365 applications in the formulation of both human and animal foods and other industrial uses. Thus, the demand for soy-based products is expected to be high in Nigeria especially among commercial consumers in the food, paint, pharmaceutical and confectioneries industries. These industries utilize soybean in various forms such as bean, meal, cake and oil. However cake and oil forms are the most significant economically in the country. The cake serves as livestock feed component (protein concentrates) while oil is consumed locally and used in the manufacture of skin lotions, margarine and infant foods.

The estimated industrial demand for soybean, according to the 2004 report of the Raw Materials Research and Development Council (RMRDC) was 634,000 metric tonnes while the domestic supply level was 386,864 metric tonnes. Some manufacturers such as Nestle Foods Nigeria Plc and Nasco Biscuits and some other Small and Medium Enterprises (SMEs) require soybean in large quantity to meet their production requirements. According to RMRDC, about 75per cent of soybean produced in Nigeria is utilized for commercial purposes while the remaining 25per cent goes for domestic consumption.

Some of the problems associated with domestic production of soybean are:

- low level of knowledge of local farmers on improved production methods;
- limitation imposed by lack of high-level production inputs;
- poor pricing of agricultural products;
- local farmers' lack of access to credit facilities; and
- poor infrastructural facilities that could facilitate processing and storage.

These problems limit the capacity of the domestic markets in meeting the industrial demand for soybean and have implications for its development in Nigeria. Industrial consumers therefore seek external sources for soybean to satisfy their need. Paradoxically, the locally produced

soybean are often more expensive than imported one which often commands higher value in terms of quality standards and grading. This results in abandonment of the local markets by major industrial consumers and serves as disincentive for local producers.

The goal of the Soya commodity project being facilitated by PrOpCom is to upgrade and add value to smallholder production to meet the demand of large commercial consumers in terms of quantities and quality of soy based raw materials. This project therefore seeks to provide empirical information for updating knowledge on the existing situation within the soy commodity chain with a view to identifying market failures and potential pro-poor solutions. The findings of the study shows the extent of demand for soy based products, sources of supply and the existing potentials and constraints in soy market activity in Nigeria. This information will assist actors in the sector to work out strategies through which the soy based market in Nigeria can be operated efficiently to ensure sustainable market and increased benefits. Specifically, the outcome of this study will assist PrOpCom in developing proposals for catalytic activities related to soy.

1.2 Development of improved soybean varieties and utilization technologies in Nigeria

Over the last two decades, research has made substantial efforts to improve the productivity of the crop by developing high yielding, early maturing varieties capable of nodulating in association with local rhizobia, and possessing other good agronomic traits (International Institute for Tropical Agriculture, IITA, 1994). Improved soybean varieties released in Nigeria include TGx 849-313D, TGx 1019-2EN, TGx 1019-2EB, TGx g1447-2E, TGx 536-02D, TGx 306-036C, TGx 1485-1ED, and TGx 1440-1E. The identification of seed collected from farmers revealed that farmers were planting the following varieties: M351, Samsoy 1 and 2, TGx 536-02D, TGx 923-1E, TGx 1440-1E, TGx 1448-2E, TGx 306-036C, and TGx 1485-1ED. These varieties were introduced to farmers over a range of time following different channels.

Early attempts to diffuse improved varieties started in the late 1970s with the introduction of the variety Genyi by the Federal Department of Agriculture. It was not until the late 1980s that other improved varieties became available. In the early 1980s, the varieties Samsoy 1 and Samsoy 2 were released and introduced to farmers. In the late 1980s, the Benue State Agricultural and Rural Development Authority (BNARDA)—the State extension services—introduced the variety TGx 536-O2D developed by IITA for mass adoption. Recently the variety TGx 923-1E was also introduced, but at the time of our study, it had not reached a stage of mass adoption. The variety TGx 1440-1E was still at the stage of adaptive research in the northern parts of Benue State.

Following the development and introduction of improved varieties, many food recipes using soybean were found to be highly acceptable to Nigerians, including their incorporation into traditional local dishes (Osho and Dashiell 1998). Substantial efforts were made to promote soybean utilization technologies among rural and urban households. National research and extension personnel in many African countries have been trained in soybean production, processing, and utilization techniques. In Nigeria, more than 47, 000 persons, including about 30, 000 women, have been trained in the production and potential utilization of soybean in their families' diet (Sanginga, *et al*, 1999).

1.3 Terms of Reference (ToR) and Specific Objectives

The main objective of the study is to collect empirical data on the scale, scope, form, and location of domestic demand for soya-based products, both imported and locally produced, by commercial buyers in Lagos, Jos, Akure and Kano, Nigeria.

Specifically, the study:

- i. Conducted a desk review of soya-based materials in terms of production, utilization demand and supply, processing, marketing and pricing in Nigeria;
- ii. Identified commercial users of soybean in Lagos, Jos, Akure and Kano, the various forms required and their final products;
- iii. Examined the scale and scope of production and demand of these commercial buyers of soybean in terms of quantity (metric tonnes), quality, form (bean, cake, meal, and oil), timing of demand and place of delivery;
- iv. Identified location(s) of domestic demand and the time of need of commercial demand for soybean;
- v. Identified sources of supply, local and imported, of soya-based products and investigate consumers' preferences in terms of price, forms, quantity and quality standards in the study locations;
- vi. Determined the various industrial production uses of soybean products by commercial consumers and the proportion of soya being utilized for each industrial product;
- vii. Developed a commodity chain flow chart to indicate the various stages of production, processing, marketing, estimate of quantities at each stage and final utilization.

2.0

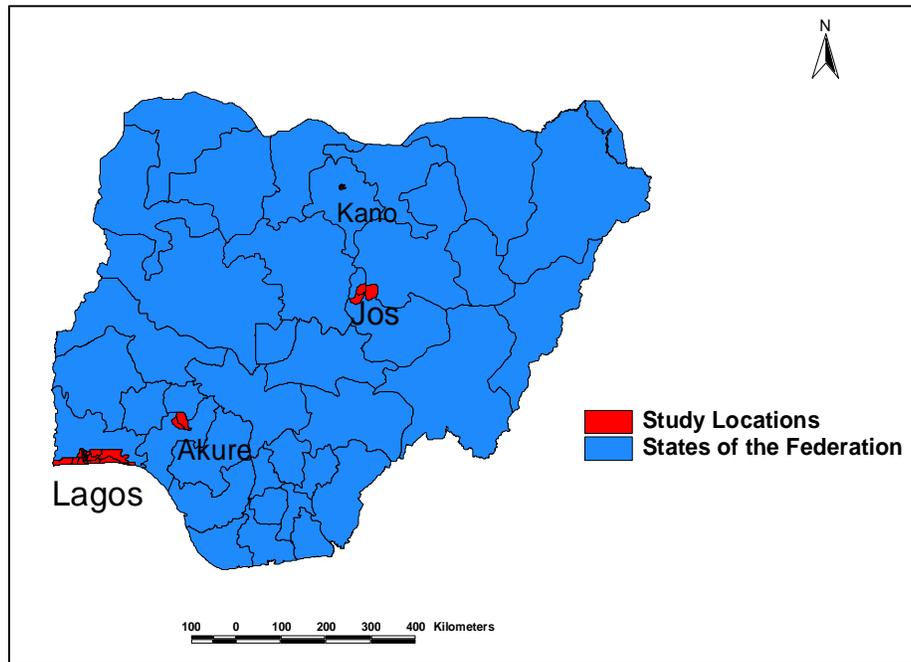
METHODOLOGY

2.0 Project Design and Approach

This project adopted the rapid reconnaissance survey approach for obtaining data on the Soya commodity chain from selected commercial consumers. The study followed a four-stage methodological approach:

- i. Identification of commercial consumers of soy based products in Nigeria, especially in the four study locations i.e. Lagos, Kano, Jos and Akure ;
- ii. Rapid reconnaissance to obtain empirically-based information on demand situation, supply channels, quality, forms, time of demand, potentials, constraints and prospects.
- iii. Qualitative and quantitative interpretations of data to reveal existing situation and draw scientific inferences
- iv. Development of prescriptive framework for enhancing market efficiency in the Soya commodity chain and ensuring a pro-poor approach to market development.

2.1 Study Locations: Based on the terms of reference, the study was conducted in four cities in Nigeria, namely Lagos, Jos, Akure and Kano. These centres have been identified to be hosting important large commercial consumers of soy based products. The Map below shows the study locations in the map of Nigeria.



1: Map showing the Study Locations

Figure

2.3 Sampling: Sampling of identified commercial consumers was based on industry type, scale of production, scope of soy based products utilization and form. A combination of purposive and snowball techniques were used in selecting samples for the different categories of commercial users. A total of 46 major soy bean processors were identified in the four study locations with Lagos having the highest number and concentration of soybean processors.

2.4 Data: Two major types of data were collected from the rapid reconnaissance survey. These are:

- *Organizational Characteristics* - Name of organization; year of establishments; staff strength; production capacity; location, products; soy-related products; quantity of soy related raw materials in each of the products; forms of soy raw materials;
- *Demand and Supply Data* - Demand/day/week/month/quarter/year; actual quantity obtained; quantity required; sources of supply, location of supplies (local/imported), quality of supply (local versus imported), price (local versus imported), quality determination, supply chain; transportation,

2.5 Data Collection Procedure: Questionnaire addressing the TOR and the specific objectives was developed. The questionnaire was pre-tested and subjected to reliability and validity tests. Four research assistants were employed and trained for each study location to assist the consultants in data collection. Six consultants conducted the study. They are:

- i. Professor Akin Omotayo – Rural Sociologist and Director, Agricultural Media Resources and Extension Centre, University of Agriculture, Abeokuta –Lead consultant.
- ii. Dr. V. I. O. Olowe – Soybean Agronomist, Research and Development Centre, University of Agriculture, Abeokuta
- iii. Dr. Eniola Fabusoro – Socioeconomist, Department of Agricultural Extension and Rural Development, University of Agriculture, Abeokuta
- iv. Dr. D. K. Ojo – Soybean Breeder, Department of Plant Breeding and Seed Technology, University of Agriculture, Abeokuta
- v. Dr. (Mrs.) J. M. Babajide, Food Scientist, Department of Food Science and Technology, University of Agriculture, Abeokuta
- vi. Dr. (Mrs.) D. A. Adegbite, Economist, Agricultural Media Resources and Extension Centre, University of Agriculture, Abeokuta

2.6 Data Analysis: Data collected were subjected to qualitative and quantitative analyses. Some of the analyses employed for data interpretations are:

- descriptive statistic – Central tendencies and dispersions
- inferential statistics – Cross tabulations, correlations and input-output analysis
- demand analysis
- Marketing chain tracing of soy input supply network and analysis

2.7 Time Line and Schedule of Project Activities: In line with the TOR of this project, the study was completed in 15 days, commencing on 28th of February and ending on 15th of March, 2007. Table 3 below shows the project activities and time schedule.

Table 3: Project Time schedule and work plan

S/N	Activities	Days																		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	Preliminary discussion with designated ToR supervisor	x																		
2	Desk review for identification of	x	x																	

	commercial consumers of soya-based products																		
3	Development of research instruments	x	x																
4	Field level data collection from commercial consumers and local producers			x	x	x	x	x	x	x	X								
5	Draft report by consultants									x	x	X							
6	Harmonization of reports from consultants												x	x	X				
7	Interim teleconference with designated supervisor and other PrOpCom staff															x			
8	Development of final report																x	x	x
9	Submission of Final report																		x

3.0 DESK REVIEW OF SOYBEAN PRODUCTION, PROCESSING, UTILIZATION AND PRICING

3.1 Global Production Outlook

The soybean plant is a self-pollinated crop with either purple or white flower which are borne in clusters. The plant can be erect, bushy and leafy and may vary in height from 2-3 meters. Soybean plant has tawny or grey-colour pubescence on the stems, leaves and pods. The number of seeds per pod varies from one to three. The size of the seed varies so much that the weight of one hundred seeds may range from 20 – 60 grams. The colour of the seed coat is generally yellow.

Production and utilization of soybean as food started with the Chinese in the 11th century B.C. and this had been almost their sole source of proteins for generations (Liu, 2000). Soybean became known and grown in other parts of the world just in the 20th century with its introduction to Europe in 1700s and America in 1804 (Katz, 1998). Soybean had become an increasingly important agricultural commodity in the past several decades, having a steady increase in annual production in the United States with about 70percent of the total world production (Salunkhe et al., 1992, Dashiell, 1993).

The world's production of soybeans increased by more than 55 per cent from 58.1m tones to 89.9m tones from the middle of 1980s to 1990s. The total harvest increased from 37.8m to 52.1m hectares with the yields following the same trend from 1536kg/ha to 1727 kg/ha during the same period. Of these lot, developing countries (Nigeria inclusive), produced 26.3m tonnes (about 30 percent). Compared to the world production, the projected scope in Africa's lowland tropics was estimated to be considerable. All these are however not without challenges and constraints due mainly to the biological constitution of the crop, lack of markets, marketing facilities and utilization technologies on the crop which did not develop on time due to unsynchronized production.

Soybean is capable of yielding the greatest amount of protein per unit of land than any major plant or animal source used as food by man. Also, the protein in soybean which is of good quality, (being nearly equal to casein in value), have made soybean an excellent food crop for protein-deficient countries of the world (Lui, 2000). Thus, the United States Agency for International Development (USAID) and International Development Research Centre (IDRC), Ottawa in Canada have been in the forefront in promoting soybean production and utilization in the developing countries, including Nigeria.

3.2 Soybean Production in Nigeria

Soybean was first introduced to Ibadan, Oyo State, Nigeria in 1908 with little or no success in the rainforest ecology of the State (Fennel, 1966). In 1928, soybean became introduced to the savanna area of Northern part of Nigeria where the soil and climatic conditions supported its production. The crop was successfully cultivated in 1937 for multiplication and commercial production in Benue State (Nyiakura, 1982). Since then, many small-scale farmers in the south central part of the country have continuously incorporated soybean propagation into their cropping systems.

According to a survey report by IITA in 1989, Benue State remained the major producer of soybean in Nigeria. The current expansion in the production of soybeans in Nigeria has been based on the many years of research conducted since the mid-1960s through the 1980s when Scientists decided to adopt a nationally-coordinated approach to research on Soybeans. In the 1970's, new attempts were made to cultivate the crop in southwestern Nigeria through

collaborative research initiated between Institute of Agricultural Research and Training (IAR&T) and IITA on soybean variety production trials. Varieties that possessed those characteristics that made them productive in the moist savanna and forest areas were developed. Nigeria is the largest producer of the crop for human and livestock feeds in West and Central Africa and has great potentials for substituting soy oil for some imported vegetable Oils.

The current domestic demand and home consumption have made the crop a versatile and multi-purpose agricultural produce that could be processed in almost 365 ways for human, livestock and industrial purposes. With the current ban on the importation of vegetable oils, some of the hitherto idle mills across the country are now looking inwards, producing edible oils from soybeans, preventing inefficiency of Soya processing facilities as well as preventing inadequate supply of the oils.

At present, the major soybean producing states in the country are Benue, Kaduna, Plateau and Niger. Other growing areas include, Nasarawa, Kebbi, Kwara, Oyo, Jigawa, Borno, Bauchi, Lagos, Sokoto, Taraba, Zamfara and FCT. The yield of soybean of 1,700 kg per hectare on research plots in Nigeria compared favourably with the United States (US) yields of 2000 kg/ha and Brazil yields of 1,800 kg/ha. However, there was a gap between the yield on the peasant farmers' farms and research plots to the extent that about 75 – 80per cent was realizable on farmers' farm per hectare. In 2003, when 402,200 hectares were cultivated, production estimates was between, 512,802 and 546,992 metric tonnes. The actual production for year 2003 was 386,854 metric tons.

The total output of the crop (yield), is the cumulative effect of the farmer's environment, the planting material genetic potential and the farmer's management capacity. Total output of soybean per State from 2000 – 2004 is presented in Table 1.

Table 1: Soybean production per state (2000-2004) (MT)

S/N	State/Year	2000	2001	2002	2003	2004	Total
1.	Abia	-	-	-	-	-	-
2.	Adamawa	-	-	-	-	-	-
3.	Akwa Ibom	-	-	-	-	-	-
4.	Anambra	-	-	-	-	-	-
5.	Bauchi	1.13	1.0	1.270	1.244	1.3	4.644
6.	Benue	163.29	163.64	164.89	163.35	161.77	655.17
7.	Bayelsa	-	-	-	-	-	-
8.	Borno	57.0	37.0	22.0	38.0	20.0	154.00
9.	Cross River	-	-	-	-	-	-
10.	Delta	-	-	-	-	-	-
11.	Ebonyi	-	-	-	-	-	-
12.	Edo	-	-	-	-	-	-
13.	Ekiti	-	-	-	-	-	-
14.	Enugu	-	-	-	-	-	-
15.	Gombe	-	-	-	-	-	-
16.	Imo	-	-	-	-	-	-
17.	Jigawa	15.0	2.485	3.165	2.817	3.81	23.467
18.	Kaduna	497.23	550.567	105.06	105.715	-	1258.54
19.	Kano	-	-	-	-	48.05	48.05
20.	Katsina	-	-	-	-	-	-
21.	Kebbi	4.942	4.942	3.27	2.951	3.45	16.105
22.	Kogi	-	-	-	-	-	-
23.	Kwara	1.0	2.405	3.165	2.814	3.381	9.384

24.	Lagos	3.367	0.12	0.25	0.43	0.45	4.167
25.	Nasarawa	13.0	4.75	3.75	2.44	2.480	23.04
26.	Niger	23.39	3.63	11.0	13.61	13.95	51.63
27.	Ogun	-	-	-	-	-	-
28.	Ondo	0.78	0.89	-	-	-	1.67
29.	Osun	-	-	-	-	-	-
30.	Oyo	5.30	4.25	4.65	5.66	-	19.86
31.	Plateau	17.06	18.6	20.5	39.217	31.124	95.377
32.	Rivers	-	-	-	-	-	-
33.	Sokoto	0.098	0.102	0.17	0.178	-	6.77
34.	Taraba	1.355	1.735	1.68	2.0	1.693	6.77
35.	Yobe	-	-	-	-	-	-
36.	Zamfara	3.169	3.521	3.242	3.609	0.60	13.541
37.	FCT	1.550	2.185	3.180	2.819	3.61	9.734
	Total	808.631	801.822	351.242	389.854	295.439	2, 348,549

Source: Raw Material Research and Development Council, RMRDC, (2004),

The total national output of soybean between year 2000 and 2004 was 2,348.549 tonnes. During this period Kaduna State produced 53.59per cent of the national output. While Benue, Plateau and Niger States produced 28per cent, 4per cent and 2.2per cent respectively. The remaining 12.21per cent was produced by the other states (See Figure 2 below). The production figures from Benue State had been consistent while Kaduna State recorded a drastic decline in production between 2002 and 2003. Plateau and Niger States' production has been consistent over the last five years but still very low (See Figure 3 below). In general, soybean production in Nigeria was high between 2000 and 2001, but declined drastically between 2002 and 2003.

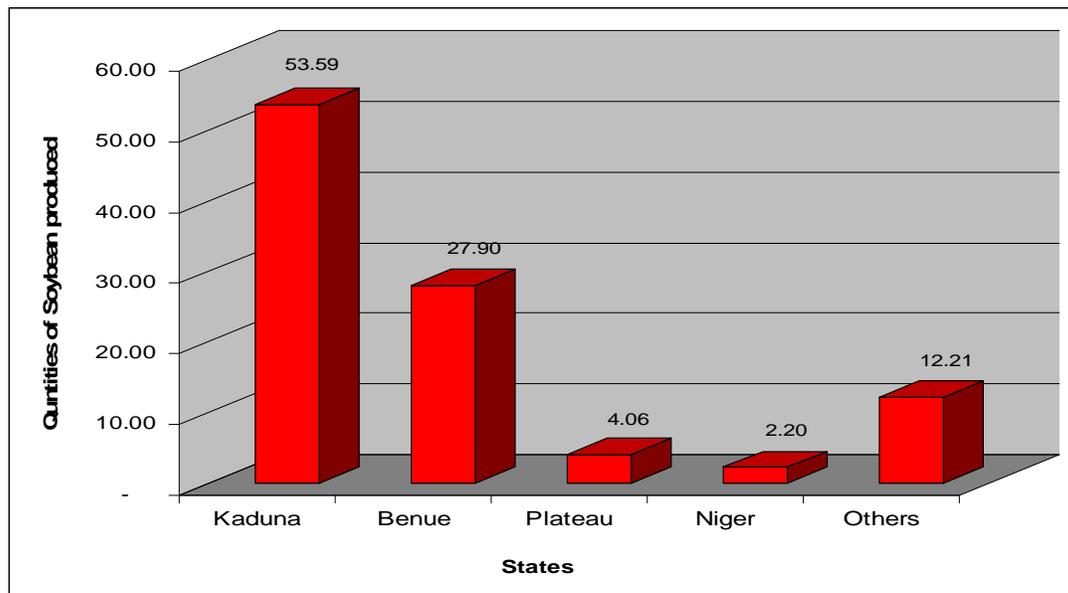


Figure 2: Percentage of Soybean production of major producing States in Nigeria (2000-2005)

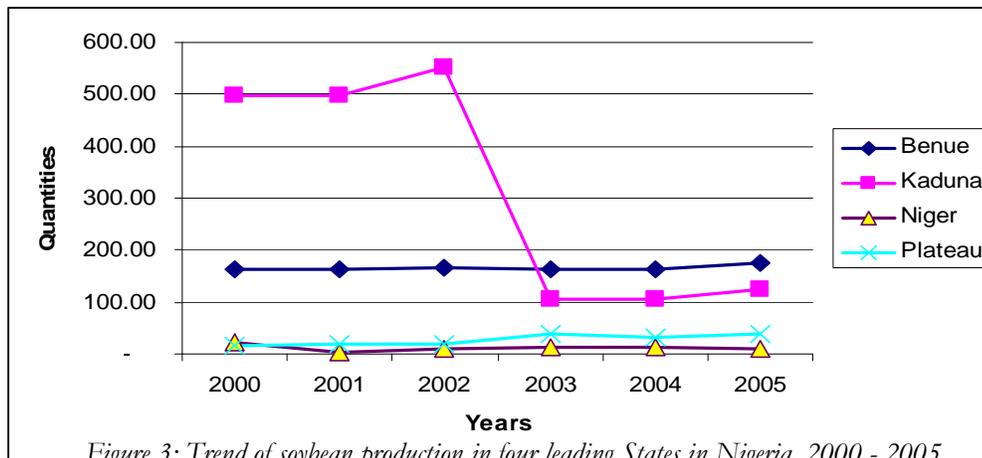


Figure 3: Trend of soybean production in four leading States in Nigeria, 2000 - 2005

The level of supply of soybean in 2003 was 386,854 tonnes. Going by the supply figures it was noted that the demand was higher than supply. The implication is that local industries operated at less than installed capacity. The soy supply chain for industrial use in Nigeria is determined by the following factors;

- the type and number of processing industries,
- the products being processed and
- demand for the products as intermediate input for further production and location of industries

To a large extent soybean cultivation in Nigeria has grown over the years and this is as a result of awareness of its economic benefits. Production levels increased in some States and this was attributed not only to the suitable climatic conditions but also to the release of high-yielding varieties from research institutes working on soybean development in Nigeria. The Agricultural Development Programmes played an important role as some of them had introduced improved, high yielding and disease resistant varieties.

3.3 Soybean Utilization and Pricing

Soybean has about 365 applications and due to its versatility in the formulation of both human and animal foods, it is in high demand not just in Nigeria but world wide. This high demand resulted in expansion of its production to increase supply. At the household level, soybean serves as a good substitute for locust bean in preparation of 'dadawa' (local condiment in soup preparation), when ground it is used in place of melon in soup and is a good source of cheap protein. Soybean has been used to fortify many traditional foods of different ethnic groups in Nigeria. These include soy-ogi, soy-vegetable soup, soy-gari, soy-akpu, soy-hatsi, soy-tuwo, soy-ice cream, soy cheese among many others. Soybean assumes an important position as a world crop because of its high quality protein content and rich oil and because of its multiple uses of all other legume crops. Research has it that one kilogram of soybean contained as much protein as 2kg of boneless meat or 45 cups of cow's milk or 5dozen of eggs (Dashiell, 1993).

Soybean seed contains about 40per cent high quality protein and 20per cent oil. Industrial and domestic processing of soybean has given rise to numerous products utilized for both human and animal consumption. Soybean products also serve as raw materials in paint, pharmaceutical and confectionery industries. These products include:

- **Soybean Meal:** Used as a protein supplement in poultry feeds, hog and cattle feed. Soybean meal is the material remaining after solvent extraction of soybean flakes. It has 50% soy protein content.

- **Soybean Infant formula:** Infant formulas based on soy are used by lactose-intolerant babies; and for babies that are allergic to human milk proteins and cow milk proteins. The formulas are sold in powdered, ready to feed, or concentrated liquid forms. It has been recommended internationally by pediatric associations that soy formulas not be used as the primary or sole source of nutrition for infants due to the high risk of several deficiencies including calcium and zinc.
- **Soybean Oil:** As edible oil - Refined to produce paints, varnishes, soap, lubricants, sealant and in pharmaceuticals Oil. In processing soybeans for [oil](#) extraction and subsequent soy flour production, selection of high quality, sound, clean, dehulled yellow soybeans is very important.
- **Lecithin:** In oil and chocolate industries.
- **Tofu or Soybean Curd:** It has a variety of uses in vegetarian cooking.
- Other uses of soybean include soy-milk, soy-akara, soy-moi-moi, dadawa, soy-ogi and a host of other uses.

Soybean cake and oil have huge economic value. The cake/meal serves as feeding stuff (protein concentrates) to live-stock while oil is consumed locally and used in the manufacture of skin lotions, margarine, salad oil, drying oil, etc. At the industrial level, many baby and adults breakfast foods are supplemented with soy protein to make cereal-soy foods, like Nutrend and Golden Morn from Nestle Foods Nigeria Plc., Mama Joy-soy-ogi from GlaxoSmithKline Nigeria Plc. and several several food formulations from small and medium-scale food producers. As far back as 1991, Cadbury Nigeria Plc. upgraded the production of dawadawa from soybean in the form of well-known monosodium glutamate (maggi) cubes which were normally and locally produced from locust bean seeds. According to RMRDC (2004), the current industrial demand level of soybean is about 634,000 tonnes excluding the use of soybean for local diets.

Local prices of soybeans tend to follow international trend adjusted for foreign exchange rate fluctuations. However, actual prices are affected by short term/seasonal disparity in supply and demand; it was observed that prices are higher in off-seasons than on seasons; foreign exchange shortage; and importation of refined vegetable oil from Asia has had much impact on the Nigerian oil. Although Nigeria has placed restrictions on the importation of vegetable oil, available trade data still shows an array of imported vegetable oils in our markets. Table 2 below shows the price range of soybeans from 1999 – 2006. The marginal increases were not enough to have any significant impact on the economy.

Table 2: Prices of soybean per tonne between 1999 and 2006

<i>Year</i>	<i>Price/tonne (N)</i>
1999	39, 813
2000	42, 690
2001	47, 908
2002	49, 370
2003	53, 072
2004	48,000
2005	50,000
2006	49, 000

Sources: CBN Nation wide Survey, Agricultural Projects Monitoring Evaluation Unit (APMEU) Bulletin of prices, NAERLS Bulletin on price and AMREC commodity prices

Local prices vary from one locality to the other. The price ranges in local measures when calculated in tonnes, goes very close or approximates the international price according to the

Central Bank of Nigeria (CBN) data. Although the Nigerian Soybean is exported and is utilized by other nations in their industries, it was observed that there was no sufficient documented evidence of this transaction. Soybean as a crop does not seem to enjoy an organized trade; the business appears to be left in the hands of touts who run it based on their whims and caprices. It therefore follows that since the documented records of commercial transactions are not available, it becomes difficult to reliably determine the quantity of soybean exported or imported into the country.

4.0 IDENTIFIED COMMERCIAL USERS OF SOYBEAN IN AKURE, JOS, KANO AND LAGOS

Tables 3, 4, 5 and 6 highlight the identified commercial consumers of soybean in Akure, Jos, Kano and Lagos respectively. A total of forty six soybean processors were identified in the four locations. Apart from Lagos where a sample of the processors was surveyed, a complete census of soybean processors in other locations was taken. Different categories of commercial consumers were identified. This comprised 10 oil mills, 18 livestock feed mills, three flour mills, five infant food and 10 instant food industries. No paint, pharmaceutical or cosmetic industry using soybean was identified. The livestock feed mills were many and utilize large quantity of soybean cake and meal. It was found that soy based materials are considered relatively expensive to be utilized in other industrial products such as paints, pharmaceuticals, confectioneries and cosmetics, where cheaper alternatives could be utilized.

4.1 Commercial Consumers of Soybean in Akure, Ondo State

Within the city of Akure, no commercial consumer of soybean was found. However, the available ones in Ondo state make Akure their administrative head office and market outlet. Consequently, the major commercial consumers of soybean in Akure have their Mills and production centres in other towns and villages in Ondo State, such as Owo and Ikare- Akoko.

JOF Family Farm Limited is a major soybean consumer in Akure. It has its administrative office at Akure but produces from Owo. It is a private farm established in 1992. It produces soy oil and meal as well as poultry feed. The poultry feed produced by this company is utilized by its poultry farm. The farm supplies other feed mills in Akure and environs soy meal and cake. Table 3 highlights the commercial consumers of soybean in Akure. .

Table 3: Identified Commercial Consumers of Soybean in Akure, Nigeria

S/N	Location	Name of Organization	Installed capacity tonnes /day	Industry type
1.	Akure/Owo	JOF Ideal Family Farm	120	Oil and feed mill
2.	Akure/Akoko	Olonimoke Feed mill	10	Livestock Feed mill
3.	Akure/Akoko	Serena Feed mill	2.5	Livestock Feed mill
4.	Akure/Akoko	Pam, Feedmill	0.5	Livestock Feed mill
5.	Akure/Akoko	His Grace Feed mill	1.0	Livestock Feed mill
6.	Akure/Owo	Opeyemi Feed mill	2.0	Livestock Feed mill

4.2 Commercial Consumers of Soybean in Jos, Plateau State

Jos hosts a number of commercial consumers of soybean. Notable among these is Grand Cereals and Oil Mill Limited. Table 4 provides the lists of soybean processors in Jos. Grand Cereals and Oil Mills Limited is the major consumer of soybeans in Plateau State. The products of the

company are soy oil, animal feed and cereal products. The company uses soybean as the major raw material. The company is noted for its pure soy oil “Grand Oil” which is widely consumed nationwide. In 2006 the company had a total of 429 members of staff with an installed capacity of 100 tonnes per day. It was evident during the survey that sourcing soybean is not a problem for the company because trucks of soybean were seen on a long line at the entrance of the company ready to off load.

Table 4: Identified Commercial Consumers of Soybean in Jos, Nigeria

S/N	Location	Name of Organization	Installed capacity tonnes /day	Industry type
1.	Jos	Grand Cereals & Oil Mills	100	Oil Mill
2.	Jos	ECWA Rural Development	120	Livestock Feed mill
3.	Jos	MJ-ONE Nig. Ltd.	10	Oil and Feed Mill
4.	Jos	Pierodex Farms Nig. Ltd.	15	Livestock Feed mill
5.	Jos	MEGATECH Industries Ltd.	20	Livestock Feed mill
6.	Jos	AGRO-MILLERS Ltd.	2	Livestock Feed mill
7.	Jos	Aminimoh & Sons	2	Livestock Feed mill
8.	Jos	Dagwom Farm Department.	10	Livestock Feed mill
9.	Jos	Lauret Oil Mills Ltd.	5	Oil Mill

Evangelical Church of West Africa (ECWA) Rural Development Limited is the second largest commercial consumer of soybeans and the oldest in Plateau State. The company was established in 1976 and presently has branches in most of the northern states of Nigeria where ECWA Church is well established. The Jos plant supplies soybean cake to most of their feed mills across the nation. The company produces poultry feeds and is widely patronized in Jos and its environs. A total of 260 members of staff are currently employed by ECWA. The company uses raw soybean, soymeal and soycake as the major input in production.

MJ-ONE Nigeria Limited was established in 1996 to produce soybean cake and crude soy oil. The current staff strength of the company is six. The company is noted in Jos as a major mill for crushing soybean cake for poultry farmers. MJ-ONE supplies soybean cake to other companies like Pierodex Farms, Megatech Industries Limited and Agro-Millers within Jos metropolis. The company uses an extruder to expel oil from treated raw soybeans. Pierodex Farms Nigeria Limited is a private and multi-national farm that was established in 2003. The head office of the company is located along Abattoir Road, Jos, while the farm where the feeds are produced is located at Babale, Bauchi road. The company sources its soybean cake mainly from MJ-ONE because of the high quality of the cake from the supplier.

Megatech is a multinational company that specializes in producing feeds and soybean cake. The company also fabricates and repairs several types of processing machines. The company also extracts oil from soybean using mechanical expeller. Agro-Millers Limited is located at Kaolin House Plot 135, Federal low cost Miango road Jos. The company was established in 2000. This company specializes in the fabrication of all types of processing machines and agricultural machineries. The milling machine is used mainly for milling soybean cake for poultry farmers on request, even though the company has a milling machine with an installed capacity of 2 tons per hour. The establishment is described as a toll miller. On the average the company mills 10 tons of cake per week.

Aminimoh and Sons Nigeria Limited is a private company located at Babale, Bauchi road in Jos North LGA with its sales outlet on University of Jos road. This company is relatively new since it was only established in 2004. The farm utilizes soybean cake in producing feeds. It has a mill

with an installed capacity of 2tons per day. The company also extracts crude soy oil from the meal mechanically.

Dagwom Farm Department is the farm that services the poultry feed needs of National Institute of Veterinary Research, Vom. It was established in 1993 and its major product is animal feed. The farm is located very close to the Institute and has staff strength of thirteen people. It has a mill with an installed capacity of 10 tons per day. However, the farm does not operate at full capacity because feeds are only produced on request from the various units of the Institute

Lastly, Lauret Oil Mills Limited is the newest among the major consumers of soybeans in Jos metropolis. The company was established in 2006 and the major products of the company are soybean cake and groundnut cake. It has a mill with an installed capacity of 5 tons per day. The company also extracts crude soy oil using heat extraction method. However, this method is yet to be fine tuned in order to obtain very clean soy oil suitable for human consumption. The company was hosting the officials of Standards Organisation of Nigeria (SON) at the time of the survey.

4.3 Commercial Consumers of Soybean in Kano, Kano State

Table 5 highlights the commercial consumers of soybean in Kano identified during the survey. It was found that the oil and feed mill industries were the only industries utilizing soy based raw materials. It was noted that soy based materials are considered relatively expensive to be utilized in other industrial products such as paints, pharmaceuticals, confectioneries and cosmetics. It was also discovered that there were numerous micro-scale oil mills in Kano that did not mill soybean because of the fact that it is not readily available in Kano State and that it requires a relatively expensive crushing machines.

Within Kano metropolis, only eleven commercial consumers of soybean were identified. Among these, Fortune Oil (formerly known as Salma Oil) is the oldest and largest consumer of soybean with install capacity of 250tonnes per day. This translates to about 6,500 tonnes monthly. This company has a large stock of soybean and soy based products and meets the demand of major feed millers in and around Kano as well as paint industries from the eastern part of the country. The company is the major supplier of soybean cake and oil to Animal Care in Ogun State and some other confectioneries and infant food industries in southwest Nigeria.

It was discovered that the oil mills produce 100% soy based products (oil, cake and meal). The cake and the meal are supplied to the feed millers while oil is purchased by paint, confectioneries and infant food industries. For instance, the raw soy oil is useful to paint industry while the neutralized oil useful to feed millers and confectionery industries. It was however discovered that these oil companies do not package their finished deodorized oil but sell it in tanks to marketers who sometimes package the oil and give it a brand name. This was discovered a common practice among the oil millers. None of them have their finished deodorized oil in the market for household level use.

Table 5: Identified Commercial Consumers of Soybean in Kano, Nigeria

S/N	Location	Name of Organization	Installed capacity tonnes /day	Industry type
1.	Kano	Fortune Oil Mill Limited	250	Oil Mill
2.	Kano	Talamiz Oil	100	Oil Mill
3.	Kano	Yakasai Oil Mill Limited	20	Oil Mill
4.	Kano	Karami Oil Limited	20	Oil Mill
5.	Kano	Danlabi Oil Mill	15	Oil Mill

6.	Kano	Alhaji Lawan Farms	15	Livestock Feed mill
7.	Kano	Alhaji Abba Zaggae Farms	5	Livestock Feed mill
8.	Kano	Nana Farms	5	Livestock Feed mill
9.	Kano	Animal Care	4	Livestock Feed mill
10.	Kano	Superb Feeds	2	Livestock Feed mill
11.	Kano	Sovet Feeds	1	Livestock Feed mill

4.4 Commercial Consumers of Soybean in Lagos, Nigeria

A total number of twenty soybeans processors were interviewed in Lagos State, and 12 are Livestock Feeds Millers, located at the well established Livestock Service Centre on Oko-oba Road at Agege Local Government Area of the State. Two large-scale producers of Livestock feeds were identified. These are Pfizer Livestock Feeds and Life Flour Group (formerly known as Sanders Feeds). The food, oils and fats processors are:

- i. Spectra Foods Nig. Ltd., Oko-Oba, Agege ,
- ii. Willmerc Nig. Ltd (la Cussion), Ojodu- Ikeja Local Government Area,
- iii. Moreson Nig. Ltd, Ojodu Ojodu-Ikeja Local Government Area,
- iv. Federal Institute of Industrial Research Institute, Oshodi, (FIIRO), Oshodi Local Government Area, Lagos
- v. Nestle foods Plc. Ilupeju
- vi. Grand Cereal (Real oil Nig. Ltd.) (Ojota Local Government Area.

Grand cereal oil has the largest installed production capacity of 150 tonnes per day followed by Nestle Foods Plc with 60 tonnes per day. Among the small-scale producers are the Golden Lay Farms Limited which has the lowest installed production capacity of 0.07 tonnes per day, Despite the company's long time of existence, most of the installed equipment were found to be small and obsolete. The total installed production capacity for sampled soybean processors in Lagos Metropolis was 313.07 tonnes per day.

The survey revealed that Livestock Feed Millers and processors are involved in the production of all categories and types of Livestock feeds and pellets like Poultry feeds, (such as Layers mash, Growers mash, Broiler starter and finisher, Chicks' mash), fish feed and pellets, turkey feeds and pig feed. Also, the soy input materials for livestock feeds used in all the areas surveyed include soy meal, soy cake and full fat soy which are obtained mainly from local markets in the northern part of Nigeria.

FIIRO, Spectra Foods, Wilmerc, (La Cussion) Nigeria Limited and Moreson Foods Nigeria Limited are involved in the production of soy flour for human consumption. Although the flour is not 100 per cent soy, the proportion of soy product in such flour was found to be about 30 per cent. The flour is being mixed with other flour products such as wheat, corn and cassava to give products like soy-ogi (corn and soy flours), soy-gari (cassava and soy flours), Cerolina (wheat and soy flours). Moreson Foods Nigeria Limited is also involved in the production of soy meal and soy cake.

Nestle Foods Nigeria Plc is the only well established Food Company that involved in the production of baby weaning food called 'Nutrend' and breakfast food called 'Golden Morn' which are made from corn and soy flour. It is important to note that apart from the Nigerian local markets product outlets, Wilmerc (La Cussion) Nigeria Limited exports its soy based health-focused and unique product in packs across the borders to many of the neighboring French-speaking countries like Senegal. The trade names for the three major products of the

company are “Soya Diatec Meal”, “Soya Beca Meal” and “Soya flour” for both infants and adults especially the diabetic and people suffering from obsessivity.

Grand Cereals and Oils Limited (a subsidiary of Real Oils Nigeria) produces soy oil. Spectra foods also have soy oil as a by-product when soybean is defatted to produce non-fat soy flour. Their soy oil is produced for local consumption. Golden Lay Farms, Life flour Group, Grand Oils and Cereals and Moreson are also involved in the production of animal feed ingredients such as soy meal, soy cake and full fat soya. All the respondents sell their products at the local market except for Wilmerc Ltd which also export its products to Senegal, West Africa. Grand Oils and Cereals have started sales outlet development in Ghana and are intending to export their product to the United Kingdom. Table 6 shows the list of identified soybean commercial consumers in Lagos.

Generally, it was discovered that Lagos hosts majority of commercial users of soybean in Nigeria. The reason for this is not far fetched. Lagos is the commercial nerve centre of Nigeria. Kano, also the commercial nerve centre of Northern Nigeria hosts several oil seed processors. The leadership of these two cities in the area of commerce and industry in the country guarantees the presence of large and expanding markets for their products. Several other oil seed industries were identified in Kano. Some of these were using soybean before but could not sustain its processing due to several production constraints. It was clear at the time of the survey that the exhaustive list of all commercial users of soybean could not be obtained due to inability of the government departments and Soybean Association of Nigeria to provide any up-to-date record on this. Majority of the commercial users listed by the States’ Ministries of Commerce and Industries have folded up or not using soybean anymore in their production. However, the sampling method utilized and some information obtained from the Raw Material Research and Development Centre (RMRDC) provided useful hints on the identified commercial consumers.

Table 6: Identified Commercial Consumers of Soybean in Jos, Nigeria

S/N	Location	Name of Organization	Installed capacity tonnes /day	Industry type
1.	Lagos	JIKS Global Ventures Limited	0.002	Livestock Feed mill
2.	Lagos	Comfort Mills & Farms	0.0012	Livestock Feed mill
3.	Lagos	High Trees Nig. Limited	0.001	Livestock Feed mill
4.	Lagos	Golden Lay farms Limited	0.0007	Livestock Feed mill
5.	Lagos	Solution Feed Mill	0.005	Livestock Feed mill
6.	Lagos	Sabina Pad Nig. Limited	0.02	Livestock Feed mill
7.	Lagos	Soleace & Moxie Investments	0.01	Livestock Feed mill
8.	Lagos	Boom Commercial Enterprises	0.001	Livestock Feed mill
9.	Lagos	Fola-Afe Agro Vet Services and Ventures	0.015	Livestock Feed mill
10.	Lagos	Spectra Foods	0.001	Food Industry
11.	Lagos	Samdor Feeds	0.001	Livestock Feed mill
12.	Lagos	S.K Grinding & Pelleting	0.002	Livestock Feed mill
13.	Lagos	Federal Institute of Industrial Research FIIRO	0.001	Food Research Institute
14.	Lagos	Livestock Feeds Plc.	0.01	Livestock Feed mill
15.	Lagos	Candor Foods	0.0005	Livestock Feed mill
16.	Lagos	Life Flour Group	0.01	Feed and Flour Mill
17.	Lagos	Willmerc (La cussion)	0.0002	Feed mill and
18.	Lagos	Grand Cereal and Oil Ltd	150	Oil Mill
19.	Lagos	Moreson Nigeria Limited	0.005	Food Industry
20.	Lagos	Nestle Foods Plc	0.06	Food Industry

Table 7 shows the average proportion of soy in the soy-based products of the companies. Among all the oil mills and others that crush the beans, the proportion of soy in the oil, meal, cake and the full fat soy (gum and flax) is 100 per cent. The feed millers utilize about 11 per cent of soy in the production of their poultry feeds. Although, there are various forms of feeds for various categories of poultry, the range is between 8.5 – 11 per cent for poultry mash while poultry concentrates contain between 37 and 49 per cent of soy. About 25 per cent soy is utilized in the production of fish meal and pellets. The soy-based food companies surveyed were found to be using 30 per cent soy flour as supplement in the production of breakfast cereals and weaning foods. About 2 per cent soy flour is also used in food seasoning. Notably, Spectra Foods Nigeria Limited uses as much as 80 per cent soy flour in Bakery-soy produced. The feed millers require soy cake or meal depending on availability and price. According to information obtained during the field survey, the meal is more expensive than the cake because it requires chemical extraction while cake is a by product of mechanically crushed soybean. Therefore, all the feed millers purchase soy cake rather than the meal.

Furthermore, 87 per cent of soybean processing outfits are privately owned while 10.9 per cent are public enterprises. This shows that the private sectors are key players in the soybean commodity chain in Nigeria. It is of note that the government in recent years is trying to encourage public-private participation in the economic sectors of the country. It will be of advantage to the country if these small and medium enterprises are given enough social and economic incentives to be able to participate fully in market oriented economy.

Table 7: Distribution of Soybean Processors based on some Production Characteristics

Parameters	Percentage (N = 46)
City Locations	
▪ Akure	13.0
▪ Jos	19.6
▪ Kano	23.9
▪ Lagos	43.5
Ownership Structure	
▪ Private Company	87.0
▪ Government Ownership	2.1
▪ Public Corporation	10.9
Soy-based Products	
▪ Soy cake	34.8
▪ Soy meal	26.1
▪ Soy flour	6.5
▪ Soy oil	41.3
▪ Infant food	47.8
▪ Instant food	10.9
▪ Full fat soy	10.9
▪ Soy beverage	2.2
▪ Poultry feed	67.4
Proportion (%) of soy in soy-based products (average)	
▪ Soy cake	100.0
▪ Soy meal	100.0
▪ Soy flour	30.0
▪ Soy oil	100.0
▪ Infant food	30.0
▪ Instant food	30.0
▪ Full fat soy	100.0
▪ Soy beverage	30.0
▪ Poultry feed (range)	8.5 – 49.0
▪ Food Seasoning	2.0
▪ Soy baked food	80.0

5.0 DEMAND ANALYSIS OF SOYBEAN AMONG THE COMMERCIAL CONSUMERS

5.1 Scale of production of Commercial Consumers of Soybean in Akure, Jos, Kano and Lagos Nigeria

The scale of production of commercial consumers, which determines their demand for soy based products, was categorized based on their staff strength using the categorization of Small and Medium Scale Enterprises Development Agency of Nigeria (SMEDAN) and their production capacity. In terms of staff strength and installed capacity, the majority of the companies are small and medium scale industries. Based on definition of micro, small and medium industries, 50 per cent of the processors are micro industries having less than 20 personnel; 32.6 per cent were small scale industries having between 20 and 80 personnel. The medium industries with about 100-120 staff were only 5.4 per cent while large scale with over 150 staff and some up to 1000 personnel were about 12 per cent. This interprets that the micro, small and medium enterprises occupy a vantage position in soybean commodity chain in Nigeria.

It was however observed that there were some companies with small number of personnel but have high installed capacity. Therefore, based on production capacity, (which was actually their own perception of their size) micro scale industries were those with less than 1 tonne per day and these accounted for 46.7 per cent of the processors. According to this categorization, those with installed capacity between 1 and 20 tonnes per day; accounted for about 31 per cent of the processors while those classified as medium have between 20 and 50 tonnes per day and they accounted for 7.1 per cent. The large scale processors are those with over 50 tonnes per day and are only 14.3 per cent. These results corroborate earlier results and categorization on the staff strength and pointing to the import of small and medium enterprises in the country's economy. Table 8 shows the distribution of the processors based on their production characteristics.

Table 8: Scale of Production of Soybean Commercial Consumers

Parameters	Percentage (N = 46)
Staff Strength	
▪ Micro (< 20)	50.0
▪ Small (21 – 80)	32.6
▪ Medium (81 – 120)	5.4
▪ Large	12.0
Installed Capacity	
▪ Micro (< 1 tonne per day)	47.6
▪ Small (1 - 20 tonnes per day)	31.0
▪ Medium (21 – 50 tonnes per day)	7.1
▪ Large (>50 tonnes per day)	14.3

5.2 Demand of Commercial Consumers for Soy Based Raw Materials

Demand for soybean and other related products by commercial consumers was obtained and aggregated in this report. It was observed that demand for the various forms of soy follows a similar pattern across processors and locations. The oil mills demand for soybeans to produce cake, meal and oil being demanded for by feed mills and other industries. However, some medium and large scale processors in the food industry demand for the bean as well. Demand for soy oil could not be ascertained because all the processors identified did not demand for soy oil but rather produced for other industries.

5.2.1 Quantities and Forms of Soy based raw materials demanded

The aggregate demand for soybean was far higher than aggregate demand for other forms such as meal, cake and oil. This is partly because oil mills and some food industries demand for large quantities of soy bean more than the industries that utilize mainly the meal and or cake. Twenty three of the processors (50%) demanded for soy bean while 18(39.1%) and 21 (45.7%) demanded for meal and cake respectively. Only one of the processors demanded for soy oil which is used in formulation of some poultry feeds.

Table 9 shows the quantity of soy based materials demanded by locations. The Figures shown also provide information on the demand structure of soy based materials. This information shows that processors in Jos have the highest aggregate demand of **42, 340,000** and **9, 576,000** tonnes per annum for bean and cake respectively. This is followed by Lagos and Akure **396,200,000** and **79,200** tonnes respectively. The aggregate demand per annum for the four locations for bean, cake and meal were **82, 217,400, 10, 045,280** and **8, 031,620** tonnes, respectively.

There was no demand for Soya oil by industries in any of the study locations visited. Apart from the oil mills, other processors such as Spectra Foods and Moreson Nigeria Limited both in Lagos utilized oil generated from the production of their soy foods. In Kano, none of the oil mills packaged their oil for domestic consumption. They supply paint industries from tve eastern part of the Nigeria (Onitsha and Enugu) with raw and neutralized oil directly. The local supply for soy oil of Karami Oil in Kano however, is done through middlemen that buy soy oil and mix with groundnut oil and package as vegetable oil. The proportion of soy in this adulterated oil is about 30 per cent.

It was found that Grand Cereals and Oil Mills Limited (Jos and Lagos) and JOF Ideal Farms Limited are the only oil milling companies that had branded soy oil (Grand Oil and Executive Chef, respectively) in the market in Nigeria. The companies have major distributors all over the country. From the foregoing, the demand for soy oil by various commercial buyers and industrial users could not be ascertained at the time of the study. However, data on the quantities of soy oil produced by various oil mills was obtained and presented in Table 10 below. Grand Cereals and Oil Mills in Lagos and Jos are the highest producers of soy oil among the oil mills identified. Danlabi Oil Mills Kano produced the least quantity of soy oil.

Table 9: Aggregate Demand for Soy based materials by forms and locations per annum ('000 tonnes)

	Bean	Cake	Meal	Oil
Akure	79.2	0	1.62	0
Jos	42, 340	9, 576	0	0
Kano	178.2	9.28	0	0
Lagos	39, 620	460	8, 030	0
Total	82, 217.4	10, 045.28	8, 031.62	0

Table 10: Volume of Soy Oil produced by Major Oil Mills in the Study Locations

Oil Mills	Soy oil produced ('000 Litres/year)
JOF Ideal Family Farm, Akure	4, 284
Grand Cereal and Oil Mills Limited, Jos	4, 080
Lauret Oil Mill, Limited	255
Fortune Oil Mills, Kano	1, 700
Talamiz Oil Mills, Kano	850
Yakassai Oil Mills, Kano	105.4

Karami Oil Mills, Kano	204
Danlabi Oil Mills, Kano	170
Grand Cereal and Oil Mills, Limited, Lagos	850
Total	12, 498.4

The high demand in Lagos and Jos for bean and cake indicates that there is a large market for the products in the two cities. On the average, the demand by each processor in Jos for bean was 7, 056.67 tonnes per annum while the demand per processor in Laogs was 3, 963.0 tonnes per annum (See Table 11). The demand for meal was lower than that of cake because cake is cheaper in price and they are both utilized for the same or similar purposes. The total average demand per annum for the four study locations were **11, 094.91**, **3, 239.55** and **535.735** tonnes for bean, cake and meal, respectively.

Table 11: Average demand for Soy based materials by form and location,(‘000tonnes)

	Bean	Cake	Meal	Oil
Akure	39.6	0.00	0.405	0.00
Jos	7, 056.67	3, 192	0.00	0.00
Kano	35.64	1.55	0.00	0.00
Lagos	3, 963.0	46.0	535.33	0.00
Total	11, 094.91	3, 239.55	535.735	0.00

From the foregoing, it was evident that demand for soy bean and other soy based products are high among the oil mills and food industries. This is because soybean is used as the major raw material by the oil mills while other industries utilize it as minor raw material. It was surprising to note that Nestle Nigeria Plc did not utilize as much Soya as Grand Cereals, in Jos. The fact that only about 30 per cent of soy based material is required in their production could be responsible for this.

Other reasons given for the low demand for soybean by feed millers is that soy cake was only a supplement in the formulation of feed and this could be substituted with groundnut cake (GNC) if soy cake was not available. In Kano and Jos, it was found that all the oil mills processed groundnut, which is readily available and considered easier to process than soybean. Although, groundnut is more expensive than soybean, price is relatively stable, the proportion of oil is higher and the cake content is also higher. The two crops (groundnut and soybean) are grown in different seasons which keep the oil millers as well as the feed millers in business throughout the year. Therefore, during the period when groundnut is available (January – May/June), soy cake and meal may not be available as many of the oil mills will switch to crushing groundnut during his period.

In terms of actual quantities obtained, it was established that the majority of commercial processors could not obtain quantities demanded. As a result, most processors especially the larger ones, have large stock of soybean and related products against the period of scarcity. It was discovered that there is a cobweb situation in the production of soybean and this affects supply at period of scarcity. Therefore processors target period of soybean glut and buy large stock, sometimes more than what is required for a year’s production.

However, information obtained from processors indicates that demand for soybean, cake and meal exceeds supply. Table 12 below shows the demand and supply situation for soybean and other products in the study locations. The demand for bean, cake and meal were in deficit of 47, 624.08, 267.37 and 6, 347.42 tonnes per annum respectively. Although, majority of the consumers indicate that the local supply of soy based products could meet their demand, it is

obvious that their opinion was wrong. It was observed that oil mills usually purchase more than required in order to meet their demand especially during the rainy season when soybean will be scarce in the market.

The shortfall in the supply of soy cake and meal corroborates the findings that bean was in short supply. Feed mills, flour and food industries utilize the cake and meal being produced by the oil mill. The huge shortfall recorded in the supply of cake and meal is as a result of the high level of production of soy cake by majority of the oil mills. Meanwhile in Jos, there was no shortfall in supply for cake, likewise for meal in Akure. This implies that the oil mills in Jos and Akure, Grand Cereals and JOF have sufficient stock of soy cake and meal to meet the demand of feed millers and other industries.

Table 12: Demand and Supply for soy based products by form and locations per annum ('000 tonnes)

Locations	Bean Demanded	Bean Supplied	Cake Demanded	Cake Supplied	Meal Demanded	Meal Supplied
Akure	79.2	61.2	0	0	1.62	1.62
Jos	42,340	48.72	9,576	9,576	0	0
Kano	178.2	135.4	9.28	8.712	0	0
Lagos	39,620	34,348	460	193.2	8,030	1,668
Total	82,217.4	34,593.32	10,045.28	9,777.91	8,031.62	1,684.2

5.2.2 Quality Determination for Soy based Products

The quality of soy based materials is one important factor considered by commercial consumers for patronizing a particular source of supply. Quality of soy materials determines quality of products which in turn determines the price value and the marketability of the products. Thus all commercial consumers have quality specifications for various materials. Quality is assured through standardized quality control, use of modern technologies and experience in the processing business over time. It was discovered that not all commercial consumers of Soya have quality assurance facility in their establishments. Some, especially the small-scale feed producers may have to take samples out for testing.

According to the commercial consumers, suppliers are given quality specifications and compliance is strictly enforced. Any supplier who breaches quality specifications is usually rejected and blacklisted.

Some of the quality requirements commercial consumers usually look out for are as follows:

- a. Percent foreign matter/impurities
- b. Percent immature seeds
- c. Mould seeds
- d. Percent damaged seeds
- e. Insect damaged seeds
- f. Percent oil content
- g. Percent free fatty acid content
- h. Moisture content
- i. Colour of bean

Table 13 shows the laboratory tests for quality and quality criteria. For bean, the colour, purity test, protein content and oil level are often determined. The colour of a mature bean should be golden yellow while the protein content should be at 50 per cent while the oil content in the bean should be about 20 per cent. The purity test (weight of foreign materials/weight of sample

= < 0.03%) is usually carried out by consumers that do not have seed cleaners. The seed cleaners separate the seeds from all form of sands and other foreign materials.

Table 13: Test for quality and quality criteria for soy based materials

Soy based materials	Laboratory test	Quality determination
Bean	<ul style="list-style-type: none"> - Colour - Purity test - Protein - Oil - Moisture Content 	Golden yellow < 0.3% ≥ 50% 18-20% 9 -12%
Cake/meal	<ul style="list-style-type: none"> - Protein - FFA - Oil - Energy Content 	44 – 48% 1.0% 5-7% 2700kcal
Oil	<ul style="list-style-type: none"> - Vitamin A - Protein - FFA 	2.5mg/500litres 40 - 45% <1.0

For the cake or meal, the quality tests are to determine protein level, Free Fatty Acid (FFA) and oil level. The protein should be high (44 - 48%) while the FFA should be less than 1.0 per cent. If the FFA is higher than 1 per cent, it means that the oil is not well refined and could adversely affect the poultry birds. The oil content in the cake/meal should also be low (5-7%); if the oil content of the cake is high, egg production in layer birds will be affected.

Usually, buyers of the oil do not conduct any laboratory analyses on the oil but processors themselves conduct some level of quality test to ensure compliance with some specifications of the National Agency for Food and Drug Administration and Control (NAFDAC) and Standards Organization of Nigeria (SON). Therefore, they ensure that the protein level of 40-45% is retained and in every 500 litres there should be 2.5mg of Vitamin A. Also the FFA should be less than 1.0%.

On the part of suppliers (for soybean and cake/meal), adhering to the quality specifications of their buyers is a determining factor for continual patronage while the processors themselves ensure quality of products to attract higher value and satisfy NAFDAC and SON's regulations. It was found that processors were willing to pay some bonus (about ₦2, 000) for high quality supply.

5.2.3 Time of Demand for Soybean and other Products

Time of demand for soy based product differs among the processors depending on the level of utilization, location of processors in relation to location of supplier and availability of storage facilities. For those utilizing the bean, timing of demand is very important because of the seasonality of soybean production. The production of soybean by Nigerian farmers has been found to fluctuate year after year following a cobweb pattern. It has been established that farmers, in response to market glut for maize at a particular year, abandon maize for soybean at another year. This they do to create alternate year scarcity/surplus for soybean.

Therefore, it was found that the oil mills respond to this situation and buy in excess during glut. In addition, the oil mills and other processors utilizing the bean always target the harvest period

(October - December) to buy large stock. During this period, the price is low and large quantities are available. Although, this group require soybean on daily basis (all year round), the supply situation do not allow them to buy in bits. For instance, Fortune oil in Kano and Nestle Foods Plc, Lagos consumes large quantities of soy daily (250 and 60 tonnes respectively). They therefore hold large stock of soybean to ensure the sustenance of their production.

For other products and other industrial users, soy based products are demanded every day, all year round. The fact is that majority of the processors in this category are small and medium enterprises and do not have the capital to buy large stock of soybean. Thus their level of utilization is low. For instance, cake and meal required by feed mills are often available with the oil mills, as long as they produce. Majority of the small and medium industries buy on monthly basis to sustain their production.

From the foregoing, demand for soybean is higher during harvest period (October – December) and low from January – September. Demand for other soy based product is all year round depending on availability. Table 12 below shows that 82.6 per cent of the processors demand for soybean between October and December. This implies that the period is very critical in the soybean commodity chain. It is a period when middlemen will also buy large stock from farmers and store until there is a rise in price.

Table 14: Time of Demand for Soybean Product

	Frequency	Percent
All Year Round	38	82.6
September - February	8	17.4
Total	46	100.0
Industry Type	Time of Demand	
▪ Oil Mill	October - December	
▪ Feed Mill	All Year Round	
▪ Instant Food Industry	All Year Round	
▪ Infant Food Industry	October - December	

5.2.4 Locations of Domestic Demand for Soy Based products

Table 13 below indicates the various locations for domestic demand for soy based products for each of the identified processors. These findings suggest that small and medium scale enterprises sell their products close to their own locations.

Table 15: Locations of domestic demand for soy based products

S/N	Name of Organization	Location	Major Soy based product	Locations of Domestic Demand (State)
1.	JOF Ideal Family Farm	Akure/Owo	Cake, meal and oil	Southwest Nigeria
2.	Olonimoke Feedmill	Akure/Akoko	Livestock feeds	Ondo and Ekiti
3.	Serena Feedmill	Akure/Akoko	Livestock feeds	Ondo and Ekiti
4.	PAM, Feedmill	Akure/Akoko	Livestock feeds	Ondo and Ekiti
5.	His Grace Feedmill	Akure/Akoko	Livestock feeds	Ondo and Ekiti
6.	Opeyemi Feedmill	Akure/Owo	Livestock feeds	Ondo and Ekiti
7.	Grand Cereals & Oil Mills	Jos	Oil, cake and meal	All over Nigeria

8.	ECWA Rural Development	Jos	Cake, meal and livestock feeds	Plateau, Kano, Bauchi, Kaduna and Abuja
9.	MJ-ONE Nig. Ltd.	Jos	Oil, cake and meal and Livestock feeds	Plateau and Niger
10.	Pierodex Farms Nig. Ltd.	Jos	Livestock feeds	Plateau
11.	MEGATECH Industries Ltd.	Jos	Livestock feeds	Northern Nigeria
12.	AGRO-MILLERS Ltd.	Jos	Livestock feeds	Plateau
13.	Aminimoh & Sons	Jos	Livestock feeds	Plateau
14.	Dagwom Farm Department.	Jos	Livestock feeds	Plateau
15.	Lauret Oil Mills Ltd.	Jos	Oil, cake and meal	Plateau and Eastern Nigeria
16.	Fortune Oil Mill Limited	Kano	Oil	Kano, Ogun, Lagos and Eastern Nigeria
17.	Talamiz Oil	Kano	Oil	Northern Nigeria
18.	Yakasai Oil Mill Limited	Kano	Oil	Kano and Kaduna
19.	Karami Oil Limited	Kano	Oil	Kano, Kaduna, Ogun and Lagos
20.	Danlabi Oil Mill	Kano	Oil	Kano
21.	Alhaji Lawan Farms	Kano	Livestock feeds	Kano
22.	Alhaji Abba Zaggae Farms	Kano	Livestock feeds	Kano
23.	Nana Farms	Kano	Livestock feeds	Kano
24.	Animal Care	Kano	Livestock feeds	Kano
25.	Superb Feeds	Kano	Livestock feeds	Kano
26.	Sovet Feeds	Kano	Livestock feeds	Kano
27.	JIKS Global Ventures Limited	Lagos	Livestock feeds	Lagos and Ogun
28.	Comfort Mills & Farms	Lagos	Livestock feeds	Lagos and Ogun
29.	High Trees Nig. Limited	Lagos	Livestock feeds	Lagos and Ogun
30.	Golden Lay farms Limited	Lagos	Livestock feeds	Lagos and Ogun
31.	Solution Feed Mill	Lagos	Livestock feeds	Lagos and Ogun
32.	Sabina Pad Nig. Limited	Lagos	Livestock feeds	Lagos and Ogun
33.	Soleace & Moxie Investments	Lagos	Livestock feeds	Lagos and Ogun
34.	Boom Commercial Enterprises	Lagos	Livestock feeds	Lagos and Ogun
35.	Fola-Afe Agro Vet Services and Ventures	Lagos	Livestock feeds	Lagos and Ogun
36.	Spectra Foods	Lagos	Soy foods	Lagos, Ogun and Oyo
37.	Samdor Feeds	Lagos	Livestock feeds	Lagos and Ogun
38.	S.K Grinding & Pelleting	Lagos	Livestock feeds	Lagos and Ogun
39.	Federal Institute of Industrial Research FIIRO	Lagos	Soy foods	Lagos
40.	Livestock Feeds Plc.	Lagos	Livestock feeds	All over Nigeria
41.	Candor Foods	Lagos	Livestock feeds	Lagos
42.	Life Flour Group	Lagos	Feed Mill, soy cake and meal	All over Nigeria
43.	Willmerc (La cussion)	Lagos	Soy foods	Lagos and Ogun
44.	Grand Cereal and Oil Ltd	Lagos	Oil, meal and cake	All over Nigeria
45.	Moreson Nigeria Limited	Lagos	Soy foods, cake and meal	Lagos
46.	Nestle Foods Plc	Lagos	Infant foods	All over Nigeria

6.0

SOURCES OF SUPPLY FOR SOY BASED PRODUCTS

6.1 Sources of Supply

A form of inter-dependence was observed between the industries, particularly those utilizing soy bean (oil mills and food industries) and those utilizing cake and meal (feed mills and some food industries). Although, there are other sources of supply of soy based materials the majority of the feed mills get their supply from the oil mills. It was observed that oil mills get their supply from middlemen mainly from the central and northern States of Nigeria: Benue, Kaduna, Plateau, Katsina, Jigawa, Kano and Bauchi.

It was found from the oil mills that there are several levels of middlemen in the soybean commodity chain. These middlemen buy directly from farmers and primary markets. They bag, store and supply the companies. The majority of these middlemen was not involved in any form of soybean processing but controlled the price of soybean especially during the rainy season (March – August). These middlemen play significant roles in meeting the demand for soy based products by different levels of processors. Sadly, they are also responsible for the adulteration of the products in a bid to meet demand.

Table 16 highlights the sources of supply for soy based products of commercial consumers. It is obvious that the majority get their supplies from Benue, Kaduna and Katsina States. On the part of the feed mills and other consumers, their sources of supply for soy meal and cake are mainly the oil mills within and around their locations. In some of these locations such as Akure, Jos and Kano, a business cluster could be formed to further strengthen the existing relationship among the group. The dependence of the feed mill in particular, on the oil mills underscores their importance in the soy commodity chain. It was noted that some large Feed Mills in the country depend mainly on supply from oil mills in the north. For instance, Fortune Oil, Kano supplies Animal care in Ogun State; Karami Oil, Kano is a major supplier of soy cake and meal to Obasanjo Farms Limited, Ota, Ogun State.

It was also discovered that Fortune Oil supplies soy cake and meal to feed mills in neighbouring States such as Kaduna, Katsina and Jigawa States.

Table 16: Sources of supply of soy based products

S/N	Name of Organization	Location	Forms of soy based materials	Sources of supply (State)
1.	JOF Ideal Family Farm	Akure/Owo	Bean	Benue, and Kaduna
2.	Olonimoke Feedmill	Akure/Akoko	Cake and meal	JOF Ideal Family Farm
3.	Serena Feedmill	Akure/Akoko	Cake and meal	JOF Ideal Family Farm and Oyo
4.	PAM, Feedmill	Akure/Akoko	Cake and meal	JOF Ideal Family Farm
5.	His Grace Feedmill	Akure/Akoko	Cake and meal	JOF Ideal Family Farm
6.	Opeyemi Feedmill	Akure/Owo	Cake and meal	JOF Ideal Family Farm
7.	Grand Cereals & Oil Mills	Jos	Bean	Plateau, Benue, Kano, Kaduna, Katsina, Jigawa
8.	ECWA Rural Development	Jos	Cake and meal	Plateau, Kano, Bauchi, Kaduna and Abuja
9.	MJ-ONE Nig. Ltd.	Jos	Cake and meal	Plateau, Grand Cereals, Benue
10.	Pierodex Farms Nig. Ltd.	Jos	Cake and meal	MJ-ONE Ltd and MEGATECH Ind. Ltd.
11.	Megatech Industries Ltd.	Jos	Cake and meal	Kano, Benue, Kaduna
12.	AGRO-MILLERS Ltd.	Jos	Cake and meal	MJ-ONE Ltd
13.	Aminimoh & Sons	Jos	Cake and meal	Plateau and Kaduna
14.	Dagwom Farm Department.	Jos	Cake and meal	Benue
15.	Lauret Oil Mills Ltd.	Jos	Bean	Plateau, Benue and Kaduna
16.	Fortune Oil Mill Limited	Kano	Bean	Kano, Katsina, Benue and Kaduna
17.	Talamiz Oil	Kano	Bean	Kano, Katsina, Benue and Kaduna
18.	Yakasai Oil Mill Limited	Kano	Bean	Kano, Katsina, Benue and Kaduna
19.	Karami Oil Limited	Kano	Bean	Kano, Katsina, Benue and Kaduna
20.	Danlabi Oil Mill	Kano	Bean	Kano, Katsina, Benue and Kaduna
21.	Alhaji Lawan Farms	Kano	Cake and meal	Mutan Enterprises, Asada Market, Kano
22.	Alhaji Abba Zaggae Farms	Kano	Cake and meal	Mutan Enterprises, Asada market, Kano, Fortune Oil Mill, Talamiz Oil Mill
23.	Nana Farms	Kano	Cake and meal	Dewanu Enterprises, Sharada, Kano, Fortune Oil Mill, Kano, Mutan Enterprises
24.	Animal Care	Kano	Cake and meal	Dewanu Enterprises, Sharada, Kano, Fortune Oil Mill, Kano
25.	Superb Feeds	Kano	Cake and meal	Karami Oil Mill
26.	Sovet Feeds	Kano	Cake and meal	Fortune Oil Mill
27.	JIKS Global Ventures Limited	Lagos	Cake and meal	Golden Oil, Sapele, Onitsha. Life flour group (Sanders), Morrison, Lagos
28.	Comfort Mills & Farms	Lagos	Cake and meal	Moreson Nig.Ltd., Ojodu, Lagos
29.	High Trees Nig. Limited	Lagos	Cake and meal	Kano, Katsina, Benue and Kaduna
30.	Golden Lay farms Limited	Lagos	Cake and meal	Kano, Katsina, Benue and Kaduna
31.	Solution Feed Mill	Lagos	Cake and meal	Golden Oil, Onitsha Karami Oil, Kano
32.	Sabina Pad Nig. Limited	Lagos	Cake and meal	Golden oil, Onitsha
33.	Soleace & Moxie Investments	Lagos	Cake and meal	Katsina, Kaduna Life flour group, Moreson, Lagos Golden oil, Onitsha
34.	Boom Commercial Enterprises	Lagos	Cake and meal	Life flour group, Moreson, Lagos Golden oil, Onitsha
35.	Fola-Afe Agro Vet Services and Ventures	Lagos	Cake and meal	Life flour group, Moreson, Lagos Golden Oils, Onitsha Grand Oils & Cereal, Jos
36.	Spectra Foods	Lagos	Bean	Benue

37.	Samdor Feeds	Lagos	Cake and meal	Benue Soya oil from Sun seed Mill
38.	S.K Grinding & Pelleting	Lagos	Cake and meal	Life flour group, Lagos, Moreson Nig. Ltd, Lagos, Golden Oil, Onitsha; Benue
39.	Federal Institute of Industrial Research FIIRO	Lagos	Bean	Mile 12, Lagos
40.	Livestock Feeds Plc.	Lagos	Cake and meal	Benue, and Katsina
41.	Candor Foods	Lagos	Cake and meal	Abattoir, Oko-oba Lagos,
42.	Life Flour Group	Lagos	Cake and meal	Grand Cereals, Lagos, Benue and import
43.	Willmerc (La cussion)	Lagos	Bean	Mile 12 Market, Lagos; Benue
44.	Grand Cereal and Oil Ltd	Lagos	Bean	Benue
45.	Moreson Nigeria Limited	Lagos	Bean	Kastina, Lagos, Benue
46.	Nestle Foods Plc	Lagos	Bean	Oyo, Benue, Kano and Kaduna

Information was obtained on the reason for patronizing these sources. The first and the most important reason given by processors is quality of the soy based materials. Over the years, they had established quality preferences and got their suppliers to comply. All the processors indicate that their priority for supply is quality. Getting quality soy based products which will have expected value is sine qua non to ensuring good quality from suppliers. Other reasons given for the patronage of their sources of supply are:

- i. Price: They tend to patronize a source that is relatively cheaper than other sources, however with same quality standards.
- ii. Regularity of supply and availability of materials: Often times they patronized a source of supply for its regularity and consistency of supplying them materials. This means that supply is always guaranteed by these sources. This assures processors that they will be able to get supply any time required.
- iii. Nearness of the supplier: This is very important as it determine the price of the products. Processors often prefer to buy from nearby sources to reduce the price since the cost of transportation increases the cost of the product. However, for processors requiring soy bean, they patronize sources from the Northern part of Nigeria because soybean is always available and at a cheaper price.
- iv. No alternative supplier: In some cases like in Akure and its environs, majority of the feed mills purchased their cake and meal from JOF mainly because they did not have an alternative close bye.

It is important to note that there are established links between the processors and their various sources of supply and some of these links are carefully discussed in section seven of this report.

a. Pricing and Price of Commodity

Pricing of soy beans and other Soya based forms is usually dictated by market forces of demand and supply which in turn is a function of time, level of production, distance from the point of delivery, quality and the quantity demanded. Consequently the prices of soy based products have not been stable over the years because of the constant fluctuations in production and the significant control of the market by middlemen. However, the price of soy varies from ₦45, 000 - ₦ 72, 000 per tonne, depending on the type of the soy material required, location of supplies and the season of the year.

Products tend to assume lower prices (as low as ₦ 45,000 per tonne) at the end of the production season. This decline in prices continues till about December/January when prices begin to increase. Price of soy bean is usually higher than that of the cake and meal, except if there is shortage in supply. On the average, the price per tonne for soybean is ₦55, 000 in

Akure, about ₦ 45, 000 in Kano and Jos and about ₦ 60, 000 in Lagos. Soy meal per tonne is about ₦52, 500 in the south and about ₦ 47, 000 in the north. Soy cake goes for about ₦ 59, 000 in the south and around ₦ 47, 000 per tonne in the north. All the prices include the cost of transportation and this often creates a wide disparity between a location far from the point of production and the place of delivery.

Figure 4 depicts the price differences between the various locations and forms of soybean products. It shows that prices of soy based products are lower in the northern States than in the southwest. The reason is the distances of the south to major locations where soy is produced. There were no prices recorded for soy oil because most industries interviewed did not indicate any demand for oil.

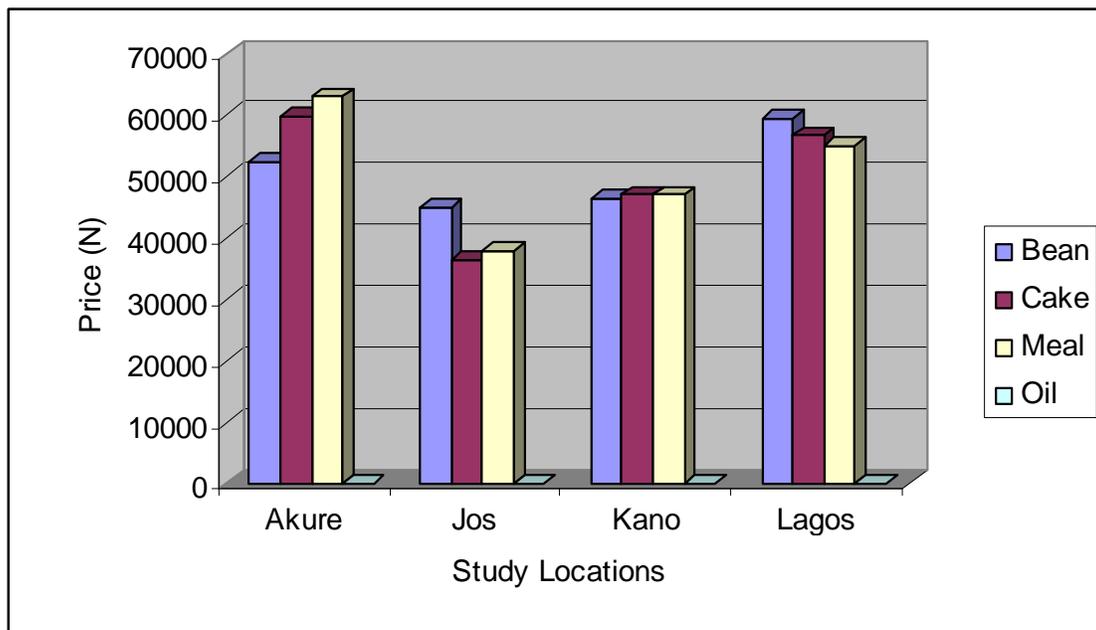


Figure 4: Price distribution of soy based materials by locations and forms.

b. Importation of Soya Inputs

Since the domestic supply from various sources could not meet the demand of the commercial consumers, it was expected that majority of them would import soy beans, cake and or meal to meet their requirement. Investigation revealed that only one (Life Flour group, Lagos) of these commercial consumers indicate that they imported soy bean and other soy based products to complement their local supply. The company was however not willing to reveal the source of importation and quantity imported but gave the average price of imported product at N55, 000 per tonne. Meanwhile, Fola-Afe Agro-Veterinary Services, Lagos was found as one of the buyers of the imported soy products from Life Flour Group. Information received from Fola-Afe Agro-Veterinary Services, show that the company usually purchase about 30 tonnes of soy meal from Life Flour Group at the rate of N55, 000 per tonne.

An inference that could be drawn from this finding is that it is either that the commercial consumers have a strategy of meeting their demand (through purchase of large stock, more than required) or that they did not operate up to their installed production capacity. What seems true

however is that the large consumers of Soya (all the Oil Mills and Nestle Nigeria Plc.) have strategic reserves of stocks of soybeans that could last one year if there were no supply at all. Middlemen also play significant role in ensuring that soybean is available for commercial processors. An important follow up to this study would be a detailed investigation of the role of middle men in the soya commodity chain how they have ensured unimpeded commercial supply of soya over the years.

7.0 SOYBEAN COMMODITY FLOW CHART

The commodity chain flow chart is to show the stages involved in the production, processing, marketing and final utilization of a commodity. It is a framework that explains the production process and the distribution channels of a commodity. In this section of the report, we discussed the Soya flow chart which depicts what happens to a commodity from production through processing and then to the end users.

Figure 5 below shows the commodity chain flow chart for soybean as revealed by study. The chain shows that soybean has several industrial and domestic levels of utilizations and engages several players in the production, processing and marketing.

The commodity chain shows that middlemen play significant roles in the distribution of soybean from the farmers' field or the primary markets to processors. None of the farmers interviewed had direct link with industrial processors. Although, some farmers indicated having direct link with major markets, their individual harvests were usually insignificant in such bigger market. Other problems of transportation and storage usually discourage farmers from venturing into direct market supply. Farmers however sell their soybean at the local markets to both middlemen and other local processors. It was observed that soybean is widely utilized among the local people at the household level.

The middlemen in addition to transporting the beans to markets provide storage for the beans. There are two categories of middlemen:

- those that buy directly from farmers, re-bag, store and transport to the feeder and central markets; and
- those that buy from these feeder and central markets and supply to industrial processors.

Some however play a dual role and are very important in price determination.

Three levels of markets were identified. These are:

- The primary markets - village markets where farmers bring their harvest for sale. In these markets, farmers sell their Soya to farm gate marketers who in turn sell to the feeder markets. Prices of soybean at the primary markets are usually between N3, 500 – N4, 000 per 100kg bag. These markets operate in almost all villages and hamlets.
- Next is the feeder markets – they are found in big villages or communities close to inter-city roads. The feeder markets act as assembling or collecting centres for large stocks soy products. Some middlemen have their stores located in these markets and most users come to these markets to buy soybean in large quantities. Prices of soybean are usually higher here. A 100kg bag of soybean sold for about N4, 600 in these markets, including the cost of transportation. Examples of such markets are Dawanu Market in Kano, Funtua market in Katsina State, Jengre in Plateau State Markarfi Market in Kaduna State, Gamawa in Bauchi State and Megatesi in Jigawa State, Gboko market in Benue State, among many others. It was discovered that some of the oil mills, for instance, Grand Cereals, Talamiz and Fortune Oils purchase directly from these feeder markets to reduce cost.

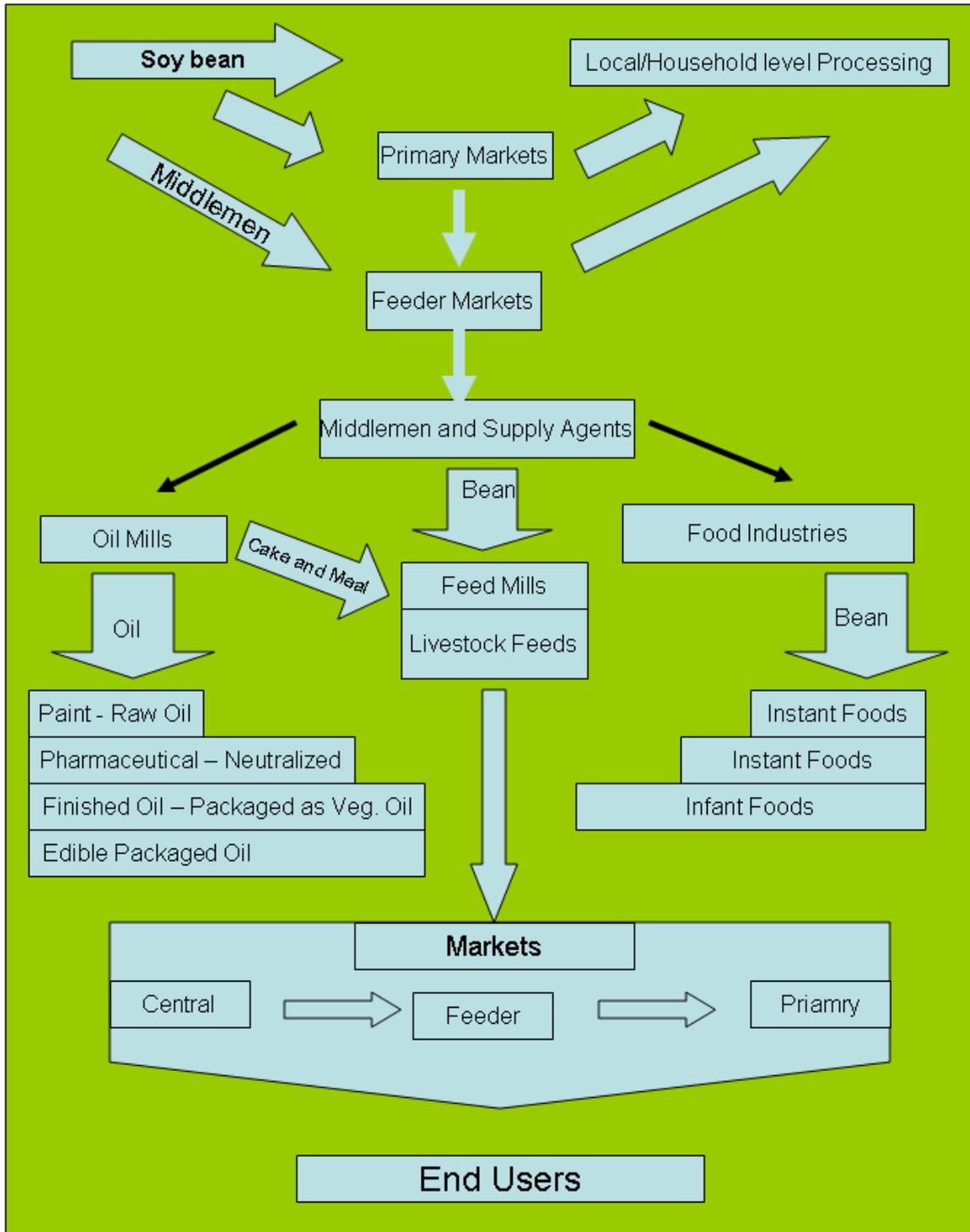
- The central markets are the urban markets where goods end up and are purchased for various industrial and commercial purposes. The central markets also act as feeder markets to other central markets in other urban centres. Examples of such markets are Bodija Market in Ibadan, Oyo State and Mile 12 markets in Lagos. Some feeder markets could also serve as central markets if they are located in an urban centre. An example of such market is Dawanu market in Kano.

At the processing level, oil mills are very important in the chain as they produce soy based products needed by other industries. Based on the level of demand, a total of **82, 217, 400** tonnes of soy bean is required by the various processors utilizing the bean. From this quantity, at least about **46, 041, 744** tonnes of cake or meal will be generated for the feed mills and some food industries. This quantity exceeds the sum of aggregate demand for soy cake and meal among the processors. As shown in Table 10, the estimated volume of oil being produced by the various oil mills is **12, 498, 400** litres. The meal and cake as well as the soy oil are useful for feed mills, food industries (confectioneries and beverages) and some pharmaceutical companies. The soy oil is also required by paint and cosmetics industries. The quantities of oil, cake and meal required by these various industries could not be determined since they were not identified in the study locations.

Some middlemen were also observed at this level of processing; they purchase cake and meal from the oil mills, store and resell to smaller feed mills. The end products of the feed mills and food industries go directly to the three levels of markets through registered distributors and agents. For feed mills, it often goes directly to the end user farms.

The oil has different levels of utilization depending on the level of processing. The raw oil is useful in paint industries while the confectioneries and the feed mill utilize the neutralized oil. A peculiarity found in Kano is that some oil mills did not package their finished soy oil. They sell it in tanks to other people who mix with ground nut oil and package as vegetable oil. Galadima market in Sabo-gari, Kano is one of such markets where middlemen sell finished soy oil in tanks and drums to wholesalers and retailers who package the oil and sell to the end users. Figure 6 shows a flow of the soybean commodity from the producer, the farmer through processing into various forms and then to soy based products.

SOYBEAN COMMODITY FLOW CHART



8.0 CONSTRAINTS ASSOCIATED WITH PROCESSING AND SUPPLY OF SOY BASED MATERIAL

Some of the constraints listed by commercial consumers are:

- a. **High price of soy based materials:** Relatively, soybean is more expensive than other oil seeds. Although, ground nut costs more than soybean but the soy based products (oil, cake and meal) are more expensive than ground nut based materials. While soybean sells for between N49, 000 and N70, 000, ground nut sells for N75, 000. However, soy cake and meal sell for about N49, 000 while groundnut cake sells for N29, 000.
- b. **Price fluctuation due to cobweb pattern of production:** According to the respondents, the prices of soy based materials are never stable and this is as result of the cobweb pattern of farmers' production system. This makes the processors buy large stock and store for period of scarcity.
- c. **Cost of storage of supplies:** Having purchased large stock of soybean in anticipation of scarcity and rise in price, processors are usually faced with the problem of storage. The majority of processors did not have enough storage capacity to store their soybeans and other stocks. They therefore rent warehouses which sometimes are very expensive.
- d. **The use of same processing machines for soybean and groundnut:** One factor contributing to scarcity of soy based materials, being experienced by feed millers, is the use of same processing machines for soybean, groundnut and other oil seeds. Since the processing machines are the same, processors can only process one at a time. This means that during the period when groundnut is being processed, soy cake, meal and oil will not be available. Groundnut has more acceptability in the north than soybean due to its availability.
- e. **Inconsistent government policy concerning importation of oil and other soy based materials:** Government ban on the importation of vegetable oil has not been effective because of lack of diligent enforcement of the ban. This, according to processors affects marketing of their products.

Other problems are:

- f. Excesses of middlemen
- g. Relatively low capital capacity of medium – small scale processors and High interest rate on agricultural loans
- h. Irregular electric power supply
- i. Lack of continuity of agricultural programmes related to soybean

Table 17 is a summary of these problems and possible solutions

Table 17: Problems of Soya Inputs Supply and Suggested Solutions

S/N	Problems		Possible Solutions to the problems of Soya Supply
	Category of Problem	Specific problems	

1.	Non-Establishment of Quality Standard	<ul style="list-style-type: none"> ○ Lack of knowledge by most suppliers of the quality required ○ No established quality standards on seed grading ○ unstandardised weight measurement ○ poor drying process/handling at production points 	<ul style="list-style-type: none"> ▪ standardization of measures/grades and weights ▪ Use machine for threshing to control the tendency for adulteration ▪ quality standards for processing procedures of soy beans and related products should be established ▪ packaging bags/materials should be standardized using proper weighing scale ▪ Need to educate the producers Processors
2.	Logistic problems	<ul style="list-style-type: none"> ○ Delays in Supply /unsynchronized order ○ scarcity during off season and festive periods ○ tendency towards adulteration of soy products by producers and Suppliers 	<ul style="list-style-type: none"> ▪ Payment in advance for prompt supply ▪ Improve on re-order time ▪ Users can buy soy materials and store for use during off season ▪ Need for continuous awareness on importance of soy products in the diet.
3.	Peculiarity of the Input	<ul style="list-style-type: none"> (i) beany flavour in soy products (ii) Difficulty in post-harvest processing and handling of the beans (iii) lack of skills and technologies required to processes beans to different recipes for human consumption 	
4.	Capital Constraints and Inadequate Credit Facilities for Users	<ul style="list-style-type: none"> (i) Huge capital requirements for input procurement and processing (ii) Financial/capital tie down when supply is delayed 	<ul style="list-style-type: none"> (i) Participants in the commodity markets should have access to Credit facilities for at reasonable interest rate (ii) Availability of capital will facilitate re-order time and timely supply of inputs (iii) Government invest in agriculture (iv) Farmers should have access to production facilities
5.	Market and Demand- related problems	<ul style="list-style-type: none"> (i) unstable price of inputs (ii) Very weak market interaction between Consumers(Users) and Producer due to middlemen' influence (iii) Non-regulation of entry into the produce markets by Consumers and Suppliers (iv) Lack of organized commodity markets due to middlemen' invasion 	<ul style="list-style-type: none"> (i) Producers and Users need to form market Cartels to fix stable prices of inputs (ii) The grain product suppliers needs to be licensed and operate under recognized body, to facilitate control
5.	Problems related to Marketing policies and Input procurement	<ul style="list-style-type: none"> (i) High cost of inputs procurement (iii) Non-existence of established policies 	<ul style="list-style-type: none"> (i) encourage cultivation in south-west Nigeria to increase supply and lower price -

CONCLUSION AND RECOMMENDATIONS

The goal of this project is to provide empirical information on soybean utilization among commercial consumers in Akure, Jos, Kano and Lagos, Nigeria, with a view to ascertaining the nature of demand among these processors. Different categories of soybean processors were identified. This ranged from the oil mills to feed mills and food industries. Oil mills were the largest consumers of soybean. A form of inter-dependence was noted among commercial processors in terms of utilization of end products for further production. Small and medium scale enterprises occupy the centre stage in soybean processing and are competing favourably.

Grand Cereals and Oil Mills Limited were found to be the largest consumer of soybean in the study locations with about 24 million tonnes demand for soybean per annum. This is followed closely by JOF Ideal Family farms at Akure. Both were the only oil mills found in the study locations that had branded soy oil in Nigeria markets. The aggregate demands for soy based materials (bean, cake and meal) for the 46 commercial consumers of soybean in the four study locations were **82, 217, 400, 10, 045, 280** and **8, 031, 620** tonnes for bean cake and meal respectively. Jos and Lagos ranked highest in quantity of soybean demand. Lagos level of demand was actually influenced by the demand of Nestle Nigeria Plc. The commodity chain revealed that farmers did not have any direct link with processors and that there were several middlemen involved in marketing and distribution of soy based materials.

In conclusion, soybean demand among processors exceeded supply. This suggests wide latitude for local market development and intervention. It was found that soy based materials required by processors were in short supply by 57.9, 2.7 and 79.0 per cent for bean, cake and meal respectively. This shortage in supply is a product of several factors ranging from low productivity of soybean farmers, segmented nature of soybean supply, lack of capital for installing separate processing machines for soybean and inconsistency in government policies on importation of vegetable oil and other common problems faced by producers and marketers in the agricultural sector of the Nigerian economy.

These findings suggest the need for a well articulated support for sustainable production of soybean in the country. Since majority of the producers are small scale farmers, the challenge is to re-examine their production constraints and develop mechanisms that would facilitate their unimpeded access to the benefits of improved production and markets when it happens. The first thing to do to make this happen however is capacity building and improvement of production technology of the small scale farmers in order to upgrade and add value to their production to supply large commercial buyers directly appropriate quantities and quality of raw material.

Furthermore, the linkages between the actors involved in the soy commodity chain need to be strengthened, to reduce the gap between producers and processors and eliminate the numerous layers of middle men in between. This will require a good understanding of the existing commodity chain and a detailed study of markets and supply channels.

An important follow up to this study would be a detailed analysis of the middle man saga. How it affects the Soya commodity chain, pricing, role in risk mitigation and market efficiency.

References

- Danishiell, K.E. (1993). Soybean production and utilization in Nigeria. Paper presented at the National workshop on small scale and industrial level processing of soybeans, held at IITA, Ibadan, 27th-29th July.
- Fennel, M. A. (1966): Present status of research on edible legumes in Western Nigeria. Paper presented at the first Nigerian Legume, Conference Centre, IITA. Ibadan, August 1966.
- Food and Agricultural Organization of the United Nations (1999): *Manual for training in Seed Technology and seed production*. Trivevedi, R. K., Usman I. A. and Umeh J.C. (Eds) 69 pp.
- IITA (1983): "Soybean lines for the lowland tropics" Research Highlights, pp 86 – 88. IITA, Ibadan
- IITA, (1995): Annual Report for 1994. IITA, Ibadan, Nigeria.
- Katz, F. (1998): "That's using the old Bean." Food Technology. 52(6): 42-43.
- Lui, K. (2000): "Expanding Soybean Food Utilization". Food Technology 54(7): 46-47.
- Ojo, D.K. (2002): Food Legume for Health and Wealth. Lecture series 4, UNAAB Alumni Association, January 2002.
- Ojo, D.K. and Dashiell, K.E. (1994): "Soybean Production in Nigeria" Paper presented at the workshop on management of Protein Energy malnutrition World Vision International, Ogbomoso, Nigeria, 13 – 14, August, 1994.
- Okoruwa, A. E. (2001): Nutritional value and uses of Legumes in Africa, Paper presented at the Legume Breeders, workshop, IITA Ibadan, Nigeria, 1 – 12 October 2001.
- Osho, O. and K.E. Dashiell. 1998. Expanding soybean production, processing and utilization in Nigeria. Pages 151–156 *in* Postharvest technology and commodity marketing, edited by R.S.B. Ferris. Proceedings of a post harvest conference, 29 Nov to 1 Dec 1995, Accra, Ghana. IITA, Ibadan
Nigeria.
- RMRDC (2004): *Soybeans*, Lagos, RMRDC
- Raw Materials Research and Development Council Report, (2004). "Soyabean" Pp. 1-99.
- Salunkhe, D. K, Chavan, J.C, Adsule, R. N and Kadam, S.S. (1992). "World Oilseeds: Chemistry, Technology and Utilization". An AVI Book Published by Van Nostrand Reinhold. New York.
- Sanginga, P.C., Adesina, A.A., Manyong, V.M., Otite, O. and Dashiell, K.E. (1999): *Social impact of soybean in Nigeria's southern Guinea savanna*, Ibadan, International Institute of Tropical Agriculture.
- Smith, J., Woodworth, J.B. and Dashiell, K.E. (1995): Government policy and farm-level technologies: the expansion of soybean in Nigeria. IITA Research, No 11: 14-18.

Solabi, G.A. (1993). Industrial processing of soybean in Nigeria: A Dream turns to reality. Keynote address presented at the National workshop on small scale and industrial level processing of soybeans. Organized by IDRC/IITA soyabeans utilization project. July27th,1993. Ibadan.

Appendices

1: Soya Demand In Ondo State- Company Characteristics

Organization	LGA	Location address	Coordinate	Ownership structure	Stock market	Year established	Year started production	Staff
JOF Ideal Family Farm	Owo	Ikare junction Owo, Ondo State	7.22013°N 5.59986°E	Private	No	1992	1993	400
Olonimoke Feedmill	Akoko North West	Ikaramu Road Oke-Agbe	7.64057°N 5.78503°E	Private	No	2005	2005	50
Serena Feedmill	Akoko North East	Epinmi road Ikare-Akoko	7.53033°N 5.77930°E	Private	No	2005	2005	12
PAM, Feedmill	Akoko North East	Jubilee area, Ikare-Akoko	7.53640°N 5.76756°E	Private	No	2003	2003	3
His Grace Feedmill	Akoko North East	Semusemu Area, Ikare-Akoko	7.53921°N 5.76894°E	Private	No	2004	2004	5
Opeyemi Feedmill	Owo	Francis Aderonmu street, Owo	7.23014°N 5.57345°E	Private	No	2001	2001	10

2: Demand And Supply For Soya Inputs In Ondo State

	Quantity required per month	Actual quantity obtained/month	Can supply meet demand (Y/N)	Time of demand month/week	Place of purchase	Quality standard	Price/unit (Naira)	Reason for choice of local source of supply	M
1	3600 tonnes/month	2100 tonnes/month	Yes	Nov. – Feb.	Benue and Kaduna states	Matured seed cream yellow seal less than 10% moisture content	52,000/t	Price is ok soybean can produce good soya products	tr
	300 tonnes/month	300 tonnes per month	Yes	Weekly purchase	JOF farm, Owo	Creamy colour soyameal	53,000/t	No alternative no money to buy more input	pe
	75.0 tonnes per month	75.0 tonnes per month	Yes	Weekly	JOF farms, Owo and Ibadan	Whitish soyameal	63,000/t, 50,000/t in Ibadan	Good quality but costly cheaper in Ibadan	pe
	4.5 tonnes per month	4.5 tonnes per month	Yes	Weekly	JOF Farms, Owo	Whitish soya meal	63,000/t	Cream colour mould-free very dry	pe
e	6 tonnes	4.5 tonnes per month	Yes	Weekly	JOF farms, Owo	Creamy soyameal	63,000/t	No other supplier	pe
	9 tonnes per month	6 tonnes per month	Yes	Weekly	JOF farms, Owo	Creamy soyameal	55,000/t	No capital to expand	pe

3: Soya Utilization In Ondo State

Location	Total installed production capacity	Products	Soya-based products	Soya input material form	Soya input main or minor and proportion	Product market	Oil extraction method	Contact person and address
Family	100 – 120 tonnes/day	Soyameal Soyaoil	Soyameal 70t/day Soyaoil 20t/day Gum Flax Layers, growers, broilers and chick mash	Raw soybean Raw soybean Raw soybean Raw soybean Raw soybean and maize	Major (100%) Minor (20%)	Local Local	Solvent extraction -	Mr. O. 0803473172
Enterprise	10 tonnes/day	Livestock feeds	Poultry feed Fish meal	Soybean meal	Minor (20%)	No sale (local consumption)	-	Mr. Ade-Ew 0808093
Small mill	2.5 tonnes/day	Livestock feeds	Pig, snail, goat, fish and grasscutter meals	Soyameal	Minor (18%)	Local	-	Mr. Ganiyu,
Mill	500 kg/day	Poultry feed fish meal	Layers and growers' mash	Soyameal	Minor (18%)	Local	-	Mr. B. 0808093404
Grace	1.0 tonnes/day	Poultry feed	Layers/growers mash	Soyameal	Minor (16%)	Local	-	
	2.0 tonnes/day	Poultry feed fish meal	Layers and chick meal, fish meal	Soyameal	Minor (18%)	Local	-	

4: Identified Commercial Consumers of Soybean in Jos

ame of Company	Address	Year established	Staff strength	Installed capacity, Tonnes/day	Soya based product(s)	Proportion of soybean in each of the products (%)	Soybe based material
Cereals & Oil Mills	Km. 17 Zawan Round About, Bukuru	1990	429	100	Pure soyoil, soya cake	100	Bea
Rural Development	Km 2 Dan Mangu Road	1976	260	120	Feeds	100	Bea
NE Nig. Ltd.	General Matthias Street, Jos Off University of Jos road.	1996	6	10	Cake	100	Bea
ex Farms Nig. Ltd.	Babale, Bauchi Road, Jos	2003	10	15	Day old chicks, feeds	10-13	Cake
ATECH Industries, Ltd.	Industrial Layout, Girin, Jos. Opposite, Jos Steel Rolling Mill	1998	14	20	Feed, Cake	10-13	Cake
-MILLERS Ltd.	Anguld, Bukuru, Jos	2000	5	2	Feed	100	Cake
moh & Sons Nig.	Babale, Bauchi Road, Jos.	2004	24	2	Egg, cake	100	Bean, c
om Farm tment.	National Veterinary Research Institute, Vom	1993	13	10	Feed	100	Bea
t Oil Mills Ltd.	Opposite Fire service, Bukuru, Jos	2006	15	5	Cake	100	Bea

Appendix 5: Demand for Soy based products by commercial consumers in Jos

s/n	Name of Company	Soy based raw material(s)	Quantity Required '000 tonnes/annum	Quantity Obtained '000 tonnes/ annum	Time of demand (months)
1.	Grand Cereals & Oil Mills Ltd.	Bean	24,000	24,000	All year round
2.	ECWA Rural Development Ltd.	Bean	12,000	12,000	All year round
3.	MJ-ONE Nig. Ltd.	Bean	520	520	All year round
4.	Aminimoh & Sons Nig. Ltd.	Bean	720	500	All year round
5.	Dagwom Farm Department.	Bean	3600	360	All year round and on request from the Institute
6.	Lauret Oil Mills Ltd.	Bean	1,500	900	All year round
	Total		42,340	37,380	
7.	MEGATECH Industries DERO. Ltd.	Cake	8,640	8,640	All year round
8.	AGRO-MILLERS Ltd.	Cake	520	520	On request by customers
9.	Pierodex Farms	Cake	416	416	All year round
	Total		9,576	9,576	

Appendix 6: Sources of supplies of soy based materials

S/n	Name of Company	Sources of supplies	Meet demand requirement	Current Price (₦/tonne)
1	Grand Cereals & Oil Mills Ltd.	Jengre, Bassa LGA, Benue State & Kaduna State	Yes	44,000 – 50,000
2	ECWA Rural Development Ltd.	Local markets in Gboko, Benue State; Mangu, Plateau State; Kafanchan, Kaduna State & Funtua, Kebbi State	Yes	50,500
3	MJ-ONE Nig. Ltd.	Saminaka, Gonto, Gomo, Madama, Bokkos	Yes	44,000
4	Pierodex Farms Nig. Ltd.	MJ-ONE Ltd MEGATECH Ind. Ltd.	Yes	45,000 – 58,000
5	MEGATECH Industries DERO, Ltd.	Through LPOs	Yes	38,000
6	AGRO-MILLERS Ltd.	MJ-ONE Ltd. And local poultry farmers	Yes	44,000
7	Aminimoh & Sons Nig. Ltd.	Jengre, Plateau State; Saminaka, Kaduna State Papengwa	Yes	50,000 – 52,000
8	Dagwom Farm Department.	Benue State	Yes	40,000 – 50,000
9	Lauret Oil Mills Ltd.	Jengre, Plateau State Angwamalafia, Kaduna State	Yes	50,000

7: Identified Commercial Consumers of Soybean in Kano

of Company	Address	Year established	Staff strength	Installed capacity, Tonnes/day	Soya based product(s)	Proportion of soya in each of the products (%)	Soya based raw materials
e Oil Mill Limited	Tafawa Balewa Road, Kano	1991	84	250	Oil, meal and cake	100%	Bear
iz Oil	Km 12, Hadejia Road, Kano	2001	63	100	Oil, meal and cake	100%	Bear
ai Oil Mill Limited	Sharada Industrial Estate, Phase II	2004	50	20	Oil and cake	100%	Bear
i Oil Limited	Sharada Industrial Estate, Phase I	2005	45	20	Oil and cake	100%	Bear
bi Oil Mill	Sharada Industrial Estate, Phase II	2003	24	15	Oil and cake	100%	Bear
Lawan Farms	Tamburawa, Kano	2003	15	15	Poultry feeds	10%	Cake
Abba Zaggae Farms	Gunduwawa, hadejia Road, Kano	2000	12	5	Poultry feeds	8.5% - 11%	Cake
Farms	D/Tofa Village, Kano	2001	18	5	Poultry feeds	9% -11%	Cake
l Care	No 9, Ibrahim Taiwo road, Kano	2001	41	4	Poultry concentrates and feeds	Concentrate-s - 49%; Mash - 11%	Cake
b Feeds	Small Scale Industrial Estate, Sharada Phase I, Kano	1986	55	2	Poultry feeds	9.3% -11%	Cake
Feeds	5, Sabo Bakinsuwo Road, Tarauni, Kano	1999	33	1	Poultry feeds	8.5% -11%	Cake

Appendix 8: Demand for Soy based products by commercial consumers in Kano

S/n	Name of Company	Soy based raw material(s)	Quantity Required '000 tonnes/annum	Quantity Obtained '000 tonnes/ annum	Time demand (months)
7.	Fortune Oil Mill Limited	Bean	100	78	All year round
8.	Talamiz Oil	Bean	50	31.2	All year round
9.	Yakasai Oil Mill Limited	Bean	6.2	6.2	October - February
10.	Karami Oil Limited	Bean	12	12	October - February
11.	Danlabi Oil Mill	Bean	10	8	October - February
Total			178.2	135.4	
12.	Alhaji Lawan Farms	Cake	4.8	4.8	All year round
13.	Alhaji Abba Zaggae Farms	Cake	2	2	All year round
14.	Nana Farms	Cake	1.5	1	All year round
15.	Animal Care	Cake	0.336	0.264	All year round
16.	Superb Feeds	Cake	0.288	0.288	All year round
17.	Sovet Feeds	Cake	0.360	0.360	All year round
Total			9.284	8.712	

Appendix 9: Sources of supply of soy based products

S/n	Name of Company	Sources of supplies	Meet demand requirement	Current Price (₦/tonne)
1	Fortune Oil Mill Limited	<ul style="list-style-type: none"> Through middle men from various States but notably from Kaduna, Katsina and Jigawa and Bauchi States 	No	45, 000
2	Talamiz Oil	<ul style="list-style-type: none"> Through middle men from various States but notably from Kaduna, Katsina and Gombe and Plateau States 	No	47, 000
3	Yakasai Oil Mill Limited	<ul style="list-style-type: none"> Through middle men from various State but notably from Kaduna, Katsina and Jigawa and Bauchi States 	Yes	47, 500
4	Karami Oil Limited	From four main sources: <ul style="list-style-type: none"> Alhaji Salisu (Katsina); Alhaji Danladi (Kano); Alhaji Buba (Maiduguri) and Alhaji Jauro (Yola) 	Yes	45, 000
4	Danlabi Oil Mill	<ul style="list-style-type: none"> Through middle men from various State but notably from Kaduna, Katsina and Jigawa and Bauchi States 	Yes	48, 000
5	Alhaji Lawan Farms	<ul style="list-style-type: none"> Mutan Enterprises, Asada Market, Kano 	Yes	47, 000
6	Alhaji Abba Zaggae Farms	<ul style="list-style-type: none"> Mutan Enterprises, Asada market, Kano Fortune Oil Mill Talamiz Oil Mill 	Yes	47, 000
7	Nana Farms	<ul style="list-style-type: none"> Dewanu Enterprises, Sharada, Kano Fortune Oil Mill, Kano Mutan Enterprises 	Yes	47, 000
8	Animal Care	<ul style="list-style-type: none"> Dewanu Enterprises, Sharada, Kano Fortune Oil Mill, Kano 	Yes	47, 000
9	Superb Feeds	<ul style="list-style-type: none"> Karami Oil Mill 	Yes	47, 000
10	Sovet Feeds	<ul style="list-style-type: none"> Fortune Oil Mill 	Yes	47, 000

Appendix 10: Characteristics of commercial processors of soybean in Lagos

S/N	Name of Organization	State	LGA	Location/ Address	Ownership structure	Stock mkt (Yes/No)	Yr.of Establishment	Staff strength (No)	Contact person(s)
1.	JIKS Global Ventures Ltd.	Lagos	Orile- Agege	Oko-oba, Agege	Private	No	2002	10	Ayilara Sulaimon
2.	Comfort Mills & Farms	"	Ifako-Ijaiye Agege	Alh. Mogaji Mkt., abattoir, Oko-oba,	"	"	1992	3	Kehinde O.K
3.	High Trees Nig. Ltd.	"	Agege	Alh. Mogaji Mkt., Oko-oba	"	"	2005	4	Oyetunde O.A
4.	Golden Lay farms Ltd.	"	Agege	Oko-oba, Km 12, Old Abk. Rd. Agege	"	"	1960	10	Alh.Asifu T.O
5.	Solution Feed Mill	"	Agege	395, Old Abk. Rd. Opp. State Abattoir, Agege, Lagos	"	"	2003	15	Akinyemi A.
6.	Sabina Pad Nig. Ltd.	"	Agege	309, Old Abk. Rd. Opp.State Abattoir, Agege, Lagos	"	"	1997	11	Akinrinade O.L
7.	Soleace & Moxie Investments Ltd	"	"	309, Old Abk. Rd. Opp.State Abattoir, Agege, Lagos	"	"	1997	8	Ogunsetan O.K.
8.	Boom Commercial Ent.	"	"	309, Old Abk. Rd. Opp.State Abattoir, Agege, Lagos	"	"	2004	6	Prince Oyekunle A.
9.	Fola-Afe Agro Vet Services CornerstoneIndustrial Ventures	"	"	10, Omoniyi Fasaye close, Ojokoro Agege, Lagos	"	"	1992	25	Oyegbite S.A
10.	Spectra Foods	"	"	Plot 1, Succo Rd., Abattior, Oko-oba, Agege	"	"	1995	50	Mr. Oladejo
11.	Samdor Feeds	"	"	Oko-Oba, Agege, Lagos	"	"	2003	100	Mr. Akinsola A.O
12.	S.K Grinding & Pelleting	"	"	Oja- Mogaji, Abattior, Agege	"	"	2006	5	Mr. Saheed
13.	Federal Institute of Industrial Research FIIRO	"	Oshodi	Blind Centre Str., near Cappa B/Stop, Oshodi	Government	"	1956	366	Oyeku Dele
14.	Livestock Feeds Plc.	"	Ikeja	1, Henry Carr Str., PMB 21097, Ikeja	Public company	Yes	1963	60	Mrs. Omotoso Mope
15.	Candor Foods	"	Ojodu/Ikeja	5 Haruna str., Ogba	"	No	2005	11	Mrs. Laleye
16.	Life Flour Group	"	Ikeja/Ojodu	Ogba Industrial Scheme	"	"	1980	150	
17.	Willmerc (La cussion)	"	Ikeja	21/23, Paul Avenue, - Yakoyo Bus-stop, Ojodu	"	"	1991	40	Joe I. G. Nzeka

18.	Grand Cereal (Real Oil Nig. Ltd.)	”	Ikeja	Maryland, Ojota Regional Office: Kudirat Abiola way, Oregun,	Public company	Yes	1988	400	Mr. M Adebamiro
19.	Moreson Nigeria Ltd.	”	Ikeja	9, Abiodun Shoneye close, Ojodu	Private	No	1986	50	Mr. Agboola
20.	Nestle Foods Plc	”	Ilupeju Ado-odo-Ota	IlupejuC (Head office and distribution) Agbara (Processing factory)	”	Yes	1961	1300	
21.	Lisabi foods	”	Maryland	Km 14, Ikorodu, rd, Maryland	private				
22.	Evans Plc.	”	Ikeja Ado-Odo	Ikeja (office) Agbara (Factory)	Plc				
23.	Unilever Plc.	”	Ikeja Ado-Odo	Ikeja (office) Agbara (Factory)	Plc	N.A	1923		
24.	GlaxoSmithKline	”	Ikeja Ado-Odo	Ikeja (office) Agbara (Factory)	Plc				
25.	Cowbell (Wonder foods)	”	Apapa	23 Wharf Rd, Apapa	Private				
26.	Leventis foods	”	Apapa	2, Wharf Rd, Apapa	Plc				
27.	JOF Ideal foods	”	Maryland	Sale office	Private				

Appendix 11: Soyabean Utilization in Lagos

Name of Organization	Installed Production capacity for soya input Tonne/day	Products	Soya-based products	Year soya processing started	Soya input: main or minor	Soya input & material forms	Product marketing (local or export)	Soy oil production (Yes/No)&method of extraction
IKS Global Ventures L	2	Live stock feed	Layers mash, grower mash, broilers starter, broilers finisher, chicks mash	2002	main	Soya meal, soy cake	local	No
Comfort Mills & Farms	1.2	Fish feed, Livestock feeds	Fish feed, Livestock feeds	2001	”	Soya meal, soy cake, full fat soya	”	”
High Trees Nig. Ltd.	0.1	”	Fish feed, Livestock feeds	2005	”	Soya meal, soy cake, full fat soya	”	”
Golden Lay farms L	0.07	Extruded soya, full fat soya	Extruded soya (soya meal, soya cake) , full fat soya	1980	”	Soya bean	”	”
Resolution Feed L	5	Live stock feed	Layers mash, grower mash, broilers starter, broilers finisher, chicks mash	2003	”	Soya meal, soy cake	”	”
Abina Pad Nig. L	20	Fish feed, Live stock feed	Fish feed (local pellets), Livestock feeds	1997	”	Soya meal, soy cake, full fat soya	”	”
Seace & Moxie Investments I	10	”	Layers mash, grower mash, broilers starter, broilers finisher,	2004	”	”	”	”

			chicks mash, fish feed					
oom Commercial E	1	Livestock feeds	”	2004	”	Soya meal, soya cake	”	”
-Afe Agro Vet Services ornerstone Industrial Ventu	15	”	Broiler, layer and grower feeds	1992	”	Soya meal, soy cake, full fat soya	”	”
pectra Foc	10	Cocoa drinks, pineapple juice, breakfast cereal, instant soya, bakery soya, sesame oil, soya oil (by-product)	breakfast cereal, instant soya, bakery soya,	1995	”	Soya bean	Local, Sample products to Canada & USA	Yes (as by-product) Extractions through Mechanical process
andor Fec	10	Livestock feeds, poultry products, cat fish	Livestock feeds	2003	”	Soya meal, soya oil	local	No
.K Grinding & Pelleti	2	Livestock feeds	Livestock feds	2006	”	Soya meal, soya cake	”	”
ederal Institute of Industr esearch, Oshodi (FIIR	1	All food processing & engineering. For Research & Development	Soy-ogi, soy-milk, soy-gari, soy enrich snack, soy based weaning food, soy dawadawa, soya flour	1956	”	Soya beans	”	”
ivestock Feeds I	10	Livestock feeds	Livestockfeeds including pig feeds	1980	”	Soya bean, soya meal, soya cake	”	”
andor Foc	0.5	Cat fish, fish feed	Fish feed	2005	”	Soya bean, soya meal, soya cake	”	”
ife Flour Group (SEEF	10	Poultry feeds, wheat grains, soya meal	Soya meal, poultry feeds	1980	”	Soya bean, soya meal	”	”
ilmerc (La Cussion)	0.2	Soy diatec, soy beca meal, soya flour	Soydiatec, soy becameal, soya flour	1991	”	Soya bean	Local and export (Senegal)	”
rand Oils & Cereals (Real C ig. Lt	150 metric tons	Edible oils (from soya, groundnut & cereal), soya meal, soya cake	Soya oil, soya meal, soya cake	1988	”	Soya bean	Local, sale development in Ghana,	Yes, solvent extraction

							Intending to export to UK	
oreson Nigeria I.	2 -5	Cerolina (wheat-soya flour), animal feed ingredients (extrude products)	Cerolina (wheat-soya flour), animal feed ingredients (extrude products)	1986	”	Soya bean	”	”
estle Foods Nigeria I	60	Baby milk, Baby foods Nutrend, Golden Morn), Assorted beverages (Milo, Nescafe), Assorted Condiments/culinary (Maggi)	Baby foods Nutrend, Golden Morn), Assorted Condiments (Maggi)	1978	”	”	”	”
total installed production capacity /day (metric ton)	313.07							
ean installed production capacity /day (metric ton)	15.65							
ae of installed production capacity/day (metric ton)	0.07-150							
isabi Foc	-	Flour from yam, corn, cassava	No longer producing soy flour					
vans Nig.I	-	Pharmaceuticals	No longer producing Babena baby weaning food					
ever Plc.	-	Tea and Coffee, food seasonings (Royco, Knorr), Margarine, soap	No longer using soya in their food seasonings	Year 2000				
laxoSmithKI	-	Pharmaceuticals	No longer produce Mama Joy Weaning Foods					
owbell (Wonder Foods N: td.)	-	Milk products	Claimed not to use soya bean					
eventis Foods Nig. I.		Valu-e Bread	Claimed not to use soya bean					

vey, 2007

S/N	Name of Organization	Proportion of Soya in each final product					
		(Actual and %)					
		Soya beans	Soya meal	Soya Cake	Soya Flour	Soya Oil	Full fat Soya
1.	JIKS Global Ventures Ltd.	-	200kg/ton 20%	500kg/ton 50%	-	-	-
2.	Comfort Mills & Farms	-	25% 30 -35% for fish feed	25%	-	-	25%
3.	High Trees Nig. Ltd.	-	180kg/ton, 18%	180kg/ton, 18%	-	-	-

Appendix 12: Proportion of Soya Utilization in Soya products

4.	Golden Lay farms Ltd.	100%	180kg/ton, 18%	180kg/ton, 18%	-	-	-
5.	Solution Feed Mill	-	100- 180kg/ton, 10-18%	180kg/ton, 18%	-	-	180kg/ton, 18%
6.	Sabina Pad Nig. Ltd.	-	350- 400kg/ton 35-40%	-	-	-	100-180kg/ton, 10- 18%
7.	Soleace & Moxie Investments Ltd	25%	100- 180kg/ton, 10-18%	100- 180kg/ton, 10- 18%	-	-	100-180kg/ton, 10- 18%
8.	Boom Commercial Ent.	-	20-80kg/ton	20-80kg/ton 2%	-	-	2kg/25kg for broiler starter 12.5% 24kg/184kg finisher 13%
9.	Fola-Afe Agro Vet Services Cornerstone Industrial Ventures	-	Broiler - 35% Layer - 20% Grower – 9% All in 1000kg	-	-	-	25kg/200kg 12 5%
10.	Spectra Foods Nig. Ltd.	Instant flour (100%) Breakfast soya-cereal (30%) Bakery soya (80%)	-	-	-	-	-
11.	Samdor Feeds Nig. Ltd.	-	Not specified	Not specified	-	For broiler feed	Not specified
12.	S.K Grinding & Pelleting	-	250kg/ton 25%	180kg/ton 18%	-	-	180kg/ton 18%
13.	Federal Institute of Industrial Research FIIRO	Soy-ogi (30%), soy- milk (100%), soy-gari (20%), soy enrich snack (20%), soy- based weaning food (30%), soy	-	-	30% for soy-ogi 20% for soy-gari 30% for weaning food	-	-

		dawadawa (100%)					
14.	Livestock Feeds Plc.	100%	5-25%	5-25%	-	-	5-25%
15.	Candor Foods	100kg/ton 10%	100kg/ton 10%	100kg/ton 10%	-	-	-
16.	Life Flour Group	12.5kg/60kg 20.8%	12.5kg/60kg 20.8%	-	-	-	-
17.	Wilmerc (La cussion)	30% for soy beca & 100% for soy flour 50% for soy- diatec	-	-	30% for soy beca 100% for soy flour 50% for soy- diatec	-	-
18.	Grand Cereal (Real Oil Nig. Ltd.)	100%	-	-	-	-	-
19.	Moreson Nigeria Ltd.	30% for Cerolina, 100% for animal feed ingredients (soya meal, soya cake)	-	-	30% for Cerolina	-	-
20.	Nestle Foods Nigeria Plc.	30% soya in Nutrend and Golden Morn 2% soya in food seasoning agents	-	-	30% for Nutrend and Golden Morn 2% in seasonin g agents	-	-

Demand and Supply for Soya Inputs

Soybean materials	Quantity required/day/week/month/year (tonnes)	Actual Quantity obtained/day/week/month/year (tonnes)	Time of Demand (months)	Place/ name of purchase (local sources) and address	Quality standard	Price ₦/unit (tonne or litres)	Can local source meet demand of soya input Yes/No	Reasons for choice of local source	Means and cost of transportation (ship/air cargo)
-Soya meal	168tonnes per year	60tonnes per year	Sept.-Jan.	Golden Oil, Sapele, Onitsha.	Use of Company's standard lab test (yellowish colour, low moisture, not moldy)	55,000/t	Yes	-Supplies good products confirmed by laboratory .test - poultry farmers preference	Road. Transport built into the co
-soya cake	24tonnes Per year	24tonnes per year		Life flour group (Sanders), Morrison, Lagos		54,000/t			
-soya meal	96tonnes Per year	12tonnes per year	Every week	Moreson Nig.Ltd., Ojodu, Lagos	-Cake must be well cooked -Non-adulteration -full fat soya rich in oil	55-57,000/t 58-60,000/t 68-72,000/t	Yes	Quality of product acceptable	Road. Transport built into the co
-soya cake	"	"							
-full fat soya	"	"							
-soya meal	96tonnes Per year	96tonnes Per year	Every week	From northern Nigeria	-Physical appearance -no off smell	55-57,000/t 58-60,000/t 68-72,000/t	Yes	-have acceptable quality -can also sell on retail basis	"
-soya cake	"								
-full fat soya	"								
Soya bean	96tonnes Per year	96tonnes Per year	Any time	Northern Nigeria	-Cream yellow grains - 10% moisture - 0.02% adulteration	60,000/t	Yes	Main source of soya bean grains	"
-Soya meal	15.84tonnes Per year	360tonnes Per year	During rainy season	-Golden Oil, Onitsha	- 48% protein -2700kcal Energy	56,000/t	Yes	-have good quality -have considerable price	Road ₦30-50,000/transport load(30tonnes)
-Soya cake				-Karami Oil, North Nigeria					
-Soya meal	19.2tonnes Per year	1440tonne Per Year	As required	Golden oil, Onitsha	-Non-toxic -No foul smell -Std. scale measurement must be used	55,000/t	Yes	-Maintain quality standard -Gives regular supply	Road 15-20,000/30to
-full fat soya									

-soya bean -soya cake -full fat soya	360tonnes Per year	480tonnes per year	All times	- Katsina/Kaduna Life flour group (Sanders), Morrison, Lagos Golden oil	-pass certified quality test - 10-12% moisture - not mouldy and rancid - cream yellow colour grains	52-54,000/t	Yes	-sell quality product (bigger and better grains) -supply regularly	Road 15,000/tonne f Feeds (Life Flo Lagos; 120-170,000/30 Lagos
-Soya meal -Soya cake	336tonnes Per year	480tonnes per year	Any time of the year	- Life flour group (Sanders), Morrison, Lagos Golden oil	-Cake must be well cooked -Non-adulteration	55,000/t	Yes	- Maintain quality standard -Gives regular supply	Road Transportation cost into cost o
-soya meal -soya cake -full fat soya	1800tonnes Per year	720tonnes Per year	Any time	Life flour group (Sanders), Morrison, Lagos Golden Oils, Onitsha Grand Oils & Cereal, Jos	Protein level of soya meal 45%	54-55,000/t	Yes	-gives credit facilities -bring the soya products to the factory	Road Inbuilt cost of transportation i
Soya beans	1080tonnes Per year	360tonnes per year	Any time	Middle belt of Nigeria (Benue)	No foreign matter, rough beans, broken beans	60,000/t	Yes	Readily available	Road Inbuilt cost of transportation i
Soya meal Soya oil	2016tonnes Per year	360tonnes per year	Any time	Benue Soya oil from Sun seed Mill	low moisture, not moldy)	52,000 to 55,000/t	Yes	Where readily available	”
-Soya meal -Soya cake -fullfat soya	60tonnes per year	60tonnes per year	Through out the year	Life flour group, Ogba, Lagos, Morrison Nig. Ltd, Lagos. Onitsha Gboko, Benue	Cake must be well cooked -Non-adulteration -full fat soya rich in oil	52,000/t 53,000/t 62,000/t	Yes	Where readily available	”
Soya beans	168tonnes/yr	168ton/yr	All the time	Mile 12, Lagos	Beans must be dry No pest or foreign matter	40,000 to 60,000/t	Yes	-Small quantity is required - Where readily available	Road transport Cost in-built in supply

-Soya beans -Soya meal -Soya cake	480tonnes per Year	480tonnes Per Year	All through the year.	Benue, Funtua, Katsina,	Wholesome beans with mini stones and shaft Soya cake and meal have 44% minimum protein and must be properly processed for anti-trypsin	40-42,000/t (season) 50,000/t (off season) 46,000/t 48,000/t	Yes	readily available	”
-Soya bean -Soya meal -Soya cake	168tonnes per Year	672tonnes per Year	All time	Abattoir, Oko-oba Lagos, Lagos	Beans must be dry No pest or foreign matter. Cake must be well cooked	67,000/t 55,000/t 52,000/t	Yes	”	”
-soya bean -soya meal	5280tonnes per Year	5280 tonnes per Years	As a function of sales	Local (Real Oil Mill, Lagos, Benue). and imported	7% moisture of bean, lack of impurity, no mould, light yellow, high protein	52,000 to 56,000/ton	Yes	Local may not meet demand Price difference Local soya may not meet quality specifications	Local purchase
Soya bean	360tonnes Year	12ton/yr	Any time	Mile 12, Lagos Benue	Fresh, Clean, cream coloured bean with no weevil and odourless	6,000-12,000/100kg bag	Yes	Cheaper and best quality	Road Transport cost supply
Soya bean	5,000Metric ton/year (5,000 tonnes/yr)	5,000tonnes/year (5,000tonnes/yr)	All the time	Benue	Clean and dry beans	42,000-48,000/ton	Yes	Readily available	Road Transport cost supply
Soya bean	6,720ton/yr	1,680tonnes per Year	Oc.-Dec.	Kastina, Lagos, Benue	Dry, Clean, cream coloured bean with no weevil and odourless	60,000/ton	Yes	”	Road Transport cost supply
Soya bean	20,000 tonnes/year 20,000,tonne /yr	20,000 tonnes Per Year 20,000 ton/yr	All the time	Benue	Clean, cream coloured bean with no weevil and rancid odour, 10% moisture	60,000/ton	Yes	major producer because they conducive agro-ecology	Road Transport cost supply

vey, 2007

Source of Soya Input Supply through Importation.

izati	Source of Importation of Soya							Means and transportation (ship/air cargo)
	Name of Inputs	Location (country/town/address)	Reason for importing soya input	Quantity obtained/day/week/month	Quality standard	Price ₦ /unit (tonne or litre)		
Vet Services Industry	Imported Sanders soya meal	Life flour former Sanders	If only imported soya meal is available at Sanders Almost same price as local soya	30tonnes/month	Cleaner than local soya	55,000/tonne	Road In-built in cost of	
	Imported Sanders soya meal and soya bean	Information not available	The major owners of the company are foreigners Non of the local suppliers have quality standard	Information not available	Have good quality standard	50,000/tonne	Imported soya bean meal by ship	

Appendix 15: Quality Standards for Soya raw materials

S/N	Name of Organisation	Existence of quality requirements for Supply (Yes/No)	Quality standard (e.g size and colour of grains)	Determination of quality standard	Price ₦/unit (tonne or litre)	Price for high quality soya product ₦
1.	JIKS Global Ventures Ltd.	Yes	yellowish colour, 9% moisture, not moldy, not rancid	Colour – physical Standard Lab tests for MC, rancidity	54 -55,000/ tonne	60,000/tonne
2.	Comfort Mills & Farms	Yes	-Cake must be well cooked -Non-adulteration -full fat soya rich in oil	Cook test, fat analysis	55-68,000/tonne	57-72,000/tonne
3.	High Trees Nig. Ltd.	Yes	-Cake must be well cooked -Non-adulteration -full fat soya rich in oil	Physical	55-68,000/tonne	57-72,000/tonne
4.	Golden Lay farms Ltd.	Yes	-10% moisture -cream yellow grains - 0.02% adulteration	Standard lab test	60,000/tonne	60,000/tonne
5.	Solution Feed Mill	Yes	48% protein 2700kcal energy	Cook test , rancidity test	-	75,000/tonne
6.	Sabina Pad Nig. Ltd.	Yes	- Non-toxic -No foul smell -Std. scale measurement must be used	Standard lab. tests	55,000/tonne	60,000/tonne
7.	Soleace & Moxie Investments Ltd	Yes	-without extraneous - 10-12% moisture	Standard lab. tests	52,000/tonne	54,000/tonne
8.	Boom Commercial Enterprises.	yes	-Cake must be well cooked -Non-adulteration	Cook test , rancidity test	55,000/tonne	55,000/tonne
9.	Fola-Afe Agro Vet Services Cornerstone Industrial Ventures	yes	45% protein level	Standard lab. tests	54,000/tonne	55,000/tonne
10.	Spectra Foods	Yes	-10% moisture -cream yellow grains -0.02% adulteration	Standard lab. tests	60,000/tonne	60,000/tonne
11.	Samdor Feeds	Yes	yellowish colour, 9% moisture, not moldy, not rancid	”	55,000/tonne	55,000/tonne
12	S.K Grinding & Pelleting	Yes	-Cake must be well cooked -Non-adulteration	”	52,000-62,000/tonne	60,000/tonne

13.	Federal Institute of Industrial Research FIIRO	Yes	Dry beans, free from pest and foreign matters	Physical and standard laboratory test	40,000- 60,000/tonne	60,000/tonne
14.	Livestock Feeds Plc.	Yes	Wholesome beans with mini stones and shaft Soya cake and meal have 44% minimum protein and must be properly processed for anti-Trypsin	Standard tests (e.g. cook test, anti-Trypsin test)	40,000-50,000/tonne	50,000/tonne
15.	Candor Foods	Yes	Beans must be dry No pest or foreign matter. Cake must be well cooked	”	52,000-67,000/tonne	60,000/tonne
16.	Life Flour Group	Yes	-10% moisture -cream yellow grains - 0.02% adulteration	”	52,000-56,000/tonne	58,000/tonne
17.	Wilmerc (LaCussion)	Yes	Fresh, Clean, cream coloured bean with no weevil and rancid odour	Beans are micronized to flex before milling and other standard tests for soya bean	6,000-8,000/100kg bag 60,000-80,000/tonne	12,000/100kg bag 120,000/tonne
18.	GrandOils & Cereals (Real Oil Nig. Ltd.)	Yes	-10% moisture -cream yellow grains -0.02% adulteration	Use of quality control laboratory.	42,000/tonne	48,000/tonne
19.	Moreson Nigeria Ltd.	yes	Dry, Clean, cream coloured bean with no weevil and rancid odour	Physically analyse colour and size, separating machine for impurity determination	60,000/ton	60,000/ton
20.	Nestle Foods Nigeria Plc.	yes	Clean, cream coloured bean with no weevil and rancid odour, 10% moisture	Standard lab. Tests	60,000/ton	60,000/ton