Assessment of Seed-Sub Sector Policy in Nigeria

P. Kormawa, E. Okorji, R. Okechukwu

International Institute of Tropical Agriculture
PMB 5320, Ibadan, Nigeria
Abstract

This study analyses Nigeria's seed sector policy by determining the effectiveness of the various bodies in the performance of their responsibilities, the effectiveness of prevailing regulatory mechanism as well as the appropriateness of the organization and implementation structures. Information was generated mainly from review of secondary data as well as from a Key Informants Survey (KIS) at both policy and industry levels. Data collected were analysed using descriptive statistics, trend, and cost returns analyses.

The results showed that the organization and implementation structures are appropriate for effective implementation. However, the various bodies involved have not performed creditably. Quantities of certified seeds are inadequate, production of breeder and foundation seed is low, and seed distribution and information dissemination networks are poor. Improved varieties are released slowly and this enhances the dominance of the low-yielding local varieties. There are adulterated seeds due to poor implementation of seed quality regulatory mechanisms. Effective implementation of the seed policy was reportedly constrained largely by inadequate trained manpower and financial resources, as well as institutional problems. Requirements for certified seeds far outweighs the supply, however, effective demand is less than 10% of the requirement for all crops considered.

Profitability analysis of the private seed industry showed that seed production is viable. However, the profitability level is comparatively low. This resulted mainly from the use of inadequate quantities of production inputs due to high costs, macroeconomic instability, low demand, and unhealthy price competition with the public seed sector.

Recommendations for improvement include strengthening the National Agricultural Seed Council (NASC), increased production of breeder seeds, decentralisation of foundation seed production, increased production and distribution of certified seeds. Both human and institutional capacity building should be pursued simultaneously in order to improve on the efficiency of the seed sub sector. Aggressive promotional activities on certified seed use in order to create greater awareness and demand among farmers. This could be done, through
field demonstrations, adequate publicity, field days, etc. Provision of improved rural infrastructure would encourage private seed companies to expand sales networks to rural areas.
# Table of contents

Abstract.................................................................................................................................... 2  
List of Tables .......................................................................................................................... 6  
List of Figures ....................................................................................................................... 6  
List of Appendices .................................................................................................................. 6  
1. Introduction ................................................................................................................ .... 7  
1.0 Overview of Nigeria agriculture and agricultural policy ............................................... 7  
1.2 Functions of the National Agricultural Seed Council .................................................. 11  
1.3 The Problem ................................................................................................................ .1 3  
1.4 Objectives of the study ................................................................................................. 15  
1.5 Data collection and approach ....................................................................................... 16  

2. Implementation of the seed sector policy ..................................................................... 17  
2.1 Overview of seed policy environment ......................................................................... 17  
2.1.1 Organisational structure and responsibilities ............................................................... 18  
2.1.2 Implementation structure ............................................................................................ 20  
2.1.3 Resource availability .................................................................................................... 22  
2.1.4 Activities and activity level analysis ............................................................................ 24  

3.0 Constraints resulting from ineffective implementation of seed policy .................... 27  

4.0 Seed production, processing and marketing at the industry level................................ 29  
4.1 Organisational structure of the seed industry ............................................................... 30  
4.1.2 Seed production arrangements ..................................................................................... 31  
4.1.3 Seed processing ............................................................................................................. 33  
4.1.4 Quality control ............................................................................................................. 34  
4.1.5 Seed marketing and distribution ................................................................................... 34  
4.2.2 Seed pricing ................................................................................................................ 35  

4.2 Constraints and Prospects of the Private seed companies ............................................ 36  
4.2.2 Prospects ...................................................................................................................... 37  

5.0 Seed demand, supply and profitability analysis ........................................................... 38
5.1 Approach ................................................................................................................... 38
5.2 Estimated seed requirement ......................................................................................... 38
5.3 Demand for and supply of seeds .................................................................................. 40
5.4 Profitability of private seed enterprises........................................................................ 45
6. Conclusion and recommendations ............................................................................... 48
6.0 Conclusions ................................................................................................................ .. 48
6.1 Recommendations ........................................................................................................ 49
List of Tables

Table 1 Operating zones and secretariat of National Agricultural Seed Council .......... 19
Table 2 Research institutes and their mandate crops ......................................................... 21
Table 3 Foundation seed production by NSS, in mt. (1980-1991) ........................................ 25
Table 4 Private seed companies registered with NSS, 2000 ................................................ 30
Table 5 Estimated seed requirement (mt) for selected crops in Nigeria (2000-2005)* ..... 39
Table 6 Demand (mt) for certified seeds in Nigeria, 1994-2001 ........................................ 41
Table 7 Supply (mt) of certified seeds in Nigeria (1994-2001) .......................................... 42
Table 8 Demand projections (mt) for certified seeds, 2002-2006 ........................................ 43
Table 9 Breeder and foundation seed production (Kg) of selected crops, 1994-1998 ...... 44
Table 10 Annual cost and return analysis for the seed industry ........................................ 47

List of Figures

Figure 1 Structure of the agricultural seed policy implementation .................................... 19
Figure 2 Production and distribution of improved seeds in Nigeria ................................... 22
Figure 3 Private seed sector marketing in Nigeria ............................................................. 32
Figure 4 Private sector seed distribution network .............................................................. 35

List of Appendices

Annex: 1 Institutional roles and responsibilities in the national seed system ................... 56
Annex 2: A Report on the stakeholders’ workshop .............................................................. 57
1. Introduction

1.0 Overview of Nigeria agriculture and agricultural policy

Before Nigeria’s independence and in the early 1960s, agriculture was the mainstay of the economy and accounted for over 50% of the Total Gross Domestic Product (CBN 1991). Over 70% of the nation’s labor force was employed in the agricultural sector that also provided the nation’s food and raw materials for the growing industries. Nigeria’s government provided little support which was concentrated on export crops such as cocoa, groundnut, palm produce, rubber, and cotton, as self-sufficiency in food production seemed not to constitute any problem (Abdullahi 1999; FMAWR&D 1989). Agricultural production over this period was predominantly traditional, as farmers made use of mainly local varieties of crops and livestock and adopted mostly cultural practices and implements in their production.

By late 1960s and early 1970s, there were signs of problems existing in the agriculture sector. Shortages in food supply and increases in food prices, for example, were noticed. By the mid 1970s the contribution of agriculture to the nation’s GDP had declined remarkably to about 26% and the food deficit gap had widened significantly. There were also shortfalls in government revenue from agriculture, in foreign exchange earnings from agricultural exports. This situation was attributed to the devastation of many farmlands during the Nigerian Civil War, 1967-1970; the diversion to the oil sector to the neglect of the agricultural sector, drought in some parts of the country, migration of labor from the agricultural sector, low agricultural output, rising food prices, and increasing population. There were also the effects of government fiscal and monetary policies (FDA 1989; Okorji 1989; Abdullahi 1999).

In a bid to revitalise the agricultural sector and salvage the situation the government initiated several policies and agricultural development programs and projects in context with three successive national development plans executed 1970-74, 1975-80 and 1981-85. These
included the National Accelerated Food Production Program, Operation Feed the Nation, Green Revolution, and the creation of River Basin Development Authorities, and Agricultural Development Projects (ADPs). The need to transform traditional agriculture through the adoption of modern farm technologies was realised and incorporated in these programs. Modern farm technologies are known to be technically and economically more efficient than the traditional system (Goldsworth 1965; Falusi 1973; Akinola, 1979; Ejiga 1990).

Despite these efforts, the performance of Nigeria’s agricultural sector was still poor. The food supply demand gap widened, food prices rose tremendously; and agriculture’s contribution to GDP declined to about 23% by the mid 1980s (CBN 1991). Experience from these policies, programs and projects, however, convinced the government that there was no alternative to well-designed and articulate agricultural policies and instruments for promoting agricultural growth and development in Nigeria (FMAWR&D 1989). In pursuance of this, the first comprehensive agricultural policy was formulated in 1985. The policy instruments, which were to remain valid for the next 15 years, were composed of macroeconomic policies, agricultural sector policies, and policies for the support services. The macro-economic policies included pricing, trade, exchange rate, and agricultural land policies. The sector-specific policies included food production, input supply, and subsidy policies while the support service policies included agricultural technology generation and extension, agricultural credit, insurance, produce marketing, and research.

The ultimate goal of Nigeria’s agricultural policy is the attainment of self-sustaining growth in all the subsectors as well as the realisation of the structural transformation necessary for the overall socioeconomic development of the rural areas. The specific objectives of the agricultural sector policies include the following

(i) Self-sufficiency should be attained in basic food commodities with particular reference to those food commodities which consume considerable shares of Nigeria’s foreign exchange and which can be produced within the country.
(ii) Production of agricultural raw materials should be increased to meet the growing needs of an expanding industrial sector.

(iii) Production and processing of export crops should be increased to increase their foreign exchange earning capacity and to diversify the country’s export base and sources of foreign exchange.

(iv) Agricultural production, processing, storage, and distribution should be modernized through the infusion of improved technology and management so that the sector can be more responsive to the demand of developments in the other sectors of the economy.

(v) Increased rural employment opportunities should be created through improvements in infrastructure facilities so as to productively absorb an increasing labor force.

(vi) The quality of life of rural dwellers should be improved through the provision of social amenities such as potable water and improved health and educational facilities.

(vii) Protection of agricultural land resources from drought, desert encroachment, soil erosion, and flood should be improved (FMAR&D 1989; Edache 1999).

Much emphasis was placed on the food crop subsector in view of the widening gap between food demand and the supply, rising food prices, low food intake, hunger and related problems. Hence the major objectives of the food crop production policy were to attain self-sufficiency in crop production, and to improve on the level of technical and economic efficiency in food crop production. This was to be achieved through the introduction and adoption of improved technologies, more efficient utilization of farm resources, reduction in the risks and uncertainties associated with food crop production, and the modernization of the structure and organization of food crop production (FMAR&D 1989).
Input supply, which includes seeds, water, land, fertilizer and agro-chemicals, was identified as one of the strategies for achieving food self-sufficiency. Of all yield-enhancing inputs in crop production, seeds give the most dramatic and most cost-effective return on investment. Improved seeds have provided 50% of the productivity gains in agriculture. The other 50% has come from improvement in management, including timeliness, best use of fertilizer, crop protection measures and equipment (Shobowale 1994; Gupta 1994; Joshua 1999; Echekwu 1999; Louwaars and Marrewijk 1999; Adamu 2000).

The development and use of high yielding seed varieties has been the technological force behind the reduction of rural poverty, successful Green Revolutions, and abundant food at prices profitable for farmers and affordable to the populace in most developing countries, particularly China, India, southwest Asia, the Pacific, and many parts of Latin America and the Caribbean (Tripp 1995; Joshua 1999; Louwaars and Marrewijk 1999). In Nigeria, the National Seed Service Unit (NSS) was created in 1975 with a mandate of producing foundation and certified seeds as well as to arrange for seed certification. Due largely to increased awareness by farmers of the superiority of improved seeds over local (Echekwu 2000), the demand for improved seeds rose so much that NSS was finding it increasingly difficult to satisfy the farmers. The ADPs had to complement the efforts of NSS in seed production. They started to produce their own improved seeds and to multiply on their own seed farms any improved seeds they could obtain from the NSS, the research institutes, and emerging private seed organizations (Cheema et al. 1994).

International and national research centers in Nigeria have developed a number of high yielding and improved seed varieties and hybrids but the benefits of using improved seeds have not been maximized. Available data indicate, among others, inadequate availability and use of such seeds. With the aim to promote and stimulate increased access to improved high yielding and quality seeds, as well as the development of a dependable seed industry, to regulate and control the registration of released varieties, the Federal Government of Nigeria in 1992 promulgated the National Agricultural Seed Decree (Decree No 72, 1992). The decree also paved way for establishing the National Agricultural Seed Council. This Decree thus provides
the legal backing to the seed policy by regulating the various aspects of seed production, marketing, and quality control activities in Nigeria. The national seed policy formulated in 1992 provides guidelines for the development of the seed sub sector. The goals of the policy are, to:

a) Support varietal improvement, testing, registration, release, and multiplication of released varieties.

b) Improve the quality of seeds sold to farmers.

c) Re-orient operations of public sector agencies along commercial lines.

d) Encourage private sector participation in seed operations through appropriate policies and promoting activities (Joshua, 1999; NSS, 2000).

1.2 Functions of the National Agricultural Seed Council

The functions of the NASC as provided for in the 1992 seed decree are as follows:

a) To analyse and propose programs, policies, and actions regarding seed development and the seed industry in general, including legislation and research on issues relating to seed testing, registration, release, production, marketing, distribution, certification, quality control, supply and use of seeds in Nigeria, importation and exportation of seeds, and quarantine regulations relating thereto.

b) Propose improved management system and procedure relating to the administration of seed activity and advise the Federal Government on the organization, management, and proper financing of seed programs.

c) Analyse the market and prices of seeds.
d) Control, supervise and approve the activities of the following committees established by or pursuant to the decree, that is:

   i. The crop variety registration and release committee.

   ii. The seeds standards committee.

   iii. The seed industry and skill development committee, and

   iv. Such other committees as may be established, from time to time,

e) Advise the national research system on the changing pattern of seed demand and farmers’ needs.

f) Monitor and evaluate the achievement of the national seed system and recommend improvements thereto.

g) Encourage the formation or establishment in Nigeria of seed companies for the purpose of carrying out research, production, processing and marketing of seeds; and

h) Perform such other related functions as may be required of the council, from time to time (FRN 1992).

For effective performance of these functions, the membership of the council was drawn from a large frame of experts in the field. These include the Director General of the Federal Ministry of Agriculture, Water Resources and Land Development, Director General of the International Institute of Tropical Agriculture (IITA), Directors of the Federal Department of Agriculture (FDA), Department of Agricultural Science, four representatives of the State Ministry of Agriculture; two representatives of the Nigeria Seed Industry; a representative of Seed Growers Association, the Cooperatives Society of Nigeria, a representative of the Federal Ministry of Finance; private financial lending institutions; the Head of Unit, NSS and a representative of the Department of Plant Breeding and Seed Technology in a Nigerian
university. The decree constituted four bodies under the NASC to facilitate the development of the seed industry. These are as follows: -

- The National Seed Service Unit
- The Crop Variety Registration and Release Committee
- The Seeds Standards Committee.
- The Seed Industry and Skill Development Committee, and
- The Department of Training, Information and Seed Extension

Each of these bodies has specific responsibilities assigned to it for the attainment of the objectives of the National Seed Policy.

1.3 The Problem
Nigeria’s governments introduced several agricultural development programs and projects during the decade 1970-79. Most of these programs were aimed at improving agricultural production in the country through the introduction and adoption of modern technologies. Some of these programs and projects came with different legislations and were meant for development of specific sub sectors of agriculture. This was the case for the promulgation of the National Seed Decree in 1992 and eventual setting up of National seed council, with the main objective of promoting and stimulating the development of a dependable seed industry. The council was to regulate, and control the registration of released varieties.

Despite these efforts and arrangements, the availability of improved seed varieties to rural farmers is still very low. Not only are farmers having difficulty in obtaining the necessary inputs on time and in good quality, but also they are paying very high prices (IFDC/IITA/WARDA/FGN, 2000). Current estimates indicate that only between 5 and 10% of total seeds required to meet total grain production are provided (Obinyan, 1994; PRSD, 1996).
Farmers in many communities are yet to have access to improved seeds. Most seeds planted by farmers come from local sources including farmers’ own crop, neighbors, and relatives, or from local markets (Cromwell et al. 1992; Jaffee and Srivastava 1994; Louwaars and Marrewijk 1999; Osborn and Faye 1991; Bal and Douglas 1992). Many of the improved seed varieties reportedly have been in use for between one and two decades. The problem in most cases is due to the lack of awareness by farmers of the advantages of improved varieties. As a result their potential yield is no longer attainable especially under the poor seed management system adopted by the farmers. Farmers have continued to use these varieties in the absence of replacement stock of improved varieties. Improved seeds often take a very long time to get to farmers, and adulteration has been reported in many communities. Consequently, many farmers have resorted to the use of local seed varieties that are readily available and relatively cheap.

Private seed companies particularly large scale seed companies are very few, this is largely because some have stopped production, and there are scarcely any new entrants in the seed business. Apart from the large-scale private seed companies, there are emerging small to medium scale seed enterprises comprising of seed producers and dealers. However, these are mostly not registered with the NSS. These observations and situations suggest the existence of problems in Nigeria’s seed system. These are in spite of the agricultural seed policy, the legal framework, and the institutional arrangements put in place to ensure success of the seed system. This raises pertinent questions, which this study intends to address: -

a) To what extent are the policies and programs on seed implemented?

b) To what extent are the regulations and practices implemented?

c) How effectively have the various bodies performed their responsibilities?

d) How effective are the organization and implementation structures?

e) How profitable is seed production and marketing at the industry level?
1.4 Objectives of the study

With the aim to develop a sustainable and efficient private seed supply system in Nigeria, this assessment was conducted with the following objectives:

a) Determine the extent to which seed policies and programmes are implemented.

b) Determine the effectiveness of the various bodies in the implementation of their responsibilities.

c) Examine the effectiveness of the prevailing regulatory mechanisms pertaining to seed quality control.

d) Determine the appropriateness of the organization and implementation structures.

e) Identify the constraints to effective implementation of the seed policy and programmes.

f) Estimate the seed requirement in Nigeria, and

g) Make recommendations for improvement, based on the findings.

Meeting the food demand for the growing population in Africa is a major concern to both national governments and international organizations (Kormawa 1999). In Nigeria, agriculture is the largest employer of labor, the major source of industrial raw materials, and the source of income for the majority of the population. Increased agricultural production would therefore impact positively on the nation’s economy. Seeds, which embody the genetic potential of plants, determine the upper limits on plant yield and therefore the productivity of other agricultural inputs (Jaffee and Srivastava 1994; Usman 1994; Louwaars and Marrewijk 1999). Regrettably, seeds have not been accorded the rightful position in Nigeria, as yet, compared to other inputs (Utoh 1994; Shobowale 1994).
National Agricultural Seed Policy (1992) provides guidelines for the development of the seed sector. Effective implementation would have, among others, ensured the availability of adequate quantities of improved seeds to the farmers at the right time and quality as well as at affordable prices. This situation is yet to be attained. This calls for an examination of the various frameworks, structures, regulatory and other mechanisms put in place for the implementation of the policy.

1.5 Data collection and approach

Data were generated largely from a review of secondary sources as well as from a key informant survey at both policy and industry levels. Secondary data sources included the following: Policy documents on agriculture; National Agricultural Seed Decrees; Agricultural Input Policy; Development of seed industry; Seed marketing; Seed quality control and enforcement; Seed imports; Regulations on genetically modified organisms (GMOs) etc, and Volumes of seed trade (by formal sector). This was complemented by a key informant survey involved discussions with staff of the relevant bodies, units and industries. Information collected at the policy level included: organization structure; implementation structure; human capital (adequacy and number), financing; activity level analysis (efficiency); matrix of expected annual output versus actual output; other services delivered; seed quality issues and major constraints regarding effective implementation of regulatory mechanisms.

Information collected at the industry level included: Organization and Structure; Seed Production Arrangements; Seed Processing (protection etc); Seed Marketing and Network (distribution); Quality control and Major problems encountered by the seed companies.

Data collected were analyzed using mainly descriptive statistics. In addition efficiency measures, trend analysis and cost-return analysis as appropriate were applied to achieve the objectives of the study.
2. Implementation of the seed sector policy

2.1 Overview of seed policy environment

The seed policy in Nigeria was given a legal status with the enactment of the Agricultural Seed Decree No 72 of 1992. The Decree established the National Agricultural Seed Council to promote and stimulate the development of dependable seed industry, regulate and control the registration of released varieties, protect the farmers from the sale of poor quality seeds, facilitate the production and marketing of high quality seeds in Nigeria, and provide legal backing for official testing, certification, sales, importation, exportation, and use of seeds (FRN, 1992). The successful implementation of the seed policy, therefore, would depend, to a large extent, on the extent to which the National Agricultural Seed Council and the different bodies (also established by the Decree) perform the above activities and other responsibilities. While the decree provided for "Institutional Council", this is not being implemented.

Nigeria’s seed policy is similar to that of India, and could be expected to have comparable results. The seed program in India has developed and progressed so well that it can be ranked among the best in Asia. The co-ordinated improved programs contribute to a constant flow of superior new improved varieties and hybrids, which are enthusiastically adopted by the traditional farmers. The National Seed Corporation had a pronounced impact on the various disciplines of the seed industry. The Seed Act (1966) and the Seed Rules (1968) provided a sound foundation for the orderly development of the seed industry. There was effective training program on seed testing, seed production, processing and certification. The comprehensive seed-testing program was supported by a network of well-staffed and well-equipped seed testing laboratories. Seed processing was introduced as a new technology to India, and positive measures were taken to manufacture seed processing equipment locally (Al-Jibouri, 1969).
2.1.1 Organisational structure and responsibilities

The National Agricultural Seed Council is charged with the responsibility for the overall policy guidelines and monitoring of the development of the national seed system. Five bodies (the National Seed Service Unit, the Crop Variety Registration and Release Committee, the Seeds Standards Committee, the Seed Industry and Skills Development Committee, and the Department of Training, Information and Seed Extension) were also established to work for the council in facilitating the development of the Seed Industry. Figure 1 shows the organizational structure for the implementation of the National Agricultural Seed Policy.

At the state level, the functions of the various implementing bodies at the national level are performed by the States Seed Coordinating Committees. These committees are in existence in some states under the chairmanship of the Commissioners of Agriculture, with the Program Managers of the ADPs as Secretary.

Each body or unit is responsible to the council on matters pertaining to its mandate. The council has five operating zones and five zonal secretariats (Table .1). By this arrangement the council’s presence would be felt in all the states of the Federation and Abuja and the Council would, among others, readily monitor the seed development activities in the states. Hence the organisational structure is appropriate for effective performance.

The various institutions involved in the national seed systems and their roles and actions are presented in Annex 1. From the Annex, the roles and responsibilities of each institution is clearly defined. However, the roles performed by the different institutions affect the performance of the other.
Figure 1  Structure of the agricultural seed policy implementation.

Table 1  Operating zones and secretariat of National Agricultural Seed Council

<table>
<thead>
<tr>
<th>Zone</th>
<th>States covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central (Ilorin)</td>
<td>FCT Abuja, Benue, Kwara, Kogi, Niger</td>
</tr>
<tr>
<td>North East (Jos)</td>
<td>Adamawa, Bauchi, Borno, Plateau, Taraba, Yobe</td>
</tr>
<tr>
<td>South East (Umudike)</td>
<td>Abia, Akwa Ibom, Anambra, Cross-River, Enugu, Imo, Ebonyi, Bayelsa, Rivers</td>
</tr>
<tr>
<td>South West (Ibadan)</td>
<td>Delta, Edo, Lagos, Ogun, Ondo, Osun and Oyo</td>
</tr>
<tr>
<td>North West (Zaria)</td>
<td>Jigawa, Kaduna, Kano, Katsina, Kebbi and Sokoto</td>
</tr>
</tbody>
</table>
2.1.2 Implementation structure

There are three broad classes of seeds are recognized for seed production in Nigeria, these are, the breeder, foundation and the certified seeds. Breeder seed is the seed of a newly developed variety that is produced under the supervision of the plant breeder. Foundation seed is the progeny of the breeder seed and it consists of the generations of seed between breeder and commercial seed. Commercial or certified seed is the seed that is produced and sold to the farmer. Seed production and multiplication involves the multiplication of the breeder seed into commercial or certified seed that will be distributed to the farmers.

There are four groups of agencies in Nigeria involved in the seed industry.

a) Crop Research Institutes and the Universities

b) National Seed Service

c) Agricultural Development Projects’ Seed Multiplication Unit/ Contract growers

d) Private Seed Companies

The Agricultural Research Institutes/Universities undertake plant breeding and breeder seed production research. These institutes/universities have contributed to the development of several high yielding varieties, hybrids of crops such as maize, rice, cowpea, soybeans to mention a few.

Agricultural research institutes with crop development focus in Nigeria as well as their mandate crops are shown in Table 2. There are six national research and three international research institute in Nigeria that are directly involved with seed production. Activities of the national research institutes were being co-coordinated by the Ministry of Science and Technology, however this has now been transferred to the Ministry of Agriculture and Rural
Development. Each of these institutes has well-developed plant breeding and variety development programmes.

Breeder seeds from the research institutes are passed on to the NSS for foundation seed production. The NSS provides Foundation Seeds to the ADPs and private seed companies (NSS, 2000). Both the ADPs and the private seed companies produce certified seeds, either from their own farms, or through contract farmers/out-growers, or both. The implementation structure is appropriate for effective performance as it not only ensures linkages between research institutes and NSS unit, but also provides alternative sources of certified seeds to the farmers.

Table 2  Research institutes and their mandate crops

<table>
<thead>
<tr>
<th>Crop Research Institute</th>
<th>Location</th>
<th>Mandate Crops</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institute for Agricultural Research (IAR)</td>
<td>Zaria</td>
<td>Sorghum, maize, cotton, sunflower, groundnut, and cowpea</td>
</tr>
<tr>
<td>National Institute for Horticultural Research (NIHORT)</td>
<td>Ibadan</td>
<td>Vegetable, horticultural and ornamentals</td>
</tr>
<tr>
<td>National Crop Research Institute (NCRI)</td>
<td>Badeggi</td>
<td>Rice, beniseed and sugar cane and soybean</td>
</tr>
<tr>
<td>Lake Chad Research Institute (LCRI)</td>
<td>Maiduguri</td>
<td>Wheat, barley and millet</td>
</tr>
<tr>
<td>Institute for Agricultural Research and Training (IAR&amp;T)</td>
<td>Ibadan</td>
<td>Maize and kenaf</td>
</tr>
<tr>
<td>National Root Crop Research Institute (NRCRI)</td>
<td>Umudike</td>
<td>Cassava, yam, Irish potato, cocoyam, ginger, and sweet potato</td>
</tr>
<tr>
<td>International Institute of Tropical Agriculture (IITA)</td>
<td>Ibadan</td>
<td>Cowpea, yam, maize, soybean, cassava, banana/plantains.</td>
</tr>
<tr>
<td>International Crop Research Institute for the Semi-Arid Tropics (ICRISAT)</td>
<td>Kano</td>
<td>Sorghum, millet, pigeon pea and groundnut</td>
</tr>
<tr>
<td>West African Rice Development Association (WARDA)</td>
<td>Ibadan</td>
<td>Rice.</td>
</tr>
</tbody>
</table>
2.1.3 Resource availability

Resources (human capital, finance, etc) are needed for effective performance of an activity or project. It is pertinent to mention, at this point, the difficulty encountered in determining the level of financial resources available to the various units. The council by composition has a team of experts drawn from relevant areas of agriculture and related fields, including Federal Ministry of Finance, private financial lending institution, seed growers associations, and cooperative societies. The council is empowered to appoint such other persons as members of its staff as it considers necessary. By this arrangement, the National Agricultural Seed Council should not lack human resources required for effective execution of its duties. The Decree also made financial provisions for the council (FRN, 1992). However, there is no clear indication of a budgetary head or sub-head for the operations of the council.

Figure 2 Production and distribution of improved seeds in Nigeria

Source: NSS, 2000
Although there is a core of experienced and trained officers within the system at the top level, there is inadequate number of adequately trained personnel at the field level. In particular, skills needed for seed business planning and management, marketing, forecasting seed demand and supply, and technical knowledge about seeds are inadequate at the field level. In the NSS, for example, it was reported that although the key personnel were adequate, a few of the staff (seed officers) needed to be trained for enhanced performance as well as in seed law enforcement.

Financial resources were reported to be inadequate in all the units. Inadequate logistics was also reported in all cases. The other bodies, however, indicated that they did not have adequate staff to effectively cover their responsibilities in the fields; a situation that derives from the restriction on employment and lack of in-service training for serving staff.
2.1.4 Activities and activity level analysis

The activities performed derive from the responsibilities assigned to the council and the bodies. Assessment of the activity level performance in the implementation process is usually determined on the basis of actual output versus expected output. However, the assessment being reported was based on key informant survey report and may not be exhaustive.

The National Agricultural Seed Council (NASC) has, among others, the responsibility to propose improved management system and procedure relating to the administration of seed activity and to advise the Federal Government on the organization, management and proper financing of seed programs. There are no documented reports on the performance of the NASC. However, key informant survey report showed that the Council rarely met, and one of the very few meetings held annually was in the month of February when farming activities usually commence in the month of January in many areas. For that year’s farming season, for instance, any decisions arrived at would be belated. Similarly, irregularity in meetings by the NASC adversely affected the performance of other responsibilities including, for instance, registration and approval for variety release, and seed quality control activities. With poor performance of these and other key responsibilities, it can be conclusively said that the NASC performed far below expectation.

The NSS Unit has three sub-programs, these are as follows:

i) Seed Industry and Technical Support Service Programme

ii) Seed Certification and Quality Control Programme; and

iii) Seed Production, Processing and Storage Programme

Each of these programmes has two or more sub-programmes. The key informant survey report, however, shows that the NSS (like similar institutions in Nigeria) is beset with problems that hinder effective performance of many of its activities. While the NSS strives to meet farmers’
seed requirements, its efforts to facilitate production of large quantities of foundation seed has been guided by the low demand from certified seed producers. Production of foundation seeds by NSS out-growers is always guided by indents from certified seed producers. Table 3 shows the annual foundation seed production by NSS. The figures do not indicate the limit that NSS foundation seed growers can produce on annual basis. The low and inconsistent demand for foundation seed stock by certified seed producers has caused the NSS in some years to carry over foundation seed stock into the following season.

Table 3 Foundation seed production by NSS, in mt. (1980-1991)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>650</td>
<td>1,647</td>
<td>1,270</td>
<td>1,390</td>
<td>914</td>
<td>1,212</td>
<td>500</td>
<td>1,315</td>
<td>367.88</td>
<td>274</td>
<td>134.75</td>
<td>64.26</td>
<td></td>
</tr>
<tr>
<td>Maize</td>
<td>500</td>
<td>1,300</td>
<td>1,233</td>
<td>1,447</td>
<td>1,561</td>
<td>1,845</td>
<td>1,877</td>
<td>1,845</td>
<td>1,103.91</td>
<td>960.8</td>
<td>648.81</td>
<td>110.86</td>
<td></td>
</tr>
<tr>
<td>Sorghum</td>
<td>300</td>
<td>200</td>
<td>253</td>
<td>321</td>
<td>225</td>
<td>263</td>
<td>300</td>
<td>441</td>
<td>54.03</td>
<td>152</td>
<td>98.0</td>
<td>8.95</td>
<td></td>
</tr>
<tr>
<td>Millet</td>
<td>100</td>
<td>100</td>
<td>161</td>
<td>215</td>
<td>130</td>
<td>153</td>
<td>170</td>
<td>487</td>
<td>32.56</td>
<td>82</td>
<td>45.0</td>
<td>30.6</td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td>40</td>
<td>140</td>
<td>50</td>
<td>10</td>
<td>103</td>
<td>50</td>
<td>100</td>
<td>-</td>
<td>283</td>
<td>105</td>
<td>20.0</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>Groundnut</td>
<td>130</td>
<td>60</td>
<td>50</td>
<td>15</td>
<td>70</td>
<td>50</td>
<td>500</td>
<td>381</td>
<td>213.35</td>
<td>226</td>
<td>21.0</td>
<td>4.32</td>
<td></td>
</tr>
<tr>
<td>Cowpea</td>
<td>-</td>
<td>100</td>
<td>60</td>
<td>11</td>
<td>53</td>
<td>65</td>
<td>80</td>
<td>351</td>
<td>21.22</td>
<td>34.9</td>
<td>22.73</td>
<td>12.08</td>
<td></td>
</tr>
</tbody>
</table>
Crop Variety Registration and Release Committee has the responsibility for making recommendations to the council on matters relating to the registration and release of any given crop variety and the declaration of a crop variety as a notified kind. It is supposed to have representations in different zones and states. Though the committee has been established under the seed decree, it has not yet been inaugurated. The functions of this committee are being performed under decree 72 of 1992 enabling a committee to meet regularly. Information from the Registrar of the National Varietal Release Committee confirmed that as to date, there is no variety duly nominated to the committee that has not been released officially. Moreover, in order to accelerate the release process, the committee has reduced the period of release from between 3 and 4 years to 2 and 3 years. With this reduced period, an outstanding variety can be released within 2 years.

Seeds Standard Committee is responsible for making recommendations to the council on matters relating to seed standards and the pertaining procedure. There are reportedly many cases of adulterated, unviable, and infested seeds sold to farmers as a result of ineffective control by the relevant body. Unidentifiable seeds are displayed at various stores and markets for sale, an act that could have been effectively checked. Although the committee has reportedly put in place various standards and regulations in place to guard against these practices, it has not been possible to thoroughly enforce the law, thus the committee has not performed as expected and the regulatory mechanisms relating to seed quality control are not effectively implemented.

Seed Industry and Skills Development Committee is responsible for making recommendations to council on seed industry and skills development these matters. It was difficult to come by any record or document showing the activities and performance of this committee.

<table>
<thead>
<tr>
<th>Soybean</th>
<th>-</th>
<th>3</th>
<th>5</th>
<th>8</th>
<th>10</th>
<th>10</th>
<th>25</th>
<th>255</th>
<th>25.33</th>
<th>24</th>
<th>10.0</th>
<th>5.79</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>1,720</td>
<td>3,550</td>
<td>3,082</td>
<td>3,417</td>
<td>3,066</td>
<td>3,648</td>
<td>3,552</td>
<td>2,175</td>
<td>2,101.28</td>
<td>1,858.7</td>
<td>1,001.09</td>
<td>249.36</td>
</tr>
</tbody>
</table>

Source: NSS, 1992
Department of Training, Information and Seed Extension is supposed to be responsible for training and information dissemination. Documents on the activities of this committee could not be sourced. It was reported that this Department is not yet in place as the Seed Council it is supposed to operate under is yet to be in place. To fill this vacuum, the NSS has been providing some skeletal services in providing training, disseminating information and providing some extension services. Some farmers in some communities were reportedly trained on seed production by extension agents of the ADPs (through the NSS). Most of these farmers could not continue after the training because they were not provided with the relevant inputs. Farmers generally have limited information about improved seeds, seed availability, and seed prices, etc, indicating a poor performance by this committee.

In general, the various bodies charged with the responsibilities associated with effective implementation of the seed policy have not performed creditably. Problems persist on seed production, seed marketing, quality control and farmer utilization. Local seed varieties still dominate as a result of the inadequate production, and ineffective distribution of certified improved seed varieties, slow release of improved varieties, and a poor information dissemination network. Hence, the policies and programmes on seed input are yet to be implemented to any reasonable extent.

3.0 Constraints resulting from ineffective implementation of seed policy

Virtually all the units are engulfed in one problem or another, resulting in observed poor performance. The major constraints emanating from the inefficient implementation of the seed policy are listed and briefly discussed in the following paragraphs.

Low production of breeder seeds: Breeder seed production involves long-term research input, requiring skill and expertise, materials, and equipment. For example the inadequate funding of the research institutes and the NSS makes it difficult for them to engage effectively in varietal development and evaluation on a more regular basis. The output of the research institutes is
far below what is required to meet the growing requirement for improved seeds and seed technology. Not only are funds reportedly inadequate, they are usually disbursed late, resulting in distortions in the breeding process. Acquisition of the necessary materials and equipment has been a problem and staff working with such inputs end up demoralised after much delay.

**Poor seed certification and quality control arrangements:** The laboratories required for seed testing, seed certification, and quality control are not adequate, and those available are poorly equipped. The central seed laboratory at the NSS headquarters is yet to be properly equipped and put into use. Trained staff to conduct the exercise in many localities is inadequate in number. As a result there have been cases of unlabelled seeds being sold in markets and stores, and many farmers have had the misfortune of buying adulterated seeds.

**Poor seed distribution arrangement:** Improved seeds produced by the public sector were sold to the farmers through farmers’ supply companies, agro service centers, ADPs, cooperative societies, etc. Presently, some of these centers are not working in some states, with the result that farmers in such areas now get seeds mostly from private seed companies (if any) and from seed traders/dealers in the open market. Such farmers pay exorbitant prices, and also run greater risks of buying unviable seeds due to poor storage and handling by the seed traders.

**Reduced activity of NSS:** The NSS has a pivotal role to play in the development of the nation’s seed industry, including the production of foundation seeds, supervision, monitoring and quality control, etc. While the NSS has a cadre of experts, activities have been slowed down or hampered by inadequate and delayed funding to perform quality control functions and research support services. It was reported that many of these activities are no longer performed effectively due to inadequate funds. The NSS, for instance, has not been able to produce adequate quantities of foundation seeds from the breeder seeds received from the research institutions. Also, inadequate number of trained personnel at the field as well as insufficient resources for training and technical assistance to contract growers has constrained the development of the seed market. Although the unit has representations at the regional and state
levels, its activities especially in terms of seed quality control and seed certification have also been reduced due to inadequate trained staff and financial constraints. These results in low output, and hence inadequate supply of certified seeds to the farmers, adulterated and unlabelled seeds on the market.

Lack of resources for training and information dissemination: The units charged with training manpower to handle the technical aspects of the seed industry are constrained by inadequate finance, equipment, and logistics. It was reported that staff training has been stalled; hence they lack staff to assist in seed testing, quality control, and in providing technical assistance to contract growers. Information about the seed industry, especially about the availability of improved seed varieties, is not readily disseminated to the farmers due to inadequate extension agents.

Poor seed distribution networks and rural infrastructures: Most rural areas are inaccessible due largely to the poor nature of the roads. This hindered the movement and performance of staff whose activities are required in the rural communities. Supply of improved seed varieties in such rural areas is also affected. Hence, farmers in such communities are deprived of the benefits of improved technology. One of the consequences of poor rural roads is the high cost of input delivery. The few dealers who find their ways into such rural areas often exploit the farmers through charging high prices for their stock. The NSS has put in place the Community Seed Development Program with aim to diffuse the improved seeds into rural communities. However, this scheme is not yet available nation wide.

4.0 Seed production, processing and marketing at the industry level

An examination of the formal systems of seed production and processing in developing countries shows the typical institutional pattern to be a mixture of public and private sector activities. It is only in Argentina and Chile that seed multiplication and processing are entirely handled by the private sector (Jaffee and Srivastava 1994). In Nigeria, the development of the
The development of superior higher yielding maize hybrids by IITA and national scientists encouraged private sector participation in the seed industry development (Joshua, 1999). Initially, the private seed companies were owned by multinationals but there were later replaced by indigenous private seed companies. The private seed companies identified from records of NSS registered with NSS as at 2000 and the types of seeds marketed are shown in Table 4. Among the companies listed, the UAC Seed (Nig) Ltd. has closed down and is no longer operational.

Table 4  Private seed companies registered with NSS, 2000

<table>
<thead>
<tr>
<th>Company name</th>
<th>Location</th>
<th>Type of seeds marketed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premier Seeds (Nig.) Limited</td>
<td>Zaria</td>
<td>OPV maize, rice, sorghum, cowpea, millet, wheat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hybrid maize and sorghum, Assorted vegetables</td>
</tr>
<tr>
<td>UAC Seed (Nig.) Limited</td>
<td>Zaria</td>
<td>OPV maize, rice, cowpea and sorghum</td>
</tr>
<tr>
<td>Alheri Seed (Nig.) Limited</td>
<td>Zaria</td>
<td>OPV maize and rice, Hybrid maize</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assorted vegetables</td>
</tr>
<tr>
<td>UT Seed, Limited</td>
<td>Jos</td>
<td>OPV maize and wheat</td>
</tr>
<tr>
<td>Savannah Seed Enterprises Limited</td>
<td>Jos</td>
<td>OPV maize and wheat, Hybrid maize</td>
</tr>
</tbody>
</table>

Source: NSS, 2000

4.1 Organisational structure of the seed industry

Private seed companies are limited liability companies registered under the Companies Act and with the NSS. Being independent economic entities, the companies organizational and management plans are vested in the Board of Directors, which is the highest decision-making body of the company. The organizational structures of the seed industries follow a similar pattern. A typical seed company is headed by the General Manager who is in-charge of the day-to-day running of the business, and is responsible to the board. The company has different units engaged with specialized activities. These include administration/accounts, production, processing, quality control, commercial/sales, and research and development units or departments. A Manager/Head of Unit who is responsible to the General Manager heads each unit.
Staff of the commercial/sales unit are posted to such offices located in different cities and are responsible to the Commercial Manager at the Head Office. Production of seeds by the company also takes place in locations outside the Head Office/Headquarters. The companies in addition to using out growers also produce seeds on their own farms. In such circumstances, staffs of the production unit are posted to reside in such places for more effective monitoring and supervision of activities going on in the fields. The research and development unit is, in addition to research/laboratory-based activities, is the extension arm in some of the companies. Most processing and quality control activities of the companies take place at the Headquarters.

### 4.1.2 Seed production arrangements

The private seed companies obtain breeder seeds from the research institutes, and foundation seeds from the NSS. They produce foundation seeds from the breeder seeds from research institutes. Certified seeds are produced from the foundation seeds (Fig.3). Production of certified seeds is done at the company’s own farm and by out growers/contract farmers. Some private seed companies in the past obtained quantities of foundation seeds from the ADPs; a practice that facilitated the company’s increased production of certified seeds. This arrangement is no longer easy because of the reduced activity of the ADPs due to poor funding. There is adequate monitoring and supervision of seed production activities on both the company’s farms and those of the contract farmers.

This is aimed primarily at producing high quality seed for the overall benefit of the company. The main characteristics that constitute quality and play a major role in the success or failure of crop establishment are: (a) the seeds must be genetically pure, representing the species or cultivars in question, morphologically well developed, undamaged and exhibiting characteristics typical of the variety, (b) cleaned, sometimes graded, and then tested for purity and germination capacity, and (c) free from pests and diseases (Muliokela and Kaliangile 1989). Thus, the seed companies have adequate and well-organized arrangements to ensure
production of adequate quantities of high quality certified seeds for use by Nigeria’s farming population.

Figure 3  Private seed sector marketing in Nigeria.
4.1.3 Seed processing

The private seed companies undertake the processing of their seeds produced both by their staff and the out growers. The processing plants are located at the Headquarters, and consist of modern machines with specialized functions for seed cleaning, sizing, grading, dressing, separating, and packaging. Trained staff of the companies operates these machines and carry out the different processing activities.

Most of the machines are imported and there is usually the problem of spare. Efforts are, however, being made to fabricate, locally, most of these parts especially the ones that wear out
quickly. This will conserve funds for the company as well as creating job opportunities for fabricators.

The companies package their products to meet the varied requirements and preferences of consumers. The research and development departments of the companies work on the information provided by the commercial/sales departments regarding consumers’ desires and tastes.

4.1.4 Quality control

Some of the private seed companies reported that their seed quality control activities commence even before seed cultivation takes place. It involves screening of eligible farms and farmers, knowing the seed field crop history, ensuring authentic source of foundation seed planted, maintenance of adequate isolation, and rouging of undesirable plant types.

Seed quality control in the private seed companies is usually in two phases, internal and external. The company’s monitoring team usually undertakes the internal seed quality control, while the external seed quality control is done by the NSS. The NSS carry out quality control checks and issue seed certification to the private seed companies.

4.1.5 Seed marketing and distribution

Seed marketing is a vital link between the seed producers and the farmers that ultimately use the seeds (Sastra, 1969). The private seed companies have developed distribution network for the marketing of their products. A typical seed sales distribution network of the private seed companies is illustrated in Figure 4.

Farmers, co-operative societies and NGOs often obtain their seeds through the ADPs/government agencies. Farmers usually prefer this channel. According to them, the
prices are comparatively lower than those charged by distributors/retailers and State Offices. Seeds from the ADPs are more likely to retain their purity than those, which passed through the distributors/retailers, for instance. Moreover, the ADPs are closest to the farmers, in the rural areas. Developing high yielding seeds alone without making them available and accessible to farmers in rural areas will not yield the intended benefits (Sastra1969; Bishawand and Kugbei, 1997; IFDC/IITA/WARDA/FGN 2000).

Figure 4  Private sector seed distribution network

4.2.2 Seed pricing
Seed companies take into consideration their direct and indirect costs, profit margin and marketing factors into consideration in pricing seeds. Direct costs include the costs for seed production, processing and distribution. The indirect costs are those expenses that are not
directly related to the volume of seeds produced or sold. These include management costs, taxes, insurances, building maintenance and repairs, and depreciation. Taking all these into consideration, the company’s purchase price for seed produced under contract are normally negotiated between the company and the seed growers (group/or association). While the private seed companies take these into consideration in fixing seed prices, seeds produced through the ADPs or community seed development programs do not, thus seed prices of seeds from the public seed producers are generally lower than those of private seed companies.

4.2 Constraints and Prospects of the Private seed companies

4.2.1 Constraints

The private seed companies in Nigeria are faced with certain problems that have impeded effective participation and investment in the industry. The major problems identified by key-informants include:

- **High costs**: Seed industry requires huge capital investments, especially in infrastructure and machinery. Materials for production and processing are equally expensive. Raising such capital is difficult, especially where there are no credit facilities and/or subsidies.

- **High risks**: The industry, like most other agricultural enterprises, is full of risks and uncertainties. Production of certified seeds, for instance, is carried out under unpredictable climatic and other conditions. A crop failure resulting from any of the natural hazards (drought, flood, attacks by pests and diseases) could have a devastating effect, especially when an insurance system is not guaranteed.

- **Macroeconomic instability**: Fluctuating exchange rates and high level of inflation discourage investments generally. The private seed companies, which import some of the machines and chemicals, are often victims of such instability, which results also in high interest rates and depreciation in the value of money.
Low demand for seed: The demand for improved seed is still relatively low, due mainly to poor promotion and marketing efforts, high prices, and the inability of farmers to purchase complementary inputs, especially fertilizer.

Lack of credit facilities: Private seed industries need financial support to expand production and enjoy the economies of scale. This support, which could be in form of provision of credit, incidentally, is not easy to come by.

Delays in releasing improved seeds: Seed development activities are time-bound. Delays in releasing improved varieties, for instance, are at a cost to the seed industries whose committed resources would be redundant.

Poor implementation of seed regulations: The body charged with this responsibility has not been effective with the result that private seed industries are usually left at the mercy of unscrupulous dealers/agents.

Unhealthy price competition with the public seed sector: Government often subsidizes the prices of seeds produced by the public seed sector, resulting in higher prices for seeds from the private seed industries. Consequently, the public seed sector enjoys greater patronage than the private seed industries.

4.2.2 Prospects

The national seed policy is in line with regional and international standards, and makes provision for the withdrawal of public sector agencies in favour of private sector in key areas of the seed industry. The private sector has the potential to supply inputs efficiently and cost-effectively. The capacity of the public sector in the production and distribution of certified seeds has been constrained by the deteriorating financial position of the participating institutions. Consequently, the availability to farmers of improved seeds has been inadequate to support anticipated accelerated growth in crop production.
According to Bishaw and Kugbei (1997), regardless of the progress made in the technical aspects of seed production, several important constraints still limit the effectiveness of the formal seed sector. Some of these include ineffective seed policies, inappropriate seed legislation, inappropriate approaches to variety development, an inflexible variety evaluation and release system, seed quality control measures, infrastructure and pricing policies, weak institutional linkages, and limited human resource development.

It has been reported that the development of private seed companies is vital because of their reliability, sustainability, cost-effectiveness, responsiveness to farmers’ needs, greater commitment to quality and generation of employment (Joshua 1997). The private seed sector by all indications is a better partner for the production of improved certified seeds and distribution to farmers. Conducive macro policy environment, improved access to finance, a developed and implemented regulatory framework, timely release of seed varieties, as well as improved human capital for market development are required.

5.0 Seed demand, supply and profitability analysis

5.1 Approach
The dearth of statistical agricultural data especially in developing countries has been reported (Okorji 1989; Shobowale 1994). In Nigeria, data on agricultural production, demand, supply, marketing, and consumption parameters are lacking or inadequate, and often distorted. The data generated for this study, for instance, provided varied figures for the same parameters in a few cases, while in some others the information was incomplete. To overcome these shortcomings, adjustments were therefore made, and mean values often taken in the cases of variations in certain figures.

5.2 Estimated seed requirement
Determination of seed requirement for the crops produced in a country is necessary because it provides a guide on production policies and decisions in respect of scale of operations,
resource needs, etc. for the government, research institutes, and other establishments responsible for the provision of the nation’s agricultural seeds. Seed requirements are determined mainly on the bases of land area intended to be cropped, seed rate, as well as technology and management systems in use.

The national and international research institutes in Nigeria produce different kinds of crops depending on their mandate (Table 2). For the purpose of this study, emphasis is placed on such crops as maize, rice, sorghum, millet, cowpea, soybean, and wheat. Table 5 presents the estimated seed requirements of selected arable crops in Nigeria, 2000-2005. The seed requirement for each of the crops increases over time. This is probably due to the expected increase in volume of output to meet the rising food demand in the country. This will be achieved through increasing the scale of operations by bringing in more land under cultivation as well as an increased adoption of improved seed varieties, among others. Farmers are becoming increasingly aware of the superiority of improved seeds over their local varieties (Muliokela and Kalingile 1989; Falusi 1994; Echekwu 1999; Utoh 1994; Cheema et al. 1994).

Variations, however, exist in the rate of increase in the seed requirement of the various crops. This is related to the level of importance attached to these crops by the farmers largely in terms of economic returns and socio-cultural values, which influence the land allocation pattern, and cropping system adopted (Okorji and Obiechina 1985). Maize, for instance, has high economic returns relative to most of the other crops; hence the land area under its cultivation is comparatively high (Utoh 1994; Shobowale 1994). Millet and sorghum have large areas of land allocated to their production although their seed rates are comparatively low. Maize, millet, sorghum, and cowpea have rising demand for domestic and industrial uses, and farmers expectedly put this into consideration in their resource allocation decisions.

Table 5    Estimated seed requirement (mt) for selected crops in Nigeria (2000-2005)*
<table>
<thead>
<tr>
<th>Crop</th>
<th>2001</th>
<th>2002</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>85,000</td>
<td>90,950</td>
<td>97,317</td>
<td>104,129</td>
<td>111,418</td>
<td>119,217</td>
</tr>
<tr>
<td>Rice</td>
<td>40,000</td>
<td>42,800</td>
<td>45,796</td>
<td>49,002</td>
<td>52,432</td>
<td>56,102</td>
</tr>
<tr>
<td>Sorghum</td>
<td>45,000</td>
<td>47,250</td>
<td>49,613</td>
<td>52,093</td>
<td>54,698</td>
<td>57,433</td>
</tr>
<tr>
<td>Millet</td>
<td>38,000</td>
<td>39,900</td>
<td>41,895</td>
<td>43,990</td>
<td>46,189</td>
<td>48,499</td>
</tr>
<tr>
<td>Cowpea</td>
<td>77,000</td>
<td>80,850</td>
<td>84,893</td>
<td>89,137</td>
<td>93,594</td>
<td>98,274</td>
</tr>
<tr>
<td>Soyabean</td>
<td>10,750</td>
<td>11,395</td>
<td>12,193</td>
<td>13,046</td>
<td>13,959</td>
<td>14,937</td>
</tr>
<tr>
<td>Wheat</td>
<td>18,750</td>
<td>20,063</td>
<td>21,066</td>
<td>22,119</td>
<td>23,225</td>
<td>24,387</td>
</tr>
</tbody>
</table>

Sources: Computed from (a) Shobowale (1994); (b) Utoh (1994); (c) Echekwu (1999) using an annual growth rate of 5 to 7% for the different crops.

5.3 **Demand for and supply of seeds**

Market demand is the total volume of a product that will be bought by consumers, at a certain period of time, in a specific location, and with certain marketing efforts (Andrein 1995). This defines the certified seed market under study. Among the factors that affect the demand for improved seeds are farmer’s perception of the yield or quality advantages of improved to local seeds, the price of seed, prices of other inputs, relative price of crops, farmer’s forecast of weather conditions, and the cost of reaching distribution/retail outlets. Demand for improved seeds can also be influenced by the effectiveness of promotional campaigns, the efficiency of distribution, and the availability of credit and other complementary inputs such as fertilizer (Falusi 1994; Utoh 1994).
The quantities of certified seeds of selected arable crops demanded in Nigeria 1994-2001 are shown in Table 6. The table shows that demand for all the seeds increased over the years. This is attributable to increasing awareness of farmers about the higher technical and economic efficiency of improved seeds over the local varieties. The extension agencies, through their promotional activities, created awareness and stimulated farmers’ interests in adoption of improved technologies.

Table 6  Demand (mt) for certified seeds in Nigeria, 1994-2001

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>3150.88</td>
<td>3803.04</td>
<td>4286.80</td>
<td>5161.63</td>
<td>6452.04</td>
<td>8065.05</td>
<td>10,081.31</td>
<td>12,601.64</td>
</tr>
<tr>
<td>Maize</td>
<td>4035.63</td>
<td>4294.54</td>
<td>4705.66</td>
<td>5148.50</td>
<td>6435.63</td>
<td>8044.53</td>
<td>10,055.60</td>
<td>12,569.50</td>
</tr>
<tr>
<td>Sorghum</td>
<td>993.61</td>
<td>1242.16</td>
<td>1542.64</td>
<td>1928.30</td>
<td>2410.30</td>
<td>3012.05</td>
<td>3,766.21</td>
<td>4,707.76</td>
</tr>
<tr>
<td>Cowpea</td>
<td>1085.70</td>
<td>1354.96</td>
<td>1693.70</td>
<td>2117.12</td>
<td>2646.40</td>
<td>3308.00</td>
<td>4,135.00</td>
<td>5,168.75</td>
</tr>
<tr>
<td>Soybean</td>
<td>1573.63</td>
<td>1967.22</td>
<td>2458.77</td>
<td>3071.00</td>
<td>3838.75</td>
<td>4798.44</td>
<td>5,998.05</td>
<td>7,497.56</td>
</tr>
<tr>
<td>Millet</td>
<td>1086.48</td>
<td>1358.10</td>
<td>1697.62</td>
<td>2113.54</td>
<td>2644.43</td>
<td>3305.53</td>
<td>4131.91</td>
<td>5,164.89</td>
</tr>
</tbody>
</table>

Source: Computed from (a) Echekwu (1999)  (b) NSS records using an annual rate of 25%

The demand figures for crops such as rice, maize, and sorghum are consistently high probably because of the relatively high level importance attached to them by the farmers, necessitating the allocation of large areas of land to their cultivation. The demand figures in the Table, however, may not represent all that the farmers are willing to buy, as availability of such seeds may be a factor determining the quantity purchased at a given point in time.
The quantities of certified seeds of selected crops supplied to farmers 1994-2001 are shown in Table 7. The supply figures for the crops generally increased over the years although there were decreases in the supply of some crops in some years. The quantities of certified seeds supplied will be influenced by factors such as availability of foundation seeds from which certified seeds are produced, regulatory mechanisms for the registration and release of certified seeds as well as production and other constraints. Seed supply as a percentage of total seed requirement, however, was only 5.4% for rice; 8.9% for maize, 4.2% for sorghum; 3.8% for soybean and only 1.2% each for cowpea and millet.

A comparison of demand and supply figures for certified seeds of selected crops (Tables 6 and 7) shows that demand far outweighs the supply of all the crops over the period covered in the study. In the case of soybean, the supply was only about 6% of what was demanded, although for maize, it was as high as 64%.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirement</td>
<td>2001</td>
<td>Demand in 2001</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7 Supply (mt) of certified seeds in Nigeria (1994-2001)
The demand projection for improved certified seeds 2002-2006 is shown in Table 8. However, the actual demand for the various seeds may likely be higher than what is projected if the constraints to effective implementation of the agricultural Seed policy are removed. Unless adequate steps are taken to significantly increase the production and supply of certified seeds to the farmers, the seed demand supply gap will worsen remarkably.

The demand figures would most likely be higher than those projected if the constraints to the effective implementation of the agricultural seed policy and problems hindering effective promotion and marketing of certified seeds. This also calls for greater motivation and support for the research institutes for increased production of breeder seeds, as well as the NSS, ADPs and private seed companies for increased production of foundation and certified seeds.

Table 8  Demand projections (mt) for certified seeds, 2002-2006

<table>
<thead>
<tr>
<th>Year</th>
<th>Rice</th>
<th>Maize</th>
<th>Sorghum</th>
<th>Cowpea</th>
<th>Cowpea</th>
<th>Soybean</th>
<th>Millet</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>1984.27</td>
<td>3470.20</td>
<td>725.20</td>
<td>627.32</td>
<td>627.32</td>
<td>255.99</td>
<td>424.00</td>
</tr>
<tr>
<td>2003</td>
<td>1861.72</td>
<td>3730.91</td>
<td>1058.76</td>
<td>661.31</td>
<td>661.31</td>
<td>271.21</td>
<td>460.06</td>
</tr>
<tr>
<td>2004</td>
<td>1007.69</td>
<td>4014.38</td>
<td>1222.08</td>
<td>466.98</td>
<td>466.98</td>
<td>288.07</td>
<td>324.10</td>
</tr>
<tr>
<td>2005</td>
<td>1852.16</td>
<td>4414.32</td>
<td>1372.53</td>
<td>658.48</td>
<td>658.48</td>
<td>331.09</td>
<td>288.00</td>
</tr>
<tr>
<td>2006</td>
<td>1706.62</td>
<td>4726.18</td>
<td>1407.98</td>
<td>751.32</td>
<td>751.32</td>
<td>356.75</td>
<td>324.10</td>
</tr>
<tr>
<td>2007</td>
<td>2049.45</td>
<td>5175.51</td>
<td>1661.17</td>
<td>828.76</td>
<td>828.76</td>
<td>365.32</td>
<td>406.00</td>
</tr>
<tr>
<td>2008</td>
<td>2190.56</td>
<td>6689.38</td>
<td>1874.92</td>
<td>866.55</td>
<td>866.55</td>
<td>416.18</td>
<td>445.85</td>
</tr>
<tr>
<td>2009</td>
<td>2293.74</td>
<td>8076.63</td>
<td>1963.53</td>
<td>939.08</td>
<td>939.08</td>
<td>427.83</td>
<td>575.03</td>
</tr>
<tr>
<td>2010</td>
<td>5.4</td>
<td>8.9</td>
<td>4.2</td>
<td>1.2</td>
<td>1.2</td>
<td>3.8</td>
<td>1.2</td>
</tr>
<tr>
<td>2011</td>
<td>18.2</td>
<td>64.3</td>
<td>41.7</td>
<td>18.2</td>
<td>18.2</td>
<td>5.7</td>
<td>12.8</td>
</tr>
</tbody>
</table>

Source: (a) Falusi (1994); (b) Shobowale (1994); (c) Echekwu (1999); (d) Annual Reports of Private Seed Companies
<table>
<thead>
<tr>
<th>Crops</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>15,711.88</td>
<td>19,639.84</td>
<td>24,549.80</td>
<td>30,687.26</td>
<td>38,297.38</td>
</tr>
<tr>
<td>Rice</td>
<td>15,752.05</td>
<td>19,689.06</td>
<td>24,612.57</td>
<td>30,765.72</td>
<td>38,456.25</td>
</tr>
<tr>
<td>Sorghum</td>
<td>5,884.70</td>
<td>7,355.88</td>
<td>9,194.85</td>
<td>11,493.56</td>
<td>14,366.95</td>
</tr>
<tr>
<td>Cowpea</td>
<td>6,460.94</td>
<td>8,076.17</td>
<td>10,095.21</td>
<td>12,619.02</td>
<td>15,723.27</td>
</tr>
<tr>
<td>Soybean</td>
<td>9,371.95</td>
<td>11,714.94</td>
<td>14,643.68</td>
<td>18,304.60</td>
<td>22,825.84</td>
</tr>
<tr>
<td>Millet</td>
<td>6,456.11</td>
<td>8,070.14</td>
<td>10,087.67</td>
<td>12,609.59</td>
<td>15,761.99</td>
</tr>
</tbody>
</table>

Source: Computed from (a) Echekwu (1999); (b) Utob (1994); (c) NSS Reports

The production figures of breeder and foundation seeds in the country from 1994 to 1998 are shown in Table 9. The volume of breeder and foundation seeds is inadequate to meet the certified seed requirements presently, and in the future.

### Table 9  
**Breeder and foundation seed production (Kg) of selected crops, 1994-1998**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BS</td>
<td>FS</td>
<td>BS</td>
<td>FS</td>
<td>BS</td>
</tr>
<tr>
<td>Maize</td>
<td>450</td>
<td>20500</td>
<td>461</td>
<td>22500</td>
<td>2800</td>
</tr>
</tbody>
</table>
This suggests the need for intensified efforts by the research institutes and the NSS to significantly increase the production of breeder and foundation seeds, and on the part of government to urgently address the constraints to effective performance of the activities of the research institutes, the NSS, and other bodies involved in the nation’s seed industry development. The present seed demand and supply figures are from the estimated seed requirement figures. Demand has to be stimulated and supply significantly increased to meet seed requirements as a necessary step towards the attainment of self-sufficiency in food crop production.

5.4 Profitability of private seed enterprises

The seed industries produce breeder, foundation and certified seeds. This analysis, however, emphasizes the production of certified seeds of the selected crops. The type and level of production of certified seeds of the selected crops varied among the industries, and over time. Production figures for certified seeds of the crops were considered over the period of three years (1999-2001) and average values were taken for the industries that produced the seeds of

<table>
<thead>
<tr>
<th></th>
<th>500</th>
<th>16985</th>
<th>500</th>
<th>32382</th>
<th>803</th>
<th>7800</th>
<th>2500</th>
<th>21,350</th>
<th>-</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>56</td>
<td>1200</td>
<td>50</td>
<td>4950</td>
<td>200</td>
<td>1600</td>
<td>1700</td>
<td>5600</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sorghum</td>
<td>15</td>
<td>2100</td>
<td>50</td>
<td>4950</td>
<td>200</td>
<td>1600</td>
<td>1700</td>
<td>5600</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cotton</td>
<td>30</td>
<td>2100</td>
<td>50</td>
<td>4950</td>
<td>200</td>
<td>1600</td>
<td>1700</td>
<td>5600</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Groundnut</td>
<td>42</td>
<td>900</td>
<td>63</td>
<td>1000</td>
<td>140</td>
<td>2599</td>
<td>1545</td>
<td>6300</td>
<td>670</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: Perara et al. (1999)
each of the crops to enhance analysis. Also average figures for prevailing market prices were used to determine the value of production. There were remarkable variations in production figures for seeds of the selected crops over the period considered. Hence, the use of average figures was to achieve greater representation of the situation in a typical seed industry.

The annual cost and return analysis for the seed industry is presented in Table 10. Maize was the most important crop produced by the seed industries both in terms of physical product and revenue realized, followed by rice. The industries, in addition to the selected crops, also produced assorted vegetable seeds. On the average, gross revenue of ₦56,853,380 was realized from sales of seeds. Revenue from the sale of seeds of some other crops (groundnut, cotton, etc.) was not considered, mainly because the crops were not common to all the seed industries.

Purchase of raw materials (parent seed, fertilizer, chemicals, etc) was the most important item of expenditure for the seed industry. The total fixed assets of the seed industries including land, buildings, plant and machinery, furniture and fittings, equipment, motor vehicles, etc. ranged between ₦15m and ₦28m. The depreciated values of these fixed assets were used in the analysis. Administrative and financial expenses constituted the major item of overhead costs, followed by marketing costs. Administrative expenses include salaries and wages, motor vehicle running expenses, transport and travelling expenses, printing and stationery, postage, telephone and telex, audit fees, etc; while financial expenses include interest on loans and overdrafts as well as bank charges. Marketing costs include advertising and business promotion, processing and packaging, carriage expenses, etc. The annual total cost of production amounted to ₦50,593,930. The net return realised was therefore ₦6,259,450. Seed production at the industry level is thus profitable. The net-return/total cost ratio of 1:0.12 indicates, however, that investment in the seed industry gives a rate of return of 12%, which does not compare favourably with the prevailing interest rate for such capital investment. This probably explains why the seed industry presently does not readily attract many investors. The relatively low level of profit realised by the seed industry over the period of study was as a result of certain factors, some of which are:-
Low output: The output of most of the crops is relatively low largely due to poor yields resulting from inadequate use of production inputs especially fertilizer and agrochemicals. It was observed in general that between 40 and 70% of the expected yield rates was achieved.

High cost of raw materials: Purchase of raw materials and other production expenses jointly accounted for about 72% of the total cost of production. The rising inflation in the country has increased the prices of goods and services tremendously. This has adversely affected the seed industry, and the consequences include, among others, capacity under-utilization and decreased scales of operation.

High overhead costs: Overhead costs accounted for about 23% of the total cost of production. Administrative costs alone contributed about 56 percent of the overhead costs. High overhead costs generally reduce profit margins.

The profitability of the seed industry can be significantly increased at least to levels comparable to returns in alternative investments if adequate quantities of relevant production inputs are employed to increase yield and output, as overhead costs should be significantly reduced through more prudent financial management.

Table 10  Annual cost and return analysis for the seed industry

<table>
<thead>
<tr>
<th>Crop</th>
<th>Output (kg)</th>
<th>Unit price (₦/kg)</th>
<th>Value of production (₦)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>299,966</td>
<td>110</td>
<td>32,996,260</td>
</tr>
<tr>
<td>Rice</td>
<td>124,245</td>
<td>120</td>
<td>14,909,400</td>
</tr>
<tr>
<td>Seeds</td>
<td>Total</td>
<td>Rate</td>
<td>Gross Revenue</td>
</tr>
<tr>
<td>----------</td>
<td>-------</td>
<td>------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Sorghum</td>
<td>68,158</td>
<td>100</td>
<td>6,815,800</td>
</tr>
<tr>
<td>Soybean</td>
<td>5,225</td>
<td>115</td>
<td>600,875</td>
</tr>
<tr>
<td>Cowpea</td>
<td>8,146</td>
<td>150</td>
<td>1,221,900</td>
</tr>
<tr>
<td>Millet</td>
<td>1,268</td>
<td>90</td>
<td>114,120</td>
</tr>
<tr>
<td>Wheat</td>
<td>860</td>
<td>115</td>
<td>98,900</td>
</tr>
<tr>
<td>Other seeds*</td>
<td>-</td>
<td>-</td>
<td>96,125</td>
</tr>
<tr>
<td>Gross revenue</td>
<td></td>
<td></td>
<td>56,853,380</td>
</tr>
</tbody>
</table>

**Costs**

<table>
<thead>
<tr>
<th>Item</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw materials</td>
<td>28,626,572</td>
</tr>
<tr>
<td>Production</td>
<td>7,816,730</td>
</tr>
<tr>
<td>Research</td>
<td>1,321,288</td>
</tr>
<tr>
<td>Marketing</td>
<td>5,093,961</td>
</tr>
<tr>
<td>Administrative/Finance</td>
<td>6,557,155</td>
</tr>
<tr>
<td>Depreciation</td>
<td>1,178,224</td>
</tr>
<tr>
<td>Total costs</td>
<td>50,593,930</td>
</tr>
<tr>
<td>Net returns</td>
<td>6,259,450</td>
</tr>
</tbody>
</table>

*Assorted vegetable seeds

6. **Conclusion and recommendations**

6.0 **Conclusions**

Nigeria’s Seed Industry has not developed remarkably about a decade after the formulation of the National Seed Policy and the enabling Agricultural Seed Decree No. 72 of 1992. Although the structure and implementation programmes of the Seed Policy were similar to those of India, the situation in Nigeria has not been very successful. The various bodies involved in the
implementation of Nigeria’s Seed Policy have not performed creditably. There still exist problems associated with non-availability of adequate quantities of certified seeds to the farmers due to low production of breeder and foundation seeds as well as poor seed distribution and information dissemination networks; slow release of improved varieties which encourages the dominance of the local low-yielding crop varieties; and the existence of adulterated, unviable and infested seeds due to poor implementation of seed quality regulatory mechanisms. Effective implementation of the seed policy by the relevant bodies was reportedly constrained, among others, by inadequate manpower and financial resources, as well as institutional problems.

The private seed industry is viable although the profitability level is comparatively low. This situation resulted mainly from use of inadequate quantities of production inputs due to high costs, macroeconomic instability, low demand, and unhealthy price competition with public seed sector, among others. Addressing these problems effectively at both policy and industry levels will provide the much needed push to realise the objectives of the seed policy.

6.1 Recommendations

Based on the findings of the study, the following recommendations are made to enhance effective implementation of the seed policy:

a) Strengthening the National Agricultural Seed Council (NASC): The composition of the NASC aimed at bringing in as many stakeholders as possible and was well intended. However, implementation of the responsibilities has been poor, due probably to the fact that some members because of the nature of their jobs are not well disposed to attend council meetings. To this end, it is suggested that more professional agriculturists should be drawn from the universities, research institutes and the private sector into the council to enhance performance.
b) Development of programme of activities for the council and other bodies: This entails putting in place a plan of action for the implementing bodies. By such programs, for instance, council and other meetings should be held regularly say, on a quarterly basis, for deliberations and decision-making. This may likely lead to the shortening of the time period between variety development, registration and release. Council at such regular meetings would more readily make approval for such.

c) Provision of adequate support to council and other bodies: NASC and other bodies responsible for the implementation of the seed policy should be adequately funded for effective performance. In addition, the various bodies especially the Crop Variety Registration and Release Committee, the Seed Standards Committee, and the Department of Training, Information and Seed Extension should be strengthened through the recruitment of an adequate number of the requisite personnel and the provision of logistics to effectively cover their responsibilities in the field.

d) Increase production of breeder seeds: For uniformity and consistency in quality, the NARIs should handle the production of breeder seeds in the country.

e) Increase production and distribution of certified seeds: Adequate arrangements to increase certified seed production, distribution and use by farmers should be put in place. Such arrangement would require the strengthening of both institutional and human capacity at the NSS, and ADPs. Also the availability and access by farmers to complimentary inputs, particularly fertilizers must be guaranteed.

f) Encouragement of private seed companies: This can be achieved through the provision of favourable interest rates, promotion of the planting of improved seeds by farmers, through demonstration plots, field days etc.

g) Provision of rural infrastructure: Construction of motorable roads to the rural areas, for instance, would enhance the movement of farm inputs including improved seeds to the
farmers, as well as the performance of activities such as information dissemination; seed quality control, etc., by staff of the relevant bodies.

h) Determine national demand and supply for seed:- Actual demand and their determinants for various seed types in Nigeria is not accurately known. There is need to conduct a survey of seed producers and users to determine demand and supply volumes and their determinants.

REFERENCES


NSS (National Seed Service) 1997. Strategies for Improving the Yield and Availability of Certified Seed to Nigerian Farmers.


Planning Research and Statistics Department 1996.


### Equation 1 Annex: Institutional roles and responsibilities in the national seed system

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>INSTITUTION</th>
<th>ROLE</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variety Development</td>
<td>CGIAR/NARIs</td>
<td>Development and introduction of new crop Varieties</td>
<td>Select against Biotic stresses. Facilitate introduction and testing of new varieties</td>
</tr>
<tr>
<td>Information Dissemination</td>
<td>NAERLS, NARIs &amp; Extension Services.</td>
<td>1. Issue variety trials report. 2. Diffuse variety performance for farmers' information</td>
<td>Diffuse Variety Test Reports.</td>
</tr>
<tr>
<td>Variety Release</td>
<td>NVRM</td>
<td>Release Recommendation Variety For the appropriate zones.</td>
<td>Prepare release documents for presentation to the appropriate Board.</td>
</tr>
<tr>
<td>Variety Registration</td>
<td>Variety Registration and Release committee, GRC/NVRM</td>
<td>1. Provisional Registration. 2. Final Registration.</td>
<td>Technical Sub-Committee meets to consider registration. The concept of provisional &amp; final registration has been developed.</td>
</tr>
<tr>
<td>Seed Production</td>
<td>NARIs</td>
<td>Production of Breeder seed.</td>
<td>1. Production of Breeder seed. 2. Varietal Maintenance.</td>
</tr>
<tr>
<td>Seed Processing &amp; Storage</td>
<td>NSS*, ADPs &amp; FASCOM, *Private seed Companies</td>
<td>1. Processing of Foundation Seed. 2. Processing of Certified seed. 3. Processing of FS &amp; CS</td>
<td>1. Facilitates for seed processing &amp; storage made available. 2. FASCOM &amp; ADPs share processing facilities.</td>
</tr>
<tr>
<td>Seed Certification</td>
<td>NSS</td>
<td>Inspection of BS, FS &amp; CS</td>
<td>Follow1992 Decree on seed Rules and Regulations.</td>
</tr>
<tr>
<td>Seed Marketing</td>
<td>FASCOM/ADP &amp; NARIs seed Dealers, *Private seed Companies</td>
<td>1. Market seed through farm Centres of FASCOM/ADPs. 2. Seed Dealers market seed to ADPs and public.</td>
<td>1. Fix prices to recover cost. (Govt/Private Seed Companies) 2. Seed dealers Negotiate price with ADPs 3. Sell to private farmers and public Establishment.</td>
</tr>
<tr>
<td>Seed Quality Control</td>
<td>NSS</td>
<td>Law enforcement on all Classes of seed</td>
<td>Regional Law enforcement officers in position to follow guidelines.</td>
</tr>
<tr>
<td>Seed Policy Formulation</td>
<td>National Seed Council (NSC)</td>
<td>1. Advise on seed sub sector policy 2. Monitor activities of the sub sector.</td>
<td>NSC organized under seed decree 72.</td>
</tr>
<tr>
<td>Workshop &amp; Training</td>
<td>NSS, *Private Seed Companies</td>
<td>Training Workshop organized and conducted by NSS, and Private Seed Companies.</td>
<td>A Seed Science and Technology Centre created recently in Makurdi to be involved in the training.</td>
</tr>
<tr>
<td>Monitoring of Seed Program Activities</td>
<td>FDA/APMEU/NSS</td>
<td>1. Monitoring &amp; Evaluation of Seed Projects. 2. Assessment &amp; Recommendation.</td>
<td>1. Monitor seed production in all states. 2. Evaluate seed projects and Recommend to Govt.</td>
</tr>
<tr>
<td>Private Sector Representation</td>
<td>National Seed Growers &amp; Industrial Association.</td>
<td>1. 4 Representatives of private seed industry now included in NSC. 2. Seed association of Nigeria now Registered.</td>
<td>1. Attend NSC Meetings. 2. Participate in seed policy formulation. 3. Take care of seed Industry. 4. Have Linkages with States ADP and NSS.</td>
</tr>
</tbody>
</table>
Annex 2 A Report on the stakeholders’ workshop
1.0 Introduction

1.1 In recognition of the importance of developing a modern and formal seed sub-sector, the government of Nigeria enacted the agricultural seed decree (law) in 1992. The decree also made provision for the establishment of the national seed council to implement the law through various statutory bodies. Over the years, various interventions have been made to promote the seed sub-sector in the country.

1.2 With funding from the United States Agency for International Development (USAID), the International Fertilizer Development Center (IFDC) was awarded a project “Developing Agricultural Input Markets in Nigeria (DAIMINA). One of the major thrusts of this project is to assist in the development of a conducive agri-input policy that will stimulate development of efficient agri-input delivery system through the private sector.

1.3 Based on its vast experience and contribution to the development of the seed sub-sector in Nigeria, the International Institute (IITA) was contracted by the IFDC to “Assess the seed sub-sector policy in Nigeria”. IITA constituted a study team that visited various institutions and collected data with the view to:

   i. Determine the extent to which the policies and programmes on seed input are implemented

   ii. Determine the effectiveness of the various bodies in the implementation of their responsibilities

   iii. Examine the effectiveness of the prevailing regulatory mechanisms pertaining to seed quality control

   iv. Determine the appropriateness of the organisation and implementation structures
v. Identify the constraints to effective implementation of the seed policy and programmes

vi. Estimate the seed requirement in Nigeria, and

vii. Make recommendations for improvement, based on the findings.

1.4 As part of the study approach, a stakeholder’s workshop was organized to discuss and validate the findings and recommendations of the study. Participants at the workshop were drawn from the private seed companies, the Federal Ministry of Agriculture and Rural Development, Research Institutes/Universities, USAID, and DAIMINA.

2.0 Opining Ceremony

Representatives from the Federal Ministry of Agriculture, agricultural research institutes, seed dealers associations and private seed industry and the DAIMINA project attended the opening ceremony.

2.1 Welcome Remarks by the DAIMINA Project Manager

Dr. U. A. Alkaleri formally welcomed all the stakeholders to the Command Guest House Conference Center, venue of the workshop. He expressed delight at the turn out. The Project Manager commended the IITA Assessment Team for an excellent study conducted. He enjoined all present to contribute positively in the deliberations so that at the end, an effective implementation of the existing Seed Policy could be achieved.

2.2 Opening Remarks by DAIMINA CoP

1. The Chief of Party, Dr. H. B. Singh, speaking on the objectives of the Seed Sub Sector Assessment Study, emphasized that seed is the major input in agriculture because only when seed is planted would other inputs be required. He said that at DAIMINA’s inception and for its success, there was the need to first of all know
the seed situation in Nigeria. To this effect, DAIMINA believing in the capabilities of IITA in the seed sector contracted IITA to carry out the study on the availability, production, constraints and marketing of seeds in Nigeria.

2. He also noted that in a benchmark survey conducted by the DAIMINA Project, it was discovered that over 60% of the seeds in circulation are below the potential certified quality. Therefore, agriculture cannot be said to increase when the seeds are of decreasing quality. He informed the stakeholders that with the approval of the MIS Project for 5 African countries with Nigeria as a major key player, agricultural trade between these countries would be enhanced and this would lead to improvement of agriculture in the country.

3. The chief of Party further revealed that only about 4 - 5% of the total seed used by Nigerian farmers come from certified sources; the balance is from the farmer saved sources as revealed by the assessment study. He said that only about 12% of the dealers contacted during the benchmark survey sell seed. Majority of the 12% dealers sell seed along with crop chemicals. In his conclusion, he stated that the assessment study was not intended to formulate an entirely new seed policy for Nigeria; rather, it was intended to make an input towards future improvement of existing seed policy.

2.3 Remarks by USAID representative

1. Mr. Abdulkadir Gudugi, Agricultural Economist of USAID joined the DAIMINA Project Manager in welcoming all the stakeholders. He apologized for the unavoidable absence of Dr Ravi Aulakh and Dr. Andrew Levin as they were preparing their end of year reports. He emphasized on the importance of seeds without which we would not be talking about agriculture.
2. He said that this was a forum where they could approach the reports of the study presented by IITA and contribute meaningfully/freely to the success of the seed sector. He commended the efforts of the DAIMINA Project and said that in as much as we expect to get financial assistance from International organizations, they should also encourage support from Nigerians and the government.

3.0 Plenary Session

The chairman of the session, Dr. A. Alkaleri stressed the importance of the study and the need to address the issues hampering the development of the seed sub sector and possibly come up with sustainable strategy for developing the seed sub sector in Nigeria. This session featured the presentation of the study report titled “Assessment of the seed sector policy in Nigeria” by the team leader.

3.1 Team leaders’ report

1. In presenting his report, Dr. Patrick Kormawa of IITA began by introducing the need for the study. He emphasized that even though there was an existing Seed Policy, it was not being implemented properly and effectively. Some of the areas addressed in the study were the extent the policies, programs, regulations and practices on seed input are being implemented as well as their effectiveness. He also highlighted some of the goals and aims of the national seed policy. He talked also on the production/distribution of seeds in the country as well as constraints to effective seed production.

2. He enumerated some of the problems being faced by the private sector. These were: - a) high investment cost on equipment, b) high risk involved in the business as sales are usually determined by rainfall and farmers’ knowledge, c)
macroeconomic instability, low demand of the input by farmers, d) lack of credit facilities due to high interest rates, e) delays in release of improved seeds, f) poor implementation of seed regulations and g) unhealthy price competition with the public sector.

3. He said that structures for implementing the policy are in place with relevant experts, however, their activity at the field level have been constrained by a) inadequate trained human resources (seed officers), b) inadequate facilities and logistics and c) inadequate financial support.

4. He said that the private seed Industry presently meets less than 10% of the National requirement and despite the availability of a seed policy and implementation structure, they are not expanding probably due to a) low demand for certified seeds, b) low prices for commodities and the relatively high prices of complimentary inputs

5. Some of the prospects of the Seed Industry he noted are that the National Seed Policy was in line with the regional and international standards; and the Private sector has potential to supply seeds efficiently and cost-effectively.

6. In conclusion, he recommended that:

   a) The different bodies established by the agricultural seed decree for the implementation of the existing National Seed Policy should to be strengthened to effectively perform the activities and responsibilities delegated by the decree.

   b) The NSS should be strengthened through appropriate human capacity development, funding and supportive equipments (including laboratories), vehicles etc.

   c) Efforts to increase effective demand for improved seed by farmers should be intensified through effective extension and seed promotional activities. This will
also require fair prices for farmers output as well as seeds so that they are adequately empowered to purchase seeds.

d) Capacity of state level implementation structure of the seed policy should be strengthened for internal quality control through training and provision of seed testing laboratories.

He rounded up by saying that the ultimate beneficiaries of this study are the farmers and as such it must be pursued to the fullest.

4.0 Syndicate Groups

Following the report presentation and discussions, two syndicate groups were formed to further celebrate on the report and discussions following the presentation. Participants were asked to join any of the two groups based on area of expertise and interest. The groups went into and came back to the plenary and presented their reports.

4.1 Syndicate Group A Report: Policy regulations and practices

The syndicate group considered the major constraints in the seed sector development, identified areas that need improvement/modification /changes and suggested how improvements can be effected. Observations and recommendations made by the group are as follows:

1. Policy constraints

Policy constraints identified by the group were as follows: -

i. Non-establishment of the national seed council as provided for in the seed decree.

ii. Poor policy implementation by the agencies established under the seed decree.

iii. Differential prices resulting from public sector subsidized seed production and distribution.
2. Regulatory constraints
   
i. Inadequate capacity to enforce seed regulations.
   
ii. Poor awareness and information dissemination on various regulations.

3. Practices
   
i. Inadequate training of seed staff at ADP level.
   
ii. Poor market information and distribution network.
   
iii. Inadequate funding to the NSS and other related agencies

B. Improvement of the supplier
   
i. Strengthening the existing structures including the statutory bodies.
   
ii. Involvement of farmers and farmers association in seed production under control of NSS
   
iii. Strengthening research through improved funding and capacity building.
   
iv. Strengthening of NSS, other agencies through improved funding and capacity building.
   
v. Need for aggressive promotional activities to create awareness for improved seed use through field days, demonstration, publicity, etc.
   
vi. Need to put in place regulatory mechanism for GMOs and LMOs.
   
vii. Development of small/medium seed enterprise to complement large seed companies in certified seed production.
viii. Conduct a national Seed Demand Survey to quantify seed demand parameters.

ix. Review of the seed development plan for the next 10 years and develop a seed sub-sector development plan of action.

4.2 Syndicate Group B Report: Policy Regulations And Practices

This group examined the seed business structure in Nigeria, identified key players and the market share of each player. The group proposed ways to increase the seed sales outlets, particularly in the private sector and developed an action plan for the development of an effective and competitive seed production and marketing system in Nigeria. Observations and recommendations made by the group are as follows:

Seed certification - areas of interest to note should include seed testing facilities, seed enforcement agency and seed quality control.

Seed law enforcement: private sectors should be able to strengthen their respective internal policy control as one of the responsibilities of seed industry.

To facilitate these developments the under listed suggestions were made:

a. Registration of all categories of seed operators i.e. the small, medium and large scale operators.

b. Identify the key players and access their performances to enhance quality control and data collection.

c. There should be registration guidelines and responsibilities to be attached to the registration processes and the support that they require.
Key players in the seed business

The group classified the key players into two categories.

i. The producers and

ii. The marketers

The producers

These are the multinationals/nationals e.g. the medium sized companies that are noted to consist of the experienced elite seed growers.

The marketers

These are seed marketers/ distributors/contact growers

- Agro input marketers i.e. stockiest for fertilizers, agro-chemicals, and seeds.

- Stockiest who collect from seed companies and then sell to these farmers.

Action Plan for developing seed production and marketing system in Nigeria

The group concluded that the action plan for the development of an effective and competitive seed production marketing system in Nigeria should include the following:

i. Capacity building of seed companies and institutions engaged in seed development.
ii. Identification of roles of each of the key players e.g. NSS producing foundation seeds etc.

iii. Develop cordial relationship between the private seed companies and the farmers

iv. Categorize key players in terms of performance and size.

v. Formation of seed farmer groups for marketing and distribution at state, and LGA, ward levels respectively.

vi. Creation of the demand for seeds through seed information awareness and motivation.

vii. Provision of credit facilities for the key players and the linkage of marketers to credit facilities.

viii. Encouragement of farmers’ seed cooperatives societies at the production level and the grassroots.

ix. Strengthening and harmonizing the activities of the national seed service (NSS) and project coordinating unit (PCU) on seed production programmes as well as the states organizations.

x. Promoting rural market penetration to help the private sector’s activities on seed marketing.

xi. Promotion of complementary input packages to farmers as production incentives at subsidized rates e.g. seeds plus agro chemicals.

xii. Promotion of commodity and input trade associations.

xiii. Promotion of input seeds to be effected at farmer level.
LIST OF ATTENDANCE

1. Dr. Adeyemi Joshua,
   Managing director/CEO,
   Premier Seeds Nig. Ltd.,
   Chikaji Industrial Estate,
   P. O. Box 1673,
   Zaria - Kaduna State.

2. Mr. Adekunle Salisu,
   Marketing Manager,
   Premier Seeds Nig. Ltd.,
   Chikaji Industrial Estate,
   P. O. Box 1673,
   Zaria - Kaduna State.

3. Mr. Mondiu B. Sarumi,
   DD/Registrar,
   National Centre for Genetic resources and
   Biotechnology (NACGRAB),
   Moore Plantation,
   P. M. B. 5382,
   Ibadan.

4. Dr. Candidus Echekwu,
   Principal Research Fellow,
   Institute for Agric Research (IAR/ABU),
   Ahmadu Bello University,
   P. M. B. 1044,
   Samaru, Zaria.

5. Senator Garba Taura,
   Chairman,
   NACOTAN,
   Kano.

6. Alh. Danazumi Husaini,
   Financial Secretary,
   NACOTAN,
   Kano.
7. Mallam Ismaila Adamu,
   Agronomist,
   Projects Coordinating Unit (PCU),
   FMA & RD,
   P. O. Box 325,
   KM 29 Suleja - Lokoja Highway,
   Sheda - Abuja.

8. Dr. Aminu M. Babandi,
   NC - CROPS,
   Projects Coordinating Unit (PCU),
   FMA & RD,
   P. O. Box 325,
   KM 29 Suleja - Lokoja Highway,
   Sheda - Abuja.

9. Dr. O. O. Oyebanji,
   Deputy Director,
   Projects Coordinating Unit (PCU),
   FMA & RD,
   P. O. Box 325,
   KM 29 Suleja - Lokoja Highway,
   Sheda - Abuja.

10. Mr. Odudu Etukudo,
    Senior Agric Officer,
    Projects Coordinating Unit (PCU),
    FMA & RD,
    P. O. Box 325,
    KM 29 Suleja - Lokoja Highway,
    Sheda - Abuja.

11. Mr. Abdulkadir Gudugi,
    Agric Economist,
    USAID - Nigeria,
    Metro Plaza,
    Abuja.

12. Dr. Patrick Kormawa,
    Economist,
    IITA,
    P.M.B. 5320,
Ibadan.

13. Dr. R. U. Okechukwu,
Research Associate,
IITA,
P.M.B. 5320,
Ibadan.

14. Mr. Nath Utuh,
PL Seed Industry Development,
National Seed Service (NSS),
Federal Department of Agriculture,
KM 31, Sheda - Abuja.

15. Alh. Ashiru Sabo Ringim,
Managing Director/CEO,
Nagoma Seeds,
150 Yankaba/Hadejia Road,
Kano.

16. Mr. S. A. Rasheed,
Principal Agric Officer,
Federal Department of Agriculture,
FMA & RD,
Area 11, Garki,
Abuja.

17. Akudiukwu Ifediorama,
Federal Department of Agriculture,
FMA & RD,
Area 11, Garki,
Abuja.

18. Mr. Godson Uzoigwe,
Assistant Director,
Federal Fertilizer Department,
FMA & RD,
Area 11, Garki,
Abuja.

19. Mr. Samuel O. Olayiwola,
Principal Land Resources Officer,
Federal Fertilizer Department,
FMA & RD,
Area 11, Garki,
Abuja.

20. Dr. Benson A. Adebusuyi,
Assistant Director,
Federal Fertilizer Department,
FMA & RD,
Kaduna.

21. Mr. Kehinde Adelugba,
National coordinator,
Planning, Monitoring & Evaluation,
National Seed Service (NSS),
Federal Department of Agriculture,
KM 31, Sheda - Abuja.

22. Mr. O. J. Shobowale,
Asst. Director/PL,
National Seed Service (NSS),
Federal Department of Agriculture,
KM 31, Sheda - Abuja.

23. Dr. Sunday E. Abimiku,
NC - Technical services,
National Seed Service (NSS),
Federal Department of Agriculture,
KM 31, Sheda - Abuja.

24. Mr. Lawrence O. Fajana,
Asst. Director,
National Seed Service (NSS),
Federal Department of Agriculture,
KM 31, Sheda - Abuja.

24. Abba Muhammad,
Director Tech. Services,
Kano State Agricultural & Rural Development Authority (KNARDA),
KM 9, Hadejia Road, Kano.
PROJECT STAFF PRESENT:

1. Alh. Sabiu Auwal,
   Zonal Coordinator, IFDC - DAIMINA Project, KNARDA Building, KM 9, Hadejia Road, Kano.

2. Dr. H. B. Singh,
   Chief of Party, IFDC - DAIMINA Project, Plot 737 Panama Street, P. O. Box 10948, Maitama, Abuja.

3. Dr. U. A. Alkaleri,
   Project Manager, IFDC - DAIMINA Project, Plot 737 Panama Street, P. O. Box 10948, Maitama, Abuja.

4. Mr. E. H. Ekpiken,
   MIS Specialist, IFDC - DAIMINA Project, Plot 737 Panama Street, P. O. Box 10948, Maitama, Abuja.

5. Mr. Ogaga Ikogho,
   Admin/Finance Officer, IFDC - DAIMINA Project, Plot 737 Panama Street, P. O. Box 10948, Maitama, Abuja.

6. Mr. Bola Ajadi,
   Marketing Specialist, IFDC - DAIMINA Project, Plot 737 Panama Street, P. O. Box 10948, Maitama, Abuja.

7. Blessing Ihediwa,
   Secretary, IFDC - DAIMINA Project, Plot 737 Panama Street, P. O. Box 10948, Maitama, Abuja.

8. Mrs. Evelyn Okwudolor,
   Secretary, IFDC - DAIMINA Project, Plot 737 Panama Street, P. O. Box 10948, Maitama, Abuja.