



**NATIONAL SEED  
TRADE ASSOCIATION  
OF GHANA - (NASTAG)**



# Overview of the Seed Sector in Ghana

**A TECHNICAL REPORT FOR NATIONAL SEED TRADE  
ASSOCIATION OF GHANA - NASTAG**

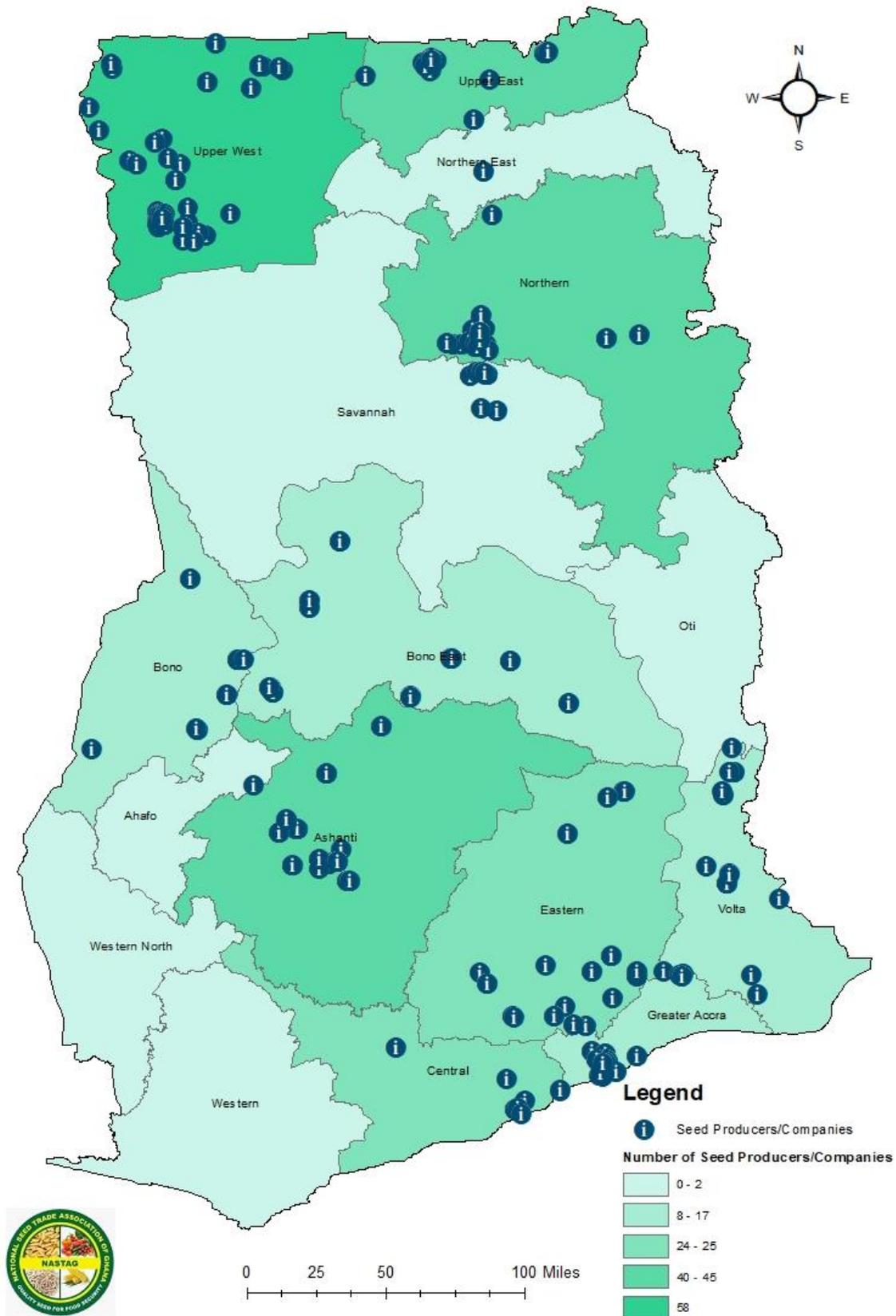
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Figure 1: Map of Ghana showing the locations of Seed Producers/Companies



# Contents

<b>LIST OF TABLES.....</b>	<b>6</b>
<b>LIST OF FIGURES .....</b>	<b>7</b>
<b>CHAPTER ONE.....</b>	<b>8</b>
<b>BACKGROUND CONTEXT .....</b>	<b>8</b>
1.0 Introduction .....	8
1.1 The Purpose of the Assignment.....	10
1.2 Methodology .....	10
2.0 Introduction .....	12
2.1 Major Seed Crop Production.....	14
2.1.1 Maize.....	14
2.1.2 Rice.....	14
2.1.3 Sorghum .....	14
2.1.4 Cowpea.....	15
2.1.5 Groundnut.....	15
2.1.6 Soybean.....	15
2.2 Key Market Trends.....	15
2.3 Private Seed Sector Companies Involvement in the Seed Industry .....	16
2.3.1 Private Sector Seed Companies.....	16
2.3.2 Seed Distribution and Marketing.....	16
2.3.3 Contribution of Seed Sector to Job Creation .....	17
2.4 Opportunities within the Ghana Seed sub-Sector .....	17
<b>CHAPTER THREE .....</b>	<b>19</b>
<b>BACKGROUND OF SEED PRODUCERS/COMPANIES IN GHANA.....</b>	<b>19</b>
3.0 Introduction .....	19
3.1 Number of Seed Producers.....	19
3.2 Gender.....	20
3.3 Age Categories of Owners of Seed Producers/Companies .....	21
3.4 Educational Level .....	22
3.5 Role of Seed Producers/Companies .....	22
3.6 Business Ownership .....	23
3.7 Legal and Professional Associations.....	23
3.8 Business Operation level .....	25
<b>CHAPTER FOUR .....</b>	<b>27</b>
<b>SEED PRODUCTION IN GHANA.....</b>	<b>27</b>
4.0 Introduction .....	27

4.1	Seed Production Business .....	28
4.2	Production System.....	28
4.3	The Volume of Certified Seed Production .....	29
4.4	Processing/Storage of Seeds.....	32
4.5	Promotion and Awareness Creation.....	33
4.6	Subsidy Programme .....	34
4.7	Capacity Building .....	35
	4.7.1 Training in Hybrid seed Production .....	35
4.7.2	Seed Conditioning and Marketing .....	36
	4.7.3 Training Received by Owners of Seed Producers/Companies.....	37
	4.7.4 Training Received by Staff of Seed Producers/Companies .....	38
4.8	Access to Foundation Seeds .....	39
4.9	Marketing Channels .....	40
4.10	Key Challenges and Priority Areas.....	41
	<b>CHAPTER FIVE.....</b>	<b>43</b>
	<b>CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>43</b>
5.1	Conclusions .....	43
5.2	Recommendations.....	43
	<b>APPENDIX A: CROP VARIETIES AND VOLUMES PRODUCED .....</b>	<b>45</b>
	<b>ANNEX B: PRODUCTION PER REGION.....</b>	<b>48</b>

# LIST OF TABLES

Table 1: Volume of Seeds Produced and Area under cultivation..... 32

Table 2: Selected Training topics received by Owners of the Seed Producers/companies.. 38

Table 3: Selected Training topics received by Owners of the Seed Producers/companies.. 38

# LIST OF FIGURES

Figure 1: Map of Ghana showing the locations of Seed Producers/Companies.....	<b>Error!</b> <b>Bookmark not defined.</b>
Figure 2: Key players within the seed sector in Ghana.....	13
Figure 3: Map of Ghana Showing the Locations of Seed Producers/companies.....	18
Figure 4: Number of Seed Producers/Companies in Ghana.....	20
Figure 5: Gender of Seed Producers/Owners of Seed Companies.....	21
Figure 6: Age of Seed Producers/Owners of Seed Companies .....	21
Figure 7: Educational Level of Seed Producers/Owners of Seed Companies .....	22
Figure 8: Roles Played by the Seed Producers/Companies .....	22
Figure 9: Business Ownership .....	23
Figure 10: Legal/Professional Associations.....	24
Figure 11: Registration with Ghana Seed Inspectorate Division of the PPRSD .....	24
Figure 12: Business operation level .....	25
Figure 13: Map of Ghana Showing locations of seed producers/companies and key production zones .....	26
Figure 14: Domestic and Imported Certified Seeds in Ghana.....	27
Figure 15: Type of Crop Seeds produced by Producers/Companies .....	28
Figure 16: System of Certified Seed Production.....	29
Figure 17: Comparison of certified seeds produced (2019 and 2022) .....	30
Figure 18: Map of Ghana Showing Key Production zones for certified maize seeds .....	31
Figure 19: Processing of Seeds .....	32
Figure 20: Seed Storage facilities used by Seed Producers/ Companies .....	33
Figure 21: Awareness/demand Creation .....	34
Figure 22: Extension Delivery services .....	34
Figure 23: Subsidy Market Channel for Seed Producers/companies.....	35
Figure 24: Seed Producers/companies trained on Hybrid Seed Production .....	35
Figure 25: Trainers of hybrid seed production .....	36
Figure 26: Seed Producers/companies trained on Seed Conditioning and Marketing .....	36
Figure 27: Trainers of seed conditioning and marketing .....	37
Figure 28: Organization/Companies Producing Foundation Seeds .....	39
Figure 29: Reasons for preference of supplier of Foundation seeds.....	40
Figure 30: Distribution of certified seeds .....	40

# CHAPTER ONE

## BACKGROUND CONTEXT

### 1.0 Introduction

In Ghana, agriculture contributes 19.7 percent of the current GDP, accounts for over 30 percent of export earnings, and represents a significant source of inputs to the manufacturing sector. In 2019, the agriculture sector absorbed 33.5 percent of the labour force. Thus, agriculture remains the critical sector of Ghana's economic growth and development process. It is estimated that 57 percent (136,000 km<sup>2</sup>) of the total land area (238,539 km<sup>2</sup>) can be classified as agricultural land, with about 58,000 km<sup>2</sup> (24.4 percent) under cultivation and 11,000 hectares are under irrigation.

In recent times, smallholders' production of food crops has increased due to Government policy interventions, including Planting for Food and Jobs (PFJ). However, it is still characterized by low productivity due to several factors, including limited access to improved certified seeds, poor extension services, ageing farmers, and limited access to financial services. Access to and adoption of improved certified seeds remains a debilitating factor to increased productivity by smallholder farmers, who contribute to more than 80 percent of the total food production in Ghana.

Thus, the availability of quality seeds constitutes a significant pathway for achieving national food security goals (Ministry of Food and Agriculture, 2015). To this end, the Government, development partners, and the private sector have made substantial investments, promoted breeding programs, and supported seed value chain actors, including local seed companies and agro-input dealers. However, with these significant investments, the Ministry of Food and Agriculture estimates that less than 5 percent of Ghanaian farmers can access improved seed from approved sources (Ministry of Food and Agriculture, 2015).

The bane is attributed to the inability of the formal seed sector to produce desired quality and quantities of certified seeds since the privatization of the sector in 1989. Studies have revealed that only about 60 percent of the certified seed produced is sold and used, implying unacceptable carry-overs in a situation of scarcity. For example, of the three-year average (2011 to 2013), the total certified seed requirement for maize and rice was 23,152 metric tons and 14,000 metric tons, respectively. However, only 2,634 metric tons of maize and 2,013 metric tons of rice were produced, representing 11 percent and 14 percent of the total requirements (Ministry of Food and Agriculture, 2015). There is, therefore, a huge domestic market in Ghana for certified seeds.

The passage of the Plants and Fertilizer Act, 2010 (Act 803) and its Regulations have paved the way for greater private sector participation in the seed sector. Additionally, the re-introduction of fertilizer and seed subsidies and subsequent introduction of the Planting of Food and Jobs programme is seen as a significant push towards increased adoption of certified seeds.

Quality improved seeds remain one of the cardinal ingredients to achieving food self-sufficiency and poverty reduction. The Ghanaian Government and its development partners have prioritized the development of the seed sector by implementing various policies to address challenges within the seed sector. Public sector dominance is giving way to growing private sector engagement and investment in the seed system in Ghana, leading to the emergence of seed producers/companies. However, the institutions and structures required to support the seed industry activities are poorly equipped and need to be streamlined and adequately equipped to ensure that the seed sector plays its critical role in agricultural development.

The Government's agriculture modernization program aims to improve production efficiency, achieve food security and profitability for farmers, and significantly increase agricultural productivity as the basis for industrialization, job creation, and export. The Government has increased subsidies on retail prices of seeds, fertilizers, and other agro-chemicals. It focuses on developing irrigation schemes, facilitating the provision of community-owned and managed small-scale irrigation facilities across the country, especially in northern Ghana, through the "One Village, One Dam Policy," and improving the extension officer to farmer ratio. (Agriculture Sector in Ghana Review, 2020)

Among the seed crops, maize is the most widely grown cereal in Ghana and a priority crop for the Government for food and income security due to the growing domestic demand for human and animal consumption. It is an important cash crop for income generation by smallholder farmers and has the most commercialized seed system with active private sector participation. Rice is the second most grown cereal, but Ghana is a net importer making it an important food security crop and government import substitution. (AGRA, 2016).

To guide, promote and facilitate the accelerated development of the seed industry, Ghana has developed a comprehensive Seed Policy that captures the interests of the whole spectrum of actors along the agriculture value chain in the seed industry. The main objective of the Seed Policy is to support the development and establishment of a well-coordinated comprehensive and sustainable private sector-driven seed industry through systematic and strategic approaches that continuously create and supply new, improved varieties for use by farmers.

The Seed Policy supports successful seed production, certification, marketing, and seed security systems that form the basis for food security and support the agriculture sector's overall development. The Policy also provides implementation guidelines to guide the general approach to implementing the Policy. (MoFA, 2018). The production of certified seed and planting materials for sale to farmers in Ghana is a private sector-driven activity in which direct public sector seed production, marketing has been terminated, and small and medium-scale seed enterprises, including small-scale farmers and commercial firms, produce and sell seeds and planting materials. In this privatized seed market, small and medium-scale seed growers and dealers are registered and trained annually to produce and market seeds in Ghana.

The formation of the National Seed Trade Association of Ghana (NASTAG) is a direct response to supporting the competitiveness of Ghana seed value chain through business and technical capacity development of its members, promoting effective collaboration among and between industry players, serving as the mouthpiece on advocacy issues relating to seed and

provision of general seed information. It has positioned itself to support the industry players to develop their niche to the fullest potential for individual and collective benefits, ultimately contributing to enhancing agricultural production that will improve farmers' livelihoods and overall agriculture in Ghana.

This report is an output of a census conducted to collect geo-referenced data on a wide range of characteristics of seed companies and seed producers in Ghana. This report describes Ghana's private formal seed sector in Ghana: the number of seed companies, basic enterprise characteristics, types of crops and seeds sold, challenges to producing quality seeds.

## 1.1 The Purpose of the Assignment

The need to establish a national database of seed producers/companies has become imperative in recent years. With support from USAID, the first seed Directory was published by NASTAG in 2018. However, since 2018 the Directory was published, it has not been updated due to financial challenges stemming from unforeseen challenges, including the COVID-19 pandemic. However, three years after the first Directory was released, AGRA made funds available under the USAID - GIAT project to help update the Directory.

### **The objectives of the assignment were to:**

- Update the appropriate tools/instruments to collect relevant data to obtain information on existing seed producers or importers in Ghana
- Update the digitized questionnaire to allow GPS coordinates, pictures, and real-time access to relevant data of these producers and Importers
- Obtain quantities of seeds produced or imported by these companies for the year
- Develop digital forms to profile all seed companies/producers in Ghana
- Develop and provide the electronic copy of the Directory of all seed producers/seed companies and other relevant values chain actors

### **The key deliverables included:**

- Report on the task accomplished indicating the detailed landscape of the seed producers/Companies in Ghana
- Present an updated printout of comprehensive Seed Companies & Producers Directory
- Make the soft copy of the data developed available to NASTAG for publishing
- Make a presentation at the 2nd National Seed Forum in November 2021

## 1.2 Methodology

In 2018, a census was conducted profiling all seed producers/companies in Ghana. Over 280 seed producers/companies were profiled using a real-time mobile phone data collection application. A semi-structured questionnaire was used to capture both text and geo-referenced data. The Consultant received the list of all the seed producers/companies profiled in 2018 from NASTAG. Additionally, the Consultant obtained a list of all seed

producers/companies from the Plant Protection and Regulatory Services Directorate (PPRSD) of the Ministry of Food and Agriculture (MoFA). This helped cross-check and ensure all seed producers/companies were profiled. A similar approach was employed in the current assignment to update the data.

The previous questionnaire was reviewed to reflect the current needs of NASTAG and its stakeholders. The questionnaire was digitized for both web and mobile using the Kobo toolbox. It was then pre-tested to check for inconsistencies and ensure that the identified ambiguities and errors/bugs were fixed. A series of meetings were held with NASTAG to ensure the final deliverable meets the expectations of all the stakeholders.

Enumerators were recruited and trained to collect data from all the 16 regions of Ghana. They were taken through the questionnaire to understand the content and familiarize themselves with the questions and the data collection tools to ensure the questions elicited accurate answers. Guidelines, objectives, and expectations of the fieldwork were spelled out.

All enumerators participated in several role-playing exercises as part of the training. They were assigned to their respective regions to profile and update seed producers/companies based on the list obtained from NASTAG and PPRSD.

Data collected from seed producers were verified, checked for errors, and cleaned for accurate and proper data analysis and reporting. The Kobo toolbox software application was used to capture, process, and compile data. The data were analysed using Microsoft Power BI software and Microsoft Excel. The data analysed will be made available to NASTAG for publication on the website.

# CHAPTER TWO

## SEED SYSTEMS IN GHANA

### 2.0 Introduction

Ghana has a significant seed industry that combines formal and informal seed production and delivery systems. The Formal seed system comprises a series of interlinked activities, from genetic resource management; variety breeding research and crop improvement; variety testing and release; conditioning and storage; marketing and distribution; to farmers' final use of the seeds with quality control performed at each stage.

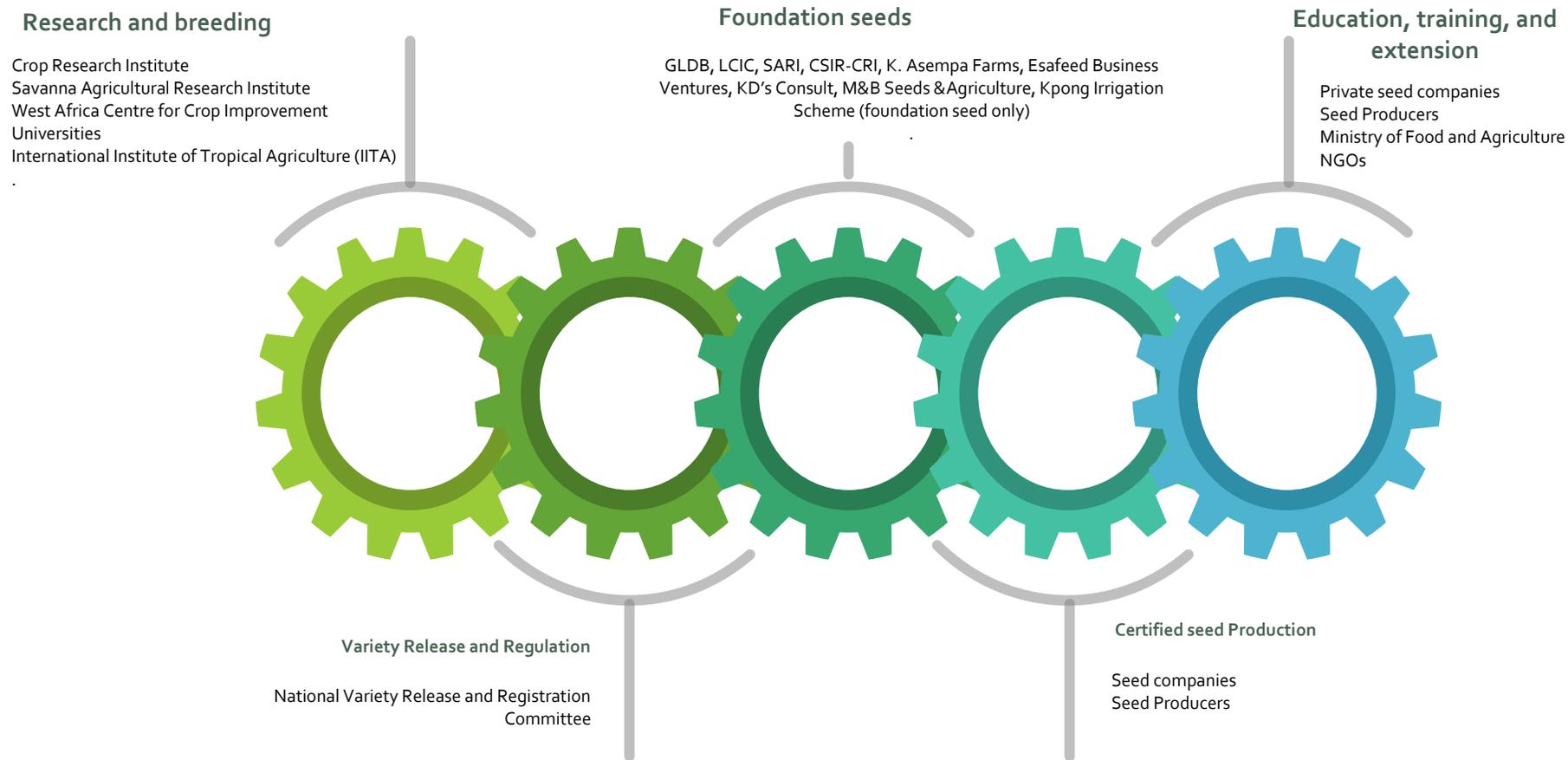
In Ghana, the informal seed sector is primarily served by farmers who save seeds obtained from their fields through exchange or purchase from the local market. On the other hand, the Informal seed system describes the local seed system that relies on farmer saved seeds. Although seed production follows a similar process as the formal system, including variety selection, testing, introduction, multiplication, dissemination, and storage, there is little regard for quality control and genetic purity.

The seed industry covers seeds and planting materials of several crop varieties developed, released, registered by Ghanaian institutions, and produced and marketed. The informal system generates and maintains less uniform materials adapted to local requirements and may provide a conduit for exchanging materials derived from improved varieties. It is characterized by "seeds" that the farmer can lay hands on at planting time. These seeds are fraught with contamination challenges, high disease incidence, low yields, and more often than not, are not adapted to changing and unpredictable weather conditions. (AGRA, 2016).

The informal seed system constitutes the dominant seed system that serves the majority (80%) of farmers across all major food crops. Adopting improved seeds is low across the country, with variations depending on the seed and seed type. (AGRA, 2016). The formal seed system in Ghana is headed by the Ministry of Food and Agriculture (MoFA), which hosts the National Seed Council (NSC) and National Variety Release and Registration Committee (NVRRC). The National Agricultural Research Institutes (CRI and SARI) are responsible for varietal research and breeder seed development. The Grains and Legumes Development Board (GLDB) has the mandate to produce foundation seeds (see Figure 2).

The formal seed system has been heavily public-sector-driven but opens up to private sector participation. Under the formal seed system, 238 crop varieties have been officially released and registered as of 2020. These crop varieties cover maize, pearl millet, rice, sorghum, common beans, cowpea, groundnut, soybean, cassava, cocoyam, frafra potato, sweet potato, taro, yam, pepper, and cotton.

**Figure 2: Key players within the seed sector in Ghana**



## 2.1 Major Seed Crop Production

### 2.1.1 Maize

According to the Ghana Early Generation seed study report 2016, about 10% and 3% of maize area planted were cropped with Open Pollinated Varieties (OPVs) and hybrids respectively from the formal system in 2015. The informal system supplied 87% of the seed. There is a limited production of local hybrids by private seed producers/companies.

Maize has the most developed Early Generation Seed (EGS) value chain with the most active private sector participation. Imported hybrids are growing in popularity due to their superior yield performance and marketing by Multinational Companies (MNCs). Of the over 40 metric tons of Foundation Seed required in 2014 for local production, Ghana Legumes and Grains Development Board (GLDB) supplied less than 50% with the NARI's and private sector producing to augment the supply. Maize accounted for 71% of improved seeds output in 2015. Obaatanpa accounted for 77% of total local maize seed production of 2,105 metric tons.

The current output levels of OPV maize of 2,028 metric tons can supply 32% of farmers who replace seeds every three years. Base case and best demand are projected to be 4,706 metric tons and 4,664 metric tons, respectively, as non-adoption declines from 68% to 37% and seed replacement rates improve from 3 to 2 years. Acreage under cultivation is projected to decrease from 97% to 75% as OPVs are replaced by hybrids.

Acreage under cultivation with hybrid maize is projected to increase from the existing 3% to 25% producing base case and best demand of 1,981 metric tons and 4,951 metric tons, respectively.

### 2.1.2 Rice

In 2015, 3% of the total land area planted to rice was supplied by seeds from the formal system. The informal system accounted for 97% of seed sources. In recent times, GLDB has been unable to produce any significant quantities of foundation seeds resulting in Savannah Agricultural Research Institute (SARI) and Crop Research Institute (CRI) producing Foundation Seeds to augment the shortfall in supply. The current output of 587 metric tons can supply 15% of farmers who replace seeds every six years. Base case and best demand are projected at 1,858MT and 3,255 metric tons, respectively, as non-adoption decreases from 85% to 58% and seed replacement rate improves from 6 to 3 years. (AGRA, 2016)

### 2.1.3 Sorghum

Breeding work on sorghum has been slow-paced, with only five varieties released since 1971. In 2015, 1% of the area planted to sorghum was supplied by seeds from the formal seed system, while the informal system supplied 99% of seeds. Non-adoption rates declined from 94% to 74%, and seed replacement rate improved from 7 to 3 years in the base case and best demand of 26 metric tons and 62 metric tons, respectively. The current output of 10 metric tons supplies 6% of farmers who replace seeds every seven years.

### 2.1.4 Cowpea

For cowpea, seeds from the formal system can only plant 1% of the area cropped. The informal system supplies 99% of the seeds. The current output of 55 metric tons can supply 5% of farmers who replace seeds every four years. Base case and best demand are projected at 224MT and 291MT, respectively, as non-adoption reduces from 95% to 79% and replacement periods improve from 4 to 3 years.

### 2.1.5 Groundnut

Only 0.1% of the groundnut area cropped was planted with improved seeds. This is the lowest for all crops under review. The informal sector predominantly caters to the seed needs of farmers. The existing output of 36 metric tons supplies 1% of farmers who replace seeds every ten years. Base case and best demand are projected at 621 metric tons and 1,082 metric tons, respectively, as non-adoption falls from 99% to 84% and replacement years decline from 10 to 5 years.

### 2.1.6 Soybean

Seed from the formal system can plant 6% of the area cropped, with the informal system supplying seed for the remaining 94%. The current output of 213 metric tons supplies 25% of farmers replacing seeds every four years. Estimation of non-adoption reducing from 75% to 55% and replacement years improving from 4 to 2 years produces base case and best demand of 460MT and 863MT respectively.

## 2.2 Key Market Trends

According to the Seed Inspectorate Division, MOFA, in 2018, certified maize seed production reached 8,430 metric tons, up from 1,510 metric tons in 2017. Also, certified rice seed production in 2018 accounted for 5,200.0 metric tons, which was 881.0 metric tons in 2017. Furthermore, government initiatives such as subsidy programs are a prominent factor behind the increased demand for certified seeds. Maize plays a significant role in Ghana's food security. To this end, the Government is making a considerable investment to ensure adequate maize production to meet the domestic consumption requirements. This has led to the awareness-raising of the importance of using hybrid maize seed to improve productivity.

About 10.0% and 3.0% of the maize area planted is cropped with OPVs and hybrids, respectively, from the formal system in 2015, while the informal system supplies 87.0% of the seeds used by farmers. About 55 varieties of maize, including one foreign hybrid (Sika Aburo), have been released in Ghana. Obaatanpa is the most widely known and grown improved maize seed, although the variety is old and not adapted to drought. Newer OPVs like Omankwa, Abontem, and Honampa are slowly gaining acceptance because of their shorter growth duration, tolerance to drought, and decent yields. Commercial farms (over 1,000 ha) tend to grow mainly imported hybrid maize seeds. In comparison, smallholder farmers (3 ha) usually grow Obaatanpa and are likely to save the seeds for a while before replacing them.

## 2.3 Private Seed Sector Companies Involvement in the Seed Industry

### 2.3.1 Private Sector Seed Companies

Opening up the seed industry by Government has seen increasing private sector participation in Ghana's seed system, especially in the production and marketing of certified seeds. As of 2015, there were about 225 active members of the Seed Producer's Association of Ghana (SEEDPAG) in Ghana, of which 14 could be classified as medium-size seed companies. The rest were individual seed producers with small operations.

The seed market for Ghana is relatively fragmented as the top-five companies account for around 40.0% of the market. In contrast, the rest is accounted for by seeds provided by Ghana's agricultural universities and research institutions. SEEDPAG has the largest share among all other companies, as it is an association of seed breeders and has a strong portfolio of crops from which it can provide seeds to farmers. Key companies include M&B Seeds, Corteva Agriscience, Seed Co. Limited, Yonifah Seeds Ltd.

Major certified seeds produced and sold are maize (hybrid and OPV), rice, sorghum, cowpea, soybean, and groundnut, with the most significant percentage being OPVs. Maize is the most produced and commercialized. Many seed companies have invested resources to expand their operations but still experience technical challenges in production, which sometimes affect seed quality. Lack of appropriate seed conditioning and storage facilities and poor distribution network and product handling systems compound the problem of maintaining product quality. In addition to this, over-reliance on rain-fed production and technical difficulties results in inconsistent output volumes, thus raising the cost of production (AGRA, 2016).

### 2.3.2 Seed Distribution and Marketing

In Ghana, seed companies and producers sell directly to smallholder farmers and lead farmers through their distribution networks, negotiated/contract supply to commercial farmers and aggregators (who supply improved seeds to out-grower schemes as part of input credit support) through agro-input dealers. Government and projects serve as significant sources of demand, selling as much as 60% of their output through these channels.

According to the AGRA Early Generation Seed Report (AGRA, 2016), most seed companies have low marketing budgets indicating that many did not have dedicated marketing teams. Furthermore, information flow was poor, and nearly all seed producers had no working relationships with key lead farmers in their operational areas. As has been the trend, aside from these issues, awareness among farmers about recently released varieties was low, but even more worrying was the general lack of knowledge about product availability and sources of supply for farmers interested in procuring improved seeds.

### 2.3.3 Contribution of Seed Sector to Job Creation

The Ghanaian economy is broadly categorized into agriculture (including forestry and fishing), industry and service. Regarding the labor force distribution by economic activity, agriculture contributed 44.7% of total employment, with the service and industry sectors accounting for 40.9% and 14.4%, respectively (GLSS6, 2014).

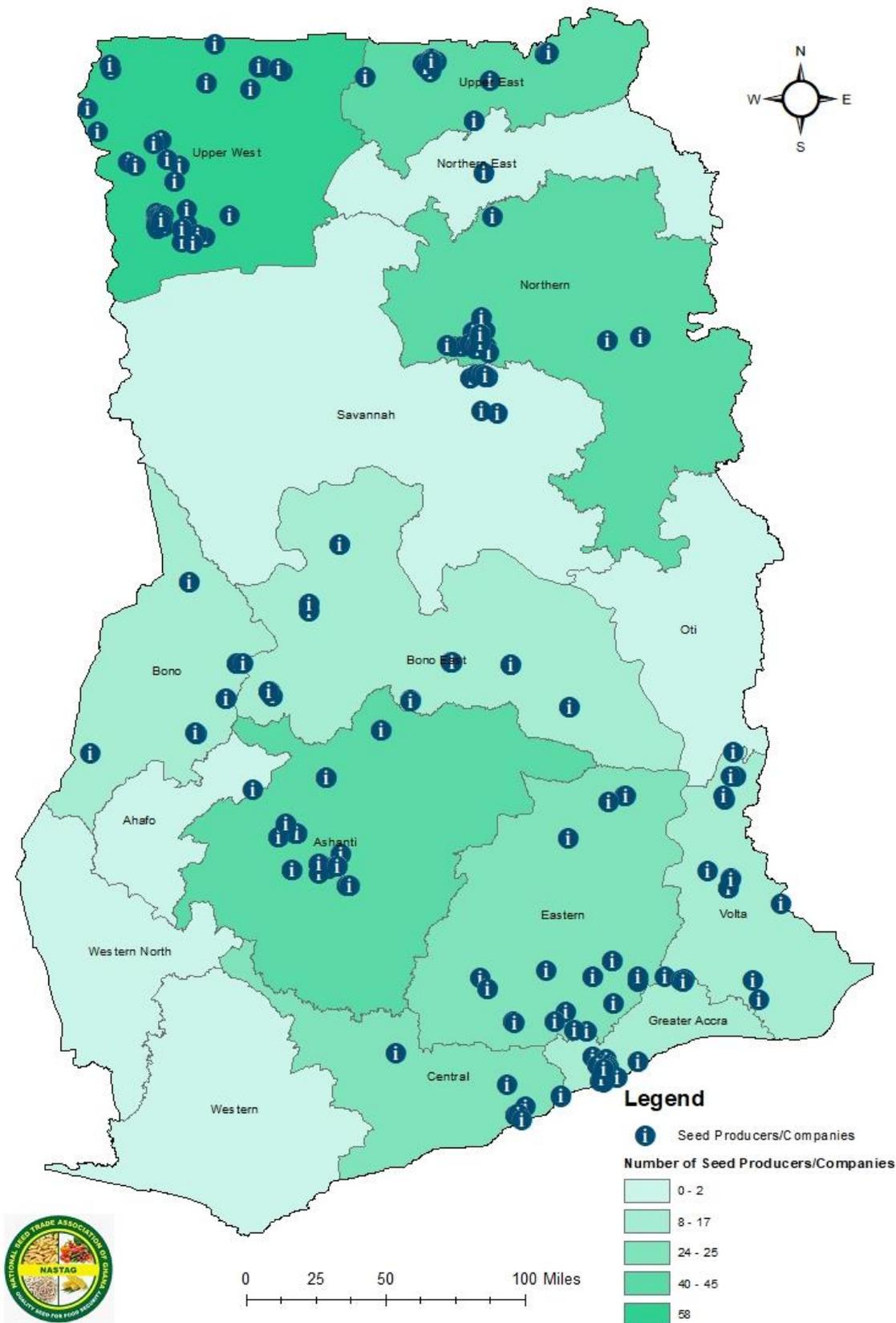
Currently, several government programs aim to change the narrative of farming as the purview of old uneducated people. One of these is the "Planting for Food and Jobs" program designed to promote growth in food production and create jobs across the country. The program is structured around seed provision, Fertilizer, Extension Services, and Marketing. The seed sector alone employs more than 6,000 people annually (NASTAG Survey, 2018).

## 2.4 Opportunities within the Ghana Seed sub-Sector

Despite its relatively young age, Ghana's seed industry has lots of prospects that, given the needed attention, will go a long way to help develop the industry. The National Seed Policy and Plants and Fertilizer Act have created the enabling environment for the thriving seed industry. The establishment of a private entity, NASTAG, has created the platform ensuring seed companies are well represented in relevant policy discussions.

Again, for the past three years, only eight varieties of four crops, namely maize, rice, soybean, and cowpea, have been released. This shows a low level of investment by both the public and private sectors in varietal development. In addition to this, Ghana despite being part of the ECOWAS regional seed harmonization arrangements, the level of seed trade in Ghana is low. The low level of regional trade partly contributes to the low volumes of certified seed sold in the country (less than 2,000 metric tons in 2016). This presents a huge investment area for investors. (TASAI, 2017)

Figure 3: Map of Ghana Showing the Locations of Seed Producers/companies



# CHAPTER THREE

## BACKGROUND OF SEED PRODUCERS/COMPANIES IN GHANA

### 3.0 Introduction

The Chapter presents background information about seed producers/companies in Ghana. It provides data on the number of seed producers/companies in Ghana, gender, age, educational level, and business registration status.

It attempts to compare the previous census to the current census and determines if there is a pathway to growth in the seed industry in Ghana.

### 3.1 Number of Seed Producers

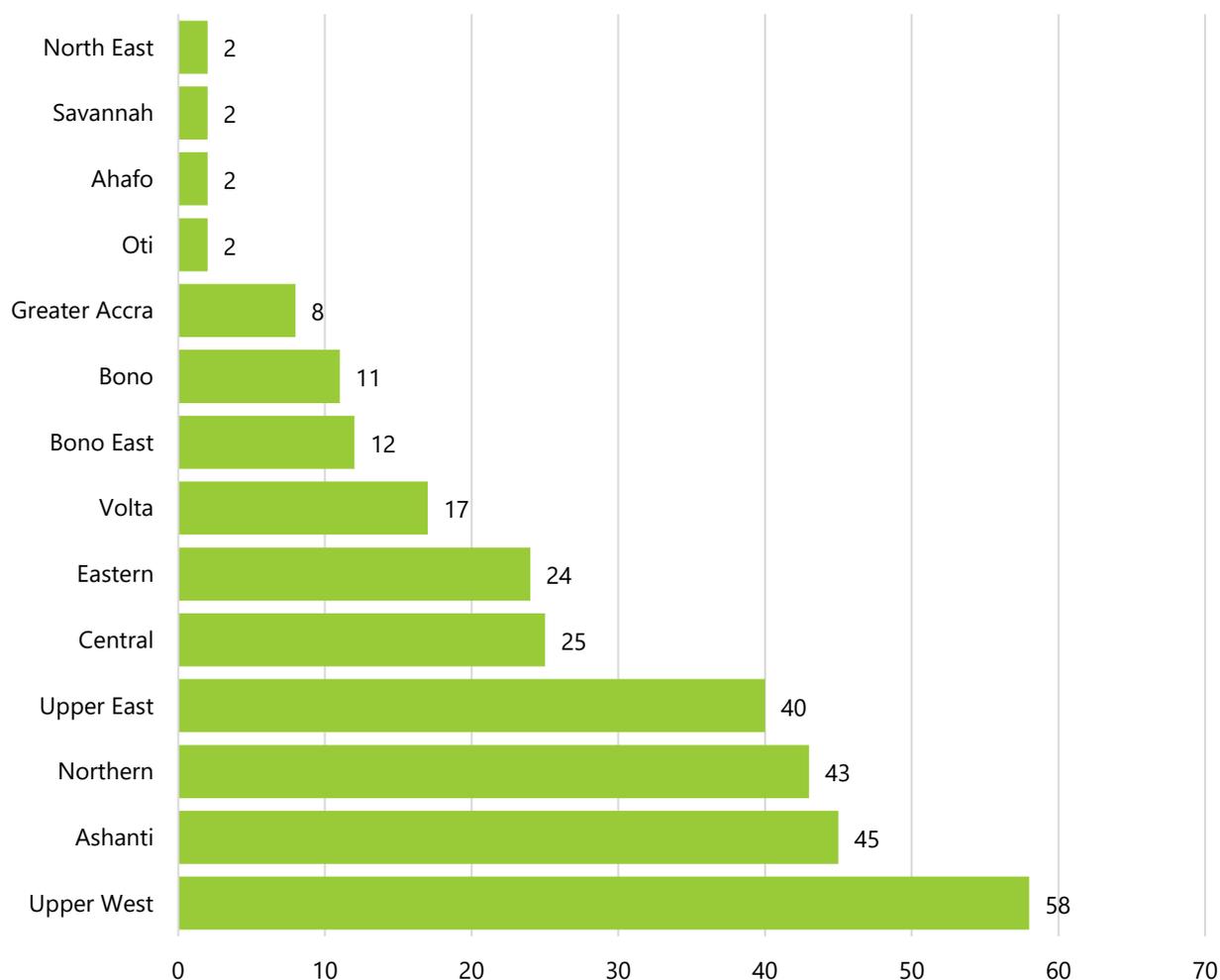
According to the census conducted by the National Seed Trade Association of Ghana (NASTAG) in 2018, there were 284 seed companies/producers in Ghana. The 2021 census identified 291 seed producers/companies.

However, the Ghana Seed Inspection Division (GSID) figures differ markedly from the census. The census revealed that some seed producers/companies were no longer operating. The database of the GSID showed 349 seed producers/companies and distributors. Thus, while the current census focused on the seed producers, the data from Ghana Seed Inspection Division (GSID) also included seed distributors.

There is, therefore, the need to synchronize the database of NASTAG and that of the Ghana Seed Inspection Division. This will ensure all seed producers/companies fields are inspected and appropriate certifications issued to ensure only quality improved seeds are churned into the market.

Four regions, including Upper West, Ashanti, Northern, and Upper East, had more than 60 percent of Ghana's total seed producers/companies. The Upper West region had 58 seed companies, Ashanti had 45, the Northern had 43, and the Upper East recorded 40 (see Figures 3 and 4). There has been no appreciable increase in seed producers/companies since the last census conducted in 2018.

Figure 4: Number of Seed Producers/Companies in Ghana

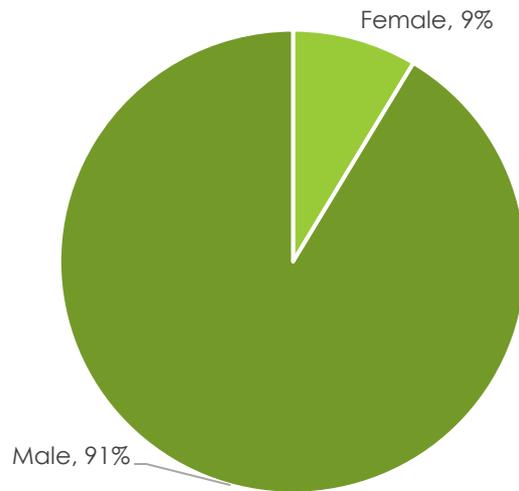


## 3.2 Gender

According to 2017/2018 Ghana Census of Agriculture (GSS, 2019), agricultural holders are primarily males, about 2.6 times as high as females. Similarly, the seed industry is also a male-dominated sub-sector, with females representing only 9 percent, while 91 percent were males (see Figure 5).

Although women play a crucial role in providing labour in the seed sector, they are not at the forefront of the seed business. Therefore, there is a need to support women entering the seed business and provide incentives to encourage women to enter into the seed business.

Figure 5: Gender of Seed Producers/Owners of Seed Companies

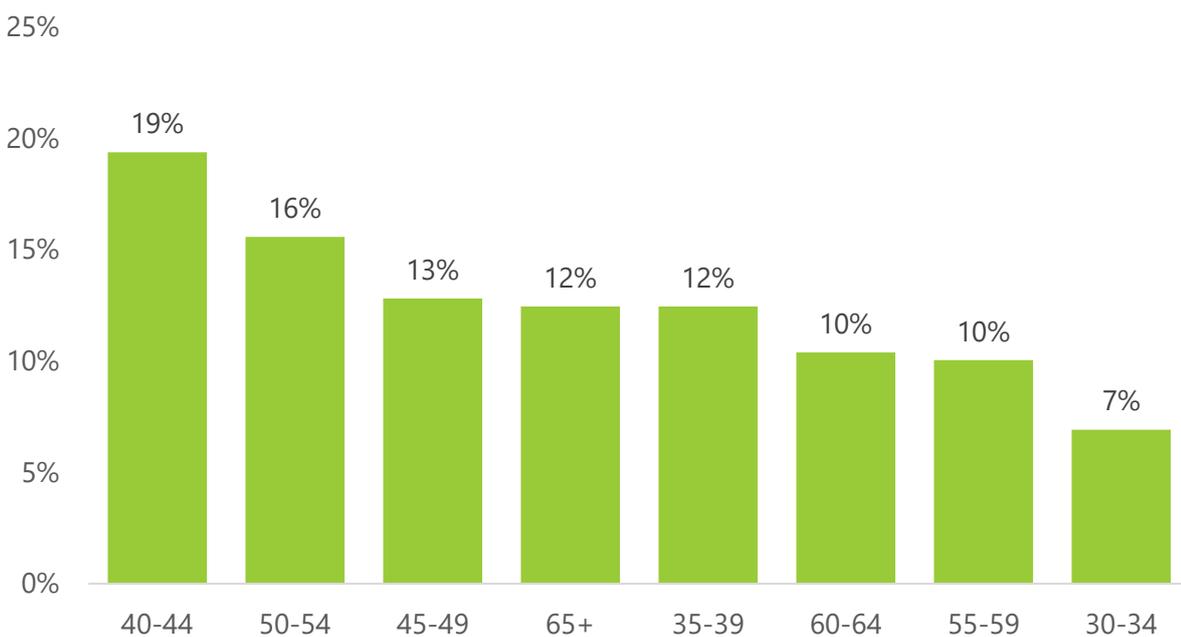


Data Source: Field Data, 2021

### 3.3 Age Categories of Owners of Seed Producers/Companies

According to the Ghana Statistical Service (GSS, 2019), about a quarter of agricultural holders are youth. However, the study revealed that only 13 percent of the seed producers/owners of the companies were youth. The seed sector is dominated by a middle-aged group representing more than 50 percent of the seed producers/companies (see Figure 5). There is a need to encourage and support the youth to go into seed production.

Figure 6: Age of Seed Producers/Owners of Seed Companies

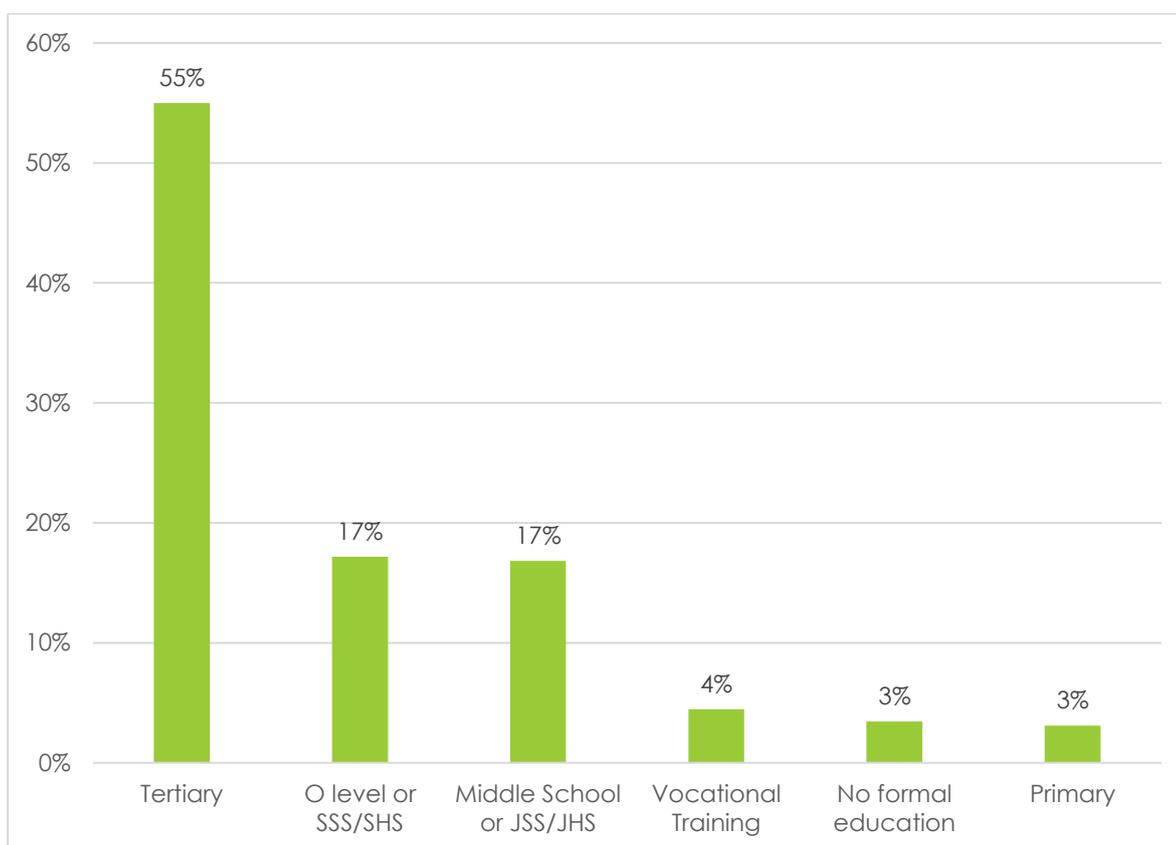


### 3.4 Educational Level

According to FAO (2010), producing quality seed requires various skills and capacities at several levels, from planning and management of seed production to skilled farm operations. Thus, the seed producers must have a certain level of education and training to succeed in the seed business.

Most seed producers and owners of the seed companies have received formal education. The data showed that 97 percent of the seed producers/owners of seed companies had tertiary education (55 percent), secondary education (17 percent), basic education (20 percent), and vocational education (4 percent). Only 3 percent have had no formal education (see Figure 6).

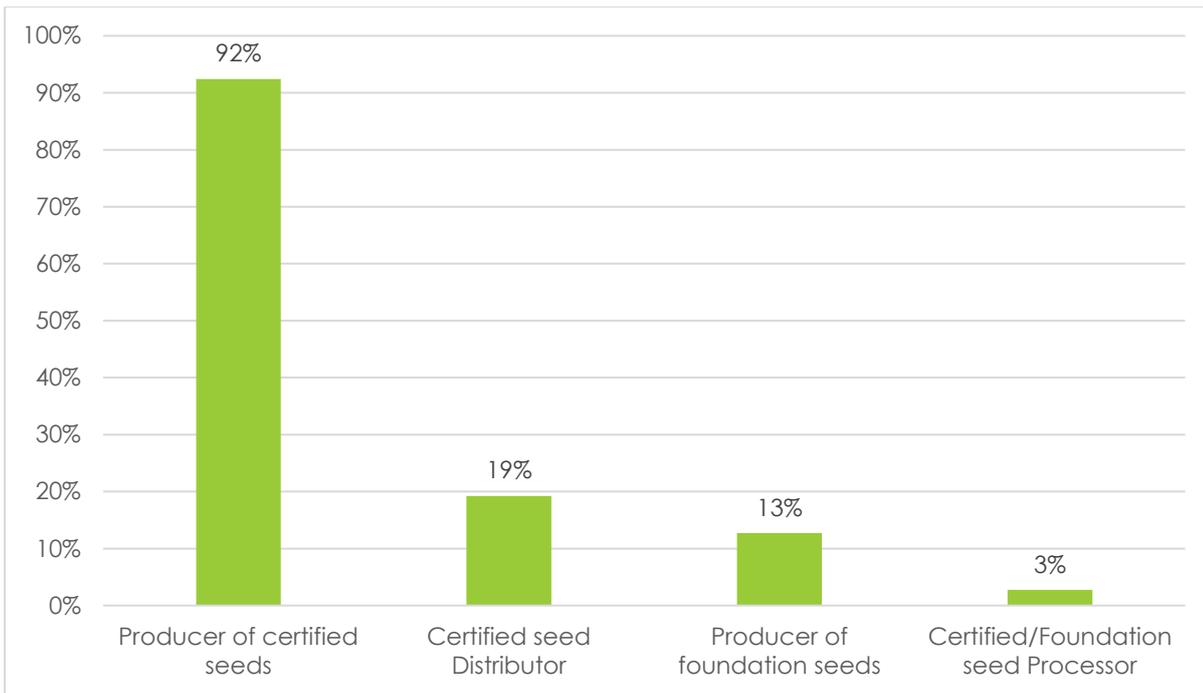
**Figure 7: Educational Level of Seed Producers/Owners of Seed Companies**



### 3.5 Role of Seed Producers/Companies

To ensure the long-term survival of the seed business in Ghana, the seed producers/companies perform various functions, including the production of various classes of seeds and seed distribution and marketing. It was realized that 92 percent of the seed producers/companies focused on producing certified seeds while 19 percent were into seed distribution, with 13 percent producing foundation seeds. Additionally, 3 percent of the seed producers/companies provide processing services for the certified/foundation seeds producers.

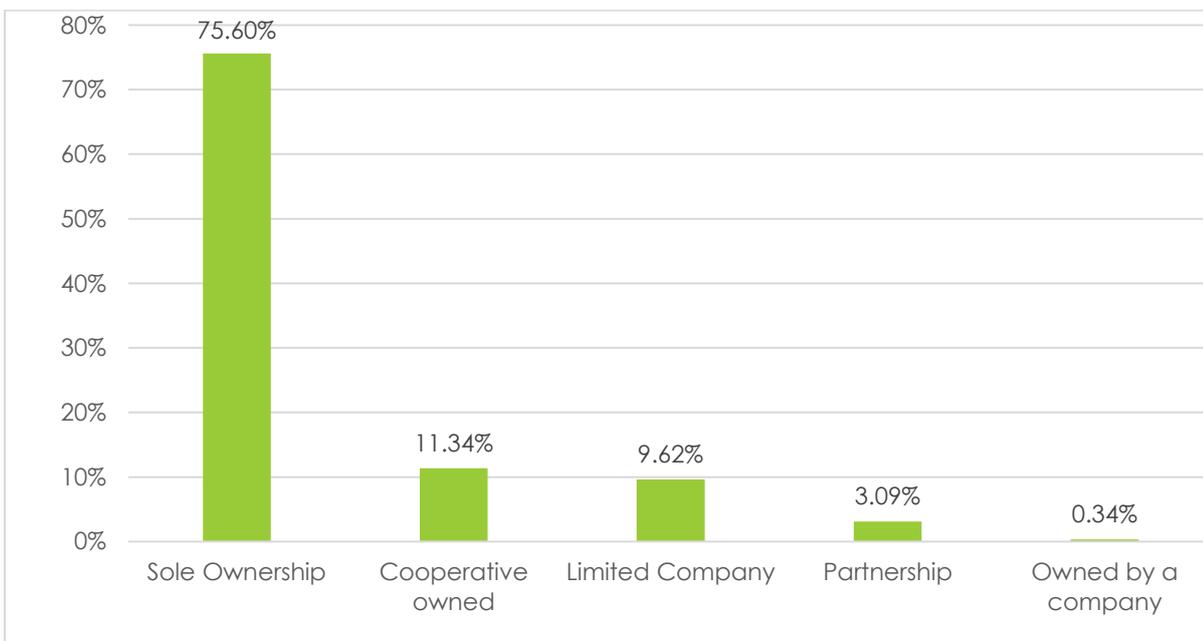
**Figure 8: Roles Played by the Seed Producers/Companies**



### 3.6 Business Ownership

Legal registration status should be a prerequisite for the seed certification process. The data showed that less than 40 percent of all the seed businesses had been registered with the Registrar General Department. As indicated in Figure 9, about 76 percent of the seed businesses were operating as sole ownership.

**Figure 9: Business Ownership**

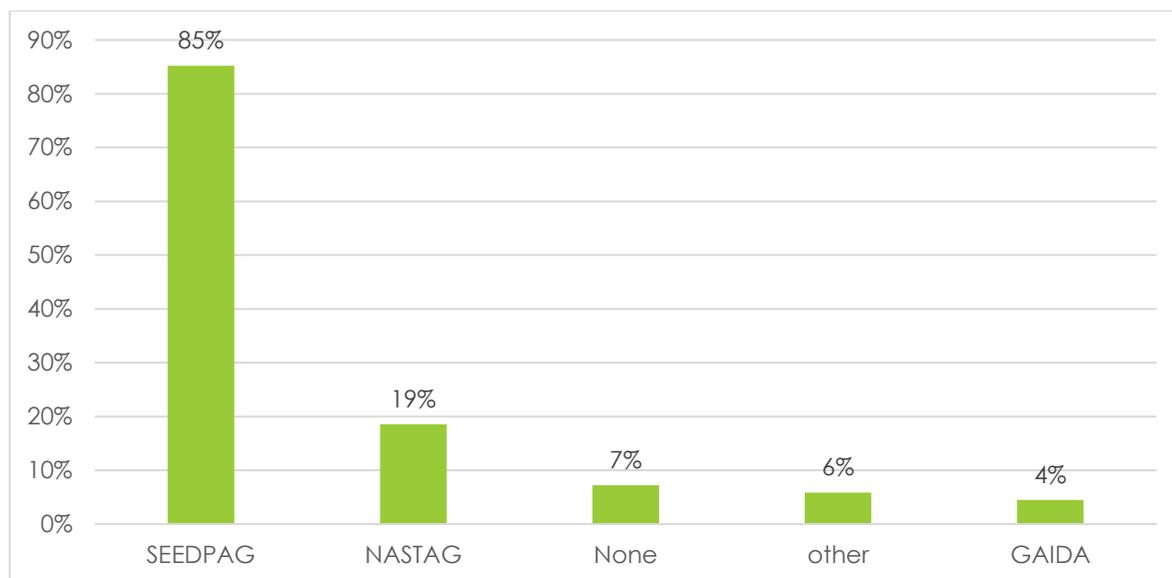


### 3.7 Legal and Professional Associations

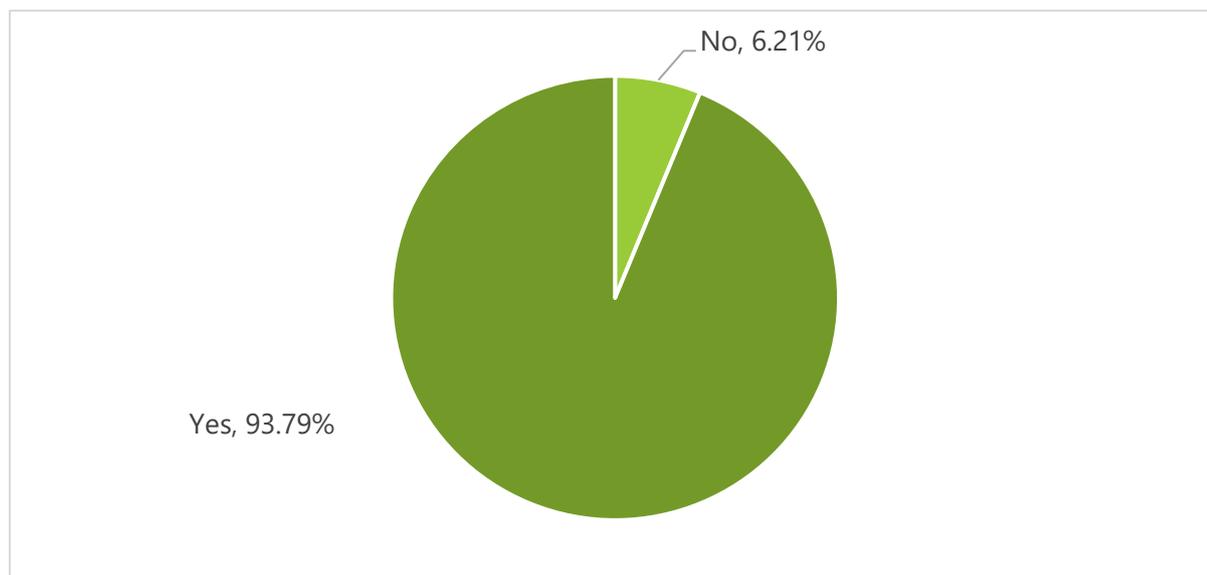
As shown in Figure 10, it was realized that 85 percent of the seed producers/companies were members of the Seed Producers Association of Ghana (SEEDPAG). Nineteen (19) percent of the seed producers/companies were members of NASTAG, while 4 percent were members of the Ghana Agri-input Dealer Association (GAIDA).

The data further showed that 93 percent of the seed producers/companies indicated they had registered with the Ghana Seed Inspection Division of the PPRSD (see Figure 11).

**Figure 10: Legal/Professional Associations**



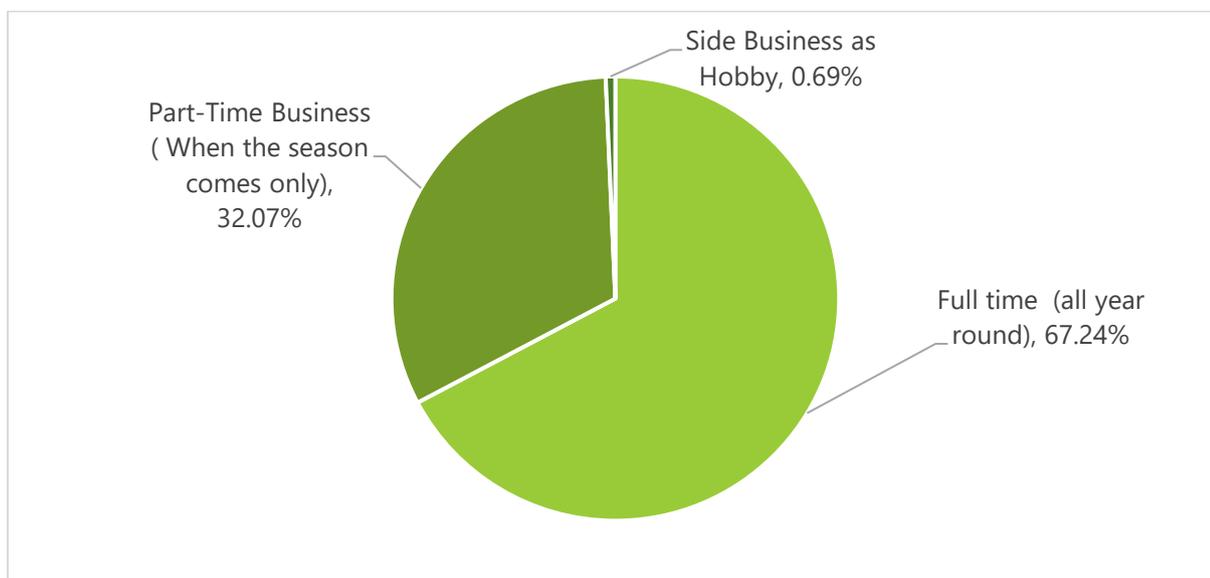
**Figure 11: Registration with Ghana Seed Inspection Division of the PPRSD**



### 3.8 Business Operation level

The data showed that 67 percent of the seed producers/companies operated seed businesses full-time. In comparison, 32 percent operated as a part-time business, with less than 1 percent indicating the seed business as a side business/hobby (see Figure 12).

Figure 12: Business operation level

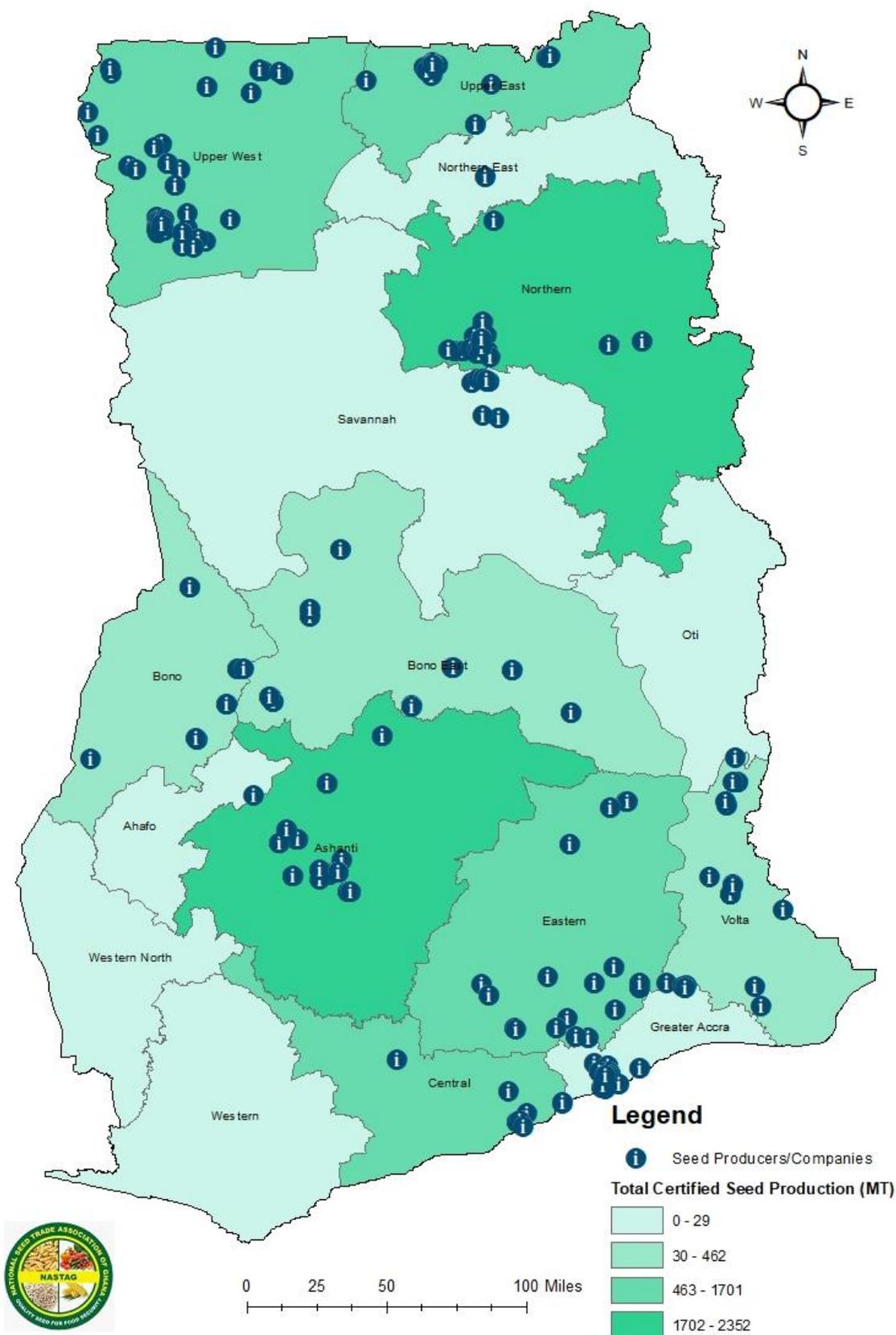


### 3.9 Job Creation

The seed sector employs more than 7,000 jobs annually, employing 1336 permanent staff, with 44 percent women and 5713 temporary staff, including 58 percent women. In 2018, 6,000 people were employed, an increase of about 17 percent within two years.

Most of the people employed as temporary staff were primarily people with no formal education or basic education, with 6 percent with tertiary level of education. The data also showed that most permanent people employed had completed tertiary level education.

Figure 13: Map of Ghana Showing locations of seed producers/companies and key production zones



# CHAPTER FOUR

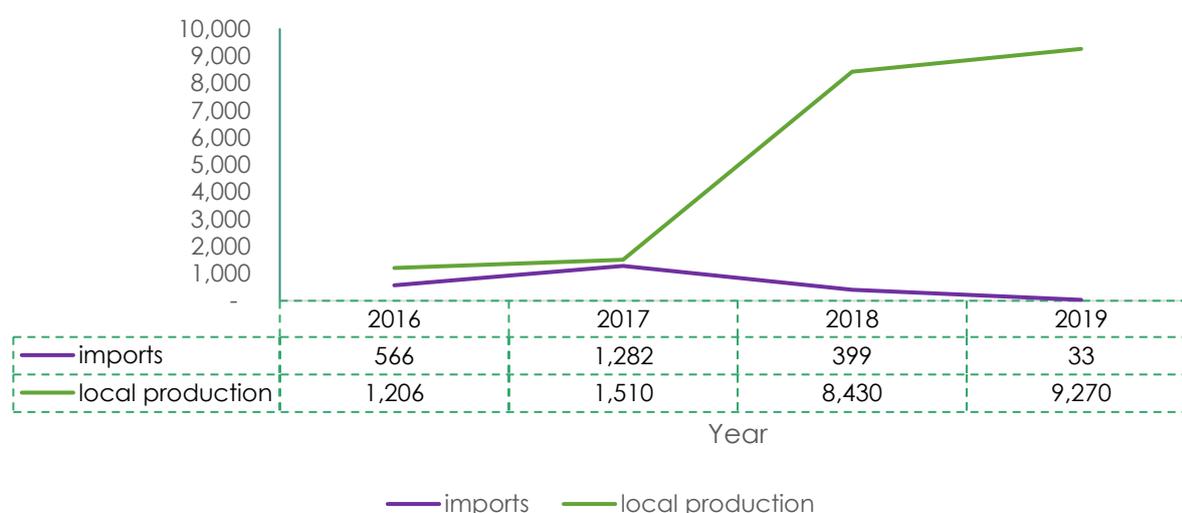
## SEED PRODUCTION IN GHANA

### 4.0 Introduction

The Chapter presents and discusses data on production volume, inspection, processing and storage, and capacity-building programmes. The seed business has been resuscitated after the Ghana Seed Company (GSC) collapsed in 1989. Currently, the Seed Market Industry Framework and Strategy Study (SMIFS) estimates that the total size of the seed industry is close to \$60M, making it very attractive for businesses (USAID, 2017).

The Government's introduction of the Planting for Food and Jobs program has seen increasing trends in local seed production in Ghana. Conversely, imports of maize and rice seeds have gone down considerably.

*Figure 14: Domestic and Imported Certified Seeds in Ghana*

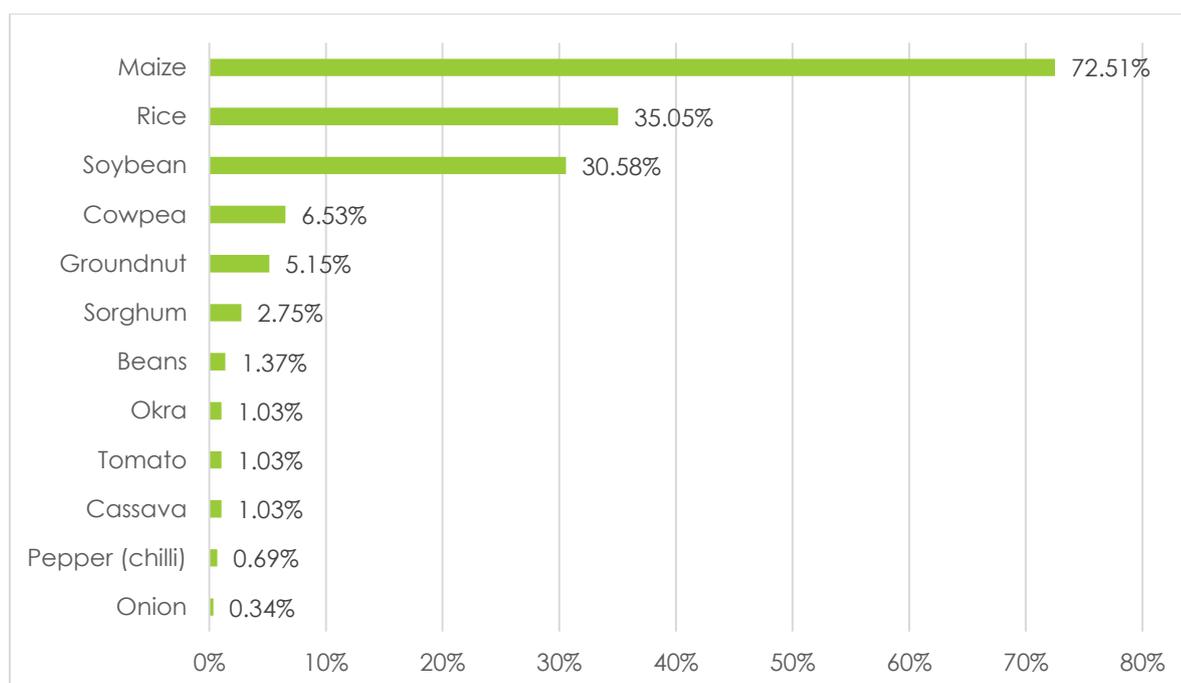


For example, maize import has declined by about 94 percent, while local production has increased more than six times. This trend is due to the promotion of certified seeds and the inclusion of certified seeds in the subsidy programme.

## 4.1 Seed Production Business

The data from the current study showed that the seed market is dominated by five crops, maize, rice, soybean, cowpea and groundnut production. The production of vegetable and root/tuber production is minimal. The data showed that 95 percent of the seed producers/companies produced open-pollinated varieties, while 16 percent produced hybrid seeds. The data did not depart from the previous data collected in 2018.

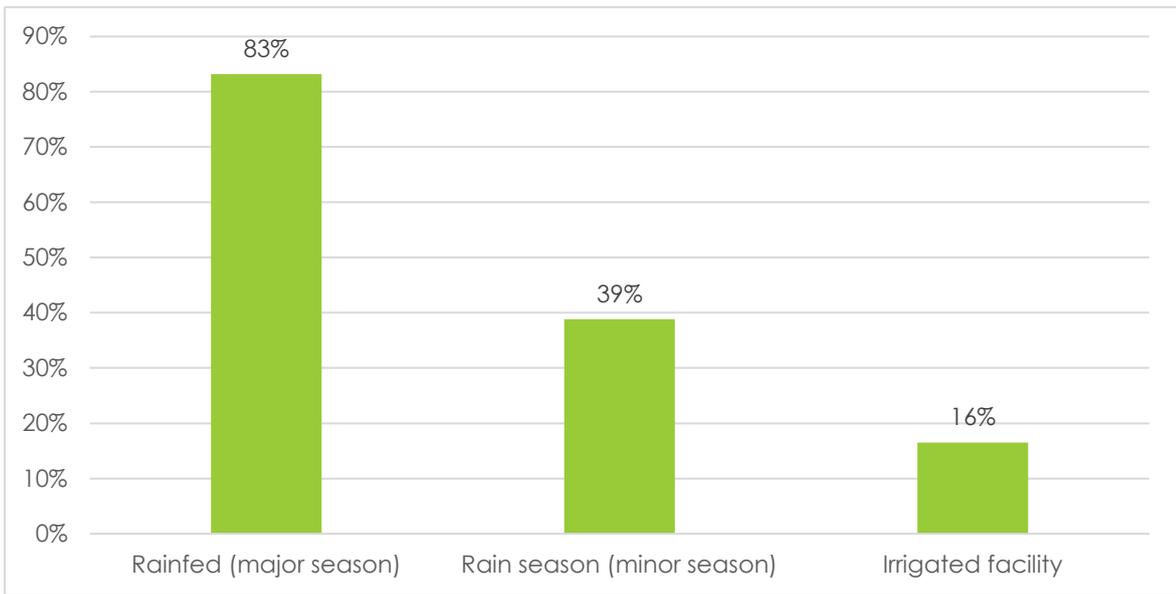
**Figure 15: Type of Crop Seeds produced by Producers/Companies**



## 4.2 Production System

Most (83 percent) seed producers/companies produced certified seeds under the rainfed system during the major season, while 39 percent produced certified seeds during the minor season. Only 16 percent indicated they produced seeds under the irrigated system.

**Figure 16: System of Certified Seed Production**



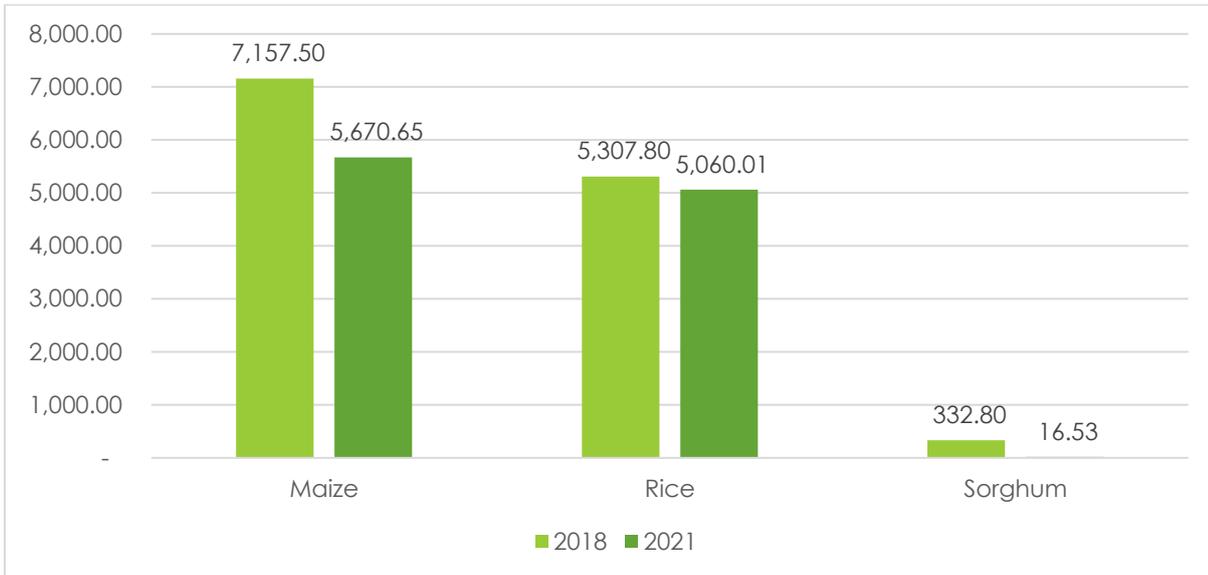
### 4.3 The Volume of Certified Seed Production

Food production depends on the availability, accessibility, and quality of seeds. In 2022, an estimated volume of 11,940.30 metric tons is expected to be in the market compared with 21,593.46 in 2021. The data showed that 98 percent of the total seeds produced came from maize (47 percent), rice (42 percent), soybean (6 percent), and cowpea (2 percent). The remaining crops, including groundnuts, sorghum, cassava, beans, tomatoes, okra, and pepper, formed 2 percent of certified seed production. According to data from the Seed Inspectorate Division, of the total certified seeds produced in 2021, rice recorded 60%, maize 26%, soybean 11%, cowpea 2%, groundnut 1%, sorghum 1%. The remaining crops, cassava, and sweet potatoes did not record any certified seed production.

Despite the efforts by the GoG and the international cooperation agencies, the production of hybrid varieties is abysmally low compared to the demand. Open-pollinated varieties represented 79 percent of the total seed production, while hybrid represented 21 percent.

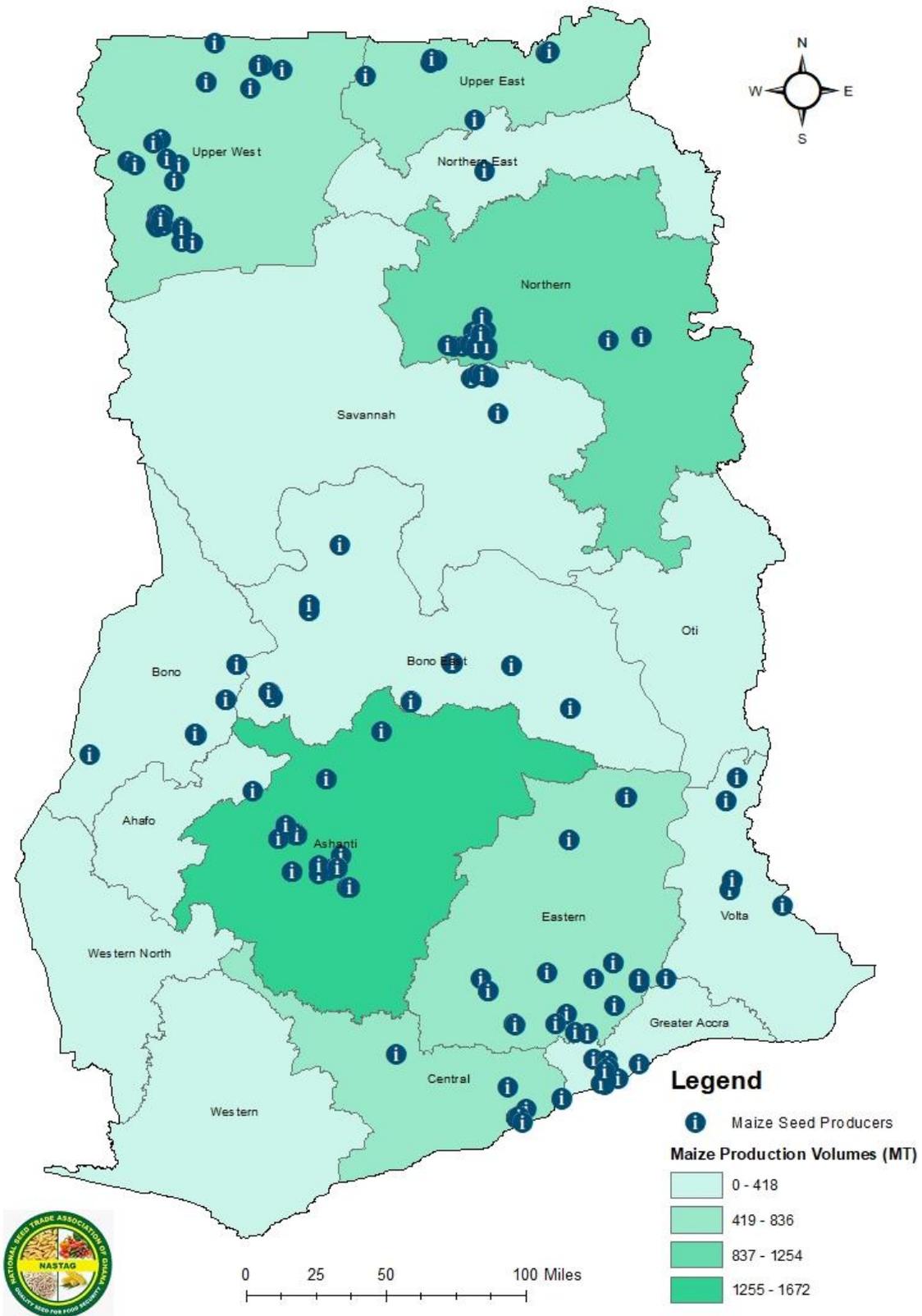
The total certified seed production has fallen compared to 2018 production figures. The volume of certified maize seed produced in 2018 was 7,157 metric tons, while 5,547 metric tons is expected to be made available in 2022, a reduction of about 22 percent over the 2018 production figure. The trend remains the same for the other certified seeds. The gradual shift to hybrids also increased its importation against the domestic production of OPVs. The impact could be long-lasting. Therefore, there is a need to implement measures to prevent further decline of certified seeds availability, affecting food security.

**Figure 17: Comparison of certified seeds produced (2018 and 2021)**



However, the data from the Seed Inspection Unit paints a different picture, projecting a total volume of certified seeds of 21,593.46 metric tons, projecting certified maize seed production of 5,546.87 metric tons, rice (12,917.9 metric tons), and sorghum (185 metric tons). The disparity was due to the number of seed producers captured during the profiling. While the profiling focused on seed producers producing certified seeds in Ghana, the data from the Seed Inspection Unit also included seed distributors.

Figure 18: Map of Ghana Showing Key Production zones for certified maize seeds



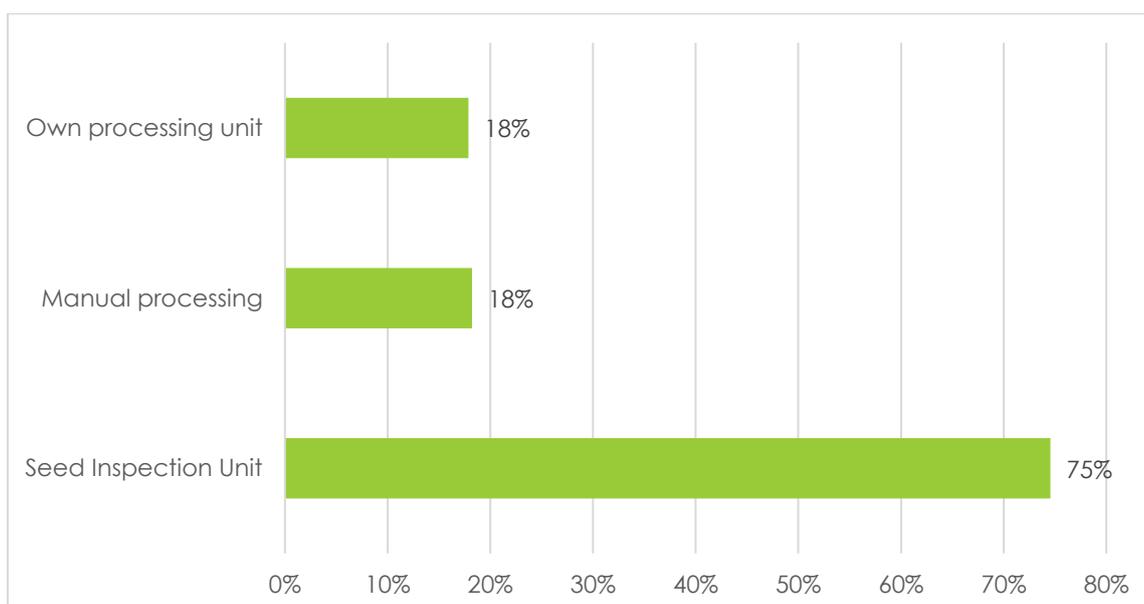
**Table 1: Projected Volume of Seeds Produced and Area under cultivation for 2021**

Crop	Land Size (in Ha)	Expected Production Volume for 2021
Maize	4,573.98	5,670.65
Rice	2,948.23	5,060.01
Soybean	866.30	773.96
Cowpea	138.98	193.93
Groundnut	55.06	46.86
Sorghum	33.04	16.53
Cassava	16.00	33.00
Beans	7.83	135.85
Tomato	7.05	0.62
Okra	4.50	7.85
Pepper (chilli)	2.00	1.06
<b>Grand Total</b>	<b>8652.97</b>	<b>11,940.30</b>

## 4.4 Processing/Storage of Seeds

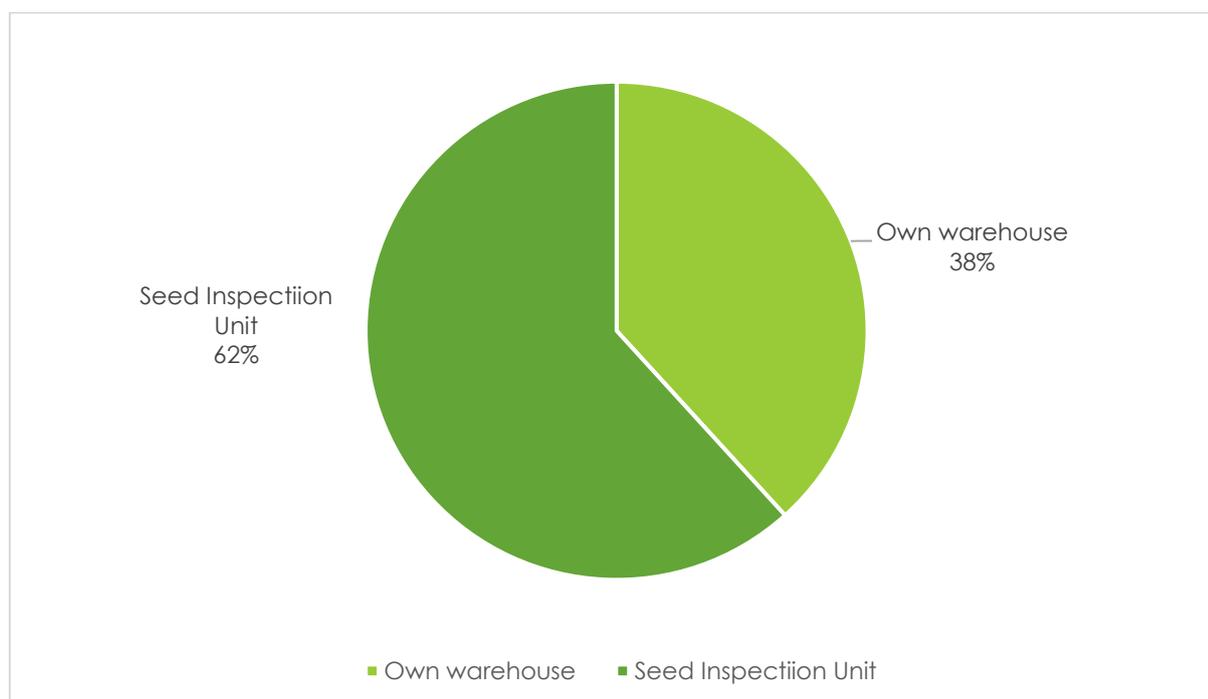
Costs of infrastructure, mainly processing and storage facilities, can be a major constraint to seed producers/companies. It was realized that 75 percent of the seed producers/companies relied on the processing facilities by the Government. Seed companies who relied on manual processing constituted 18 percent, while those with their processing unit were 18 percent. The overreliance on Government facilities by the seed companies affects the timely processing of certified seeds in Ghana.

**Figure 19: Processing of Seeds**



It was realized that 62 percent of the seed producers/companies utilized the storage services by the Ghana Seed Inspection Units, while 38 percent had their warehouse.

**Figure 20: Seed Storage facilities used by Seed Producers/ Companies**



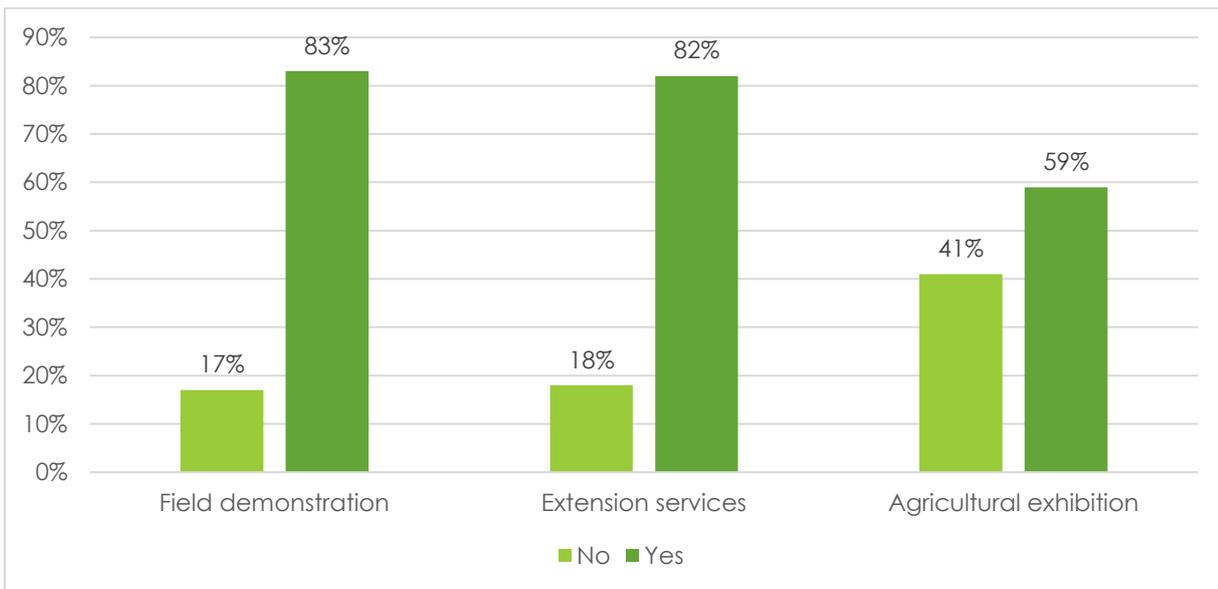
## 4.5 Promotion and Awareness Creation

To increase the demand for new varieties, field demonstrations and promotional activities, such as seed fairs, demonstration activities, production leaflets, media coverage (TV/Radio) are needed on a massive scale (Aidoo et al., 2013). According to FAO (2010), the development of markets for smallholders' produce is possibly the single most effective measure to stimulate the growth of seed enterprises. However, major efforts are still required to raise farmers' awareness of the benefits of using high-quality seed. Most seed producers/companies continue to offer services to increase farmers' uptake of improved certified seeds, including field demonstration (83 percent), extension services (82 percent), and agricultural exhibitions (59 percent). Lack of information and poor extension services constrain uptake of improved varieties in developing countries.

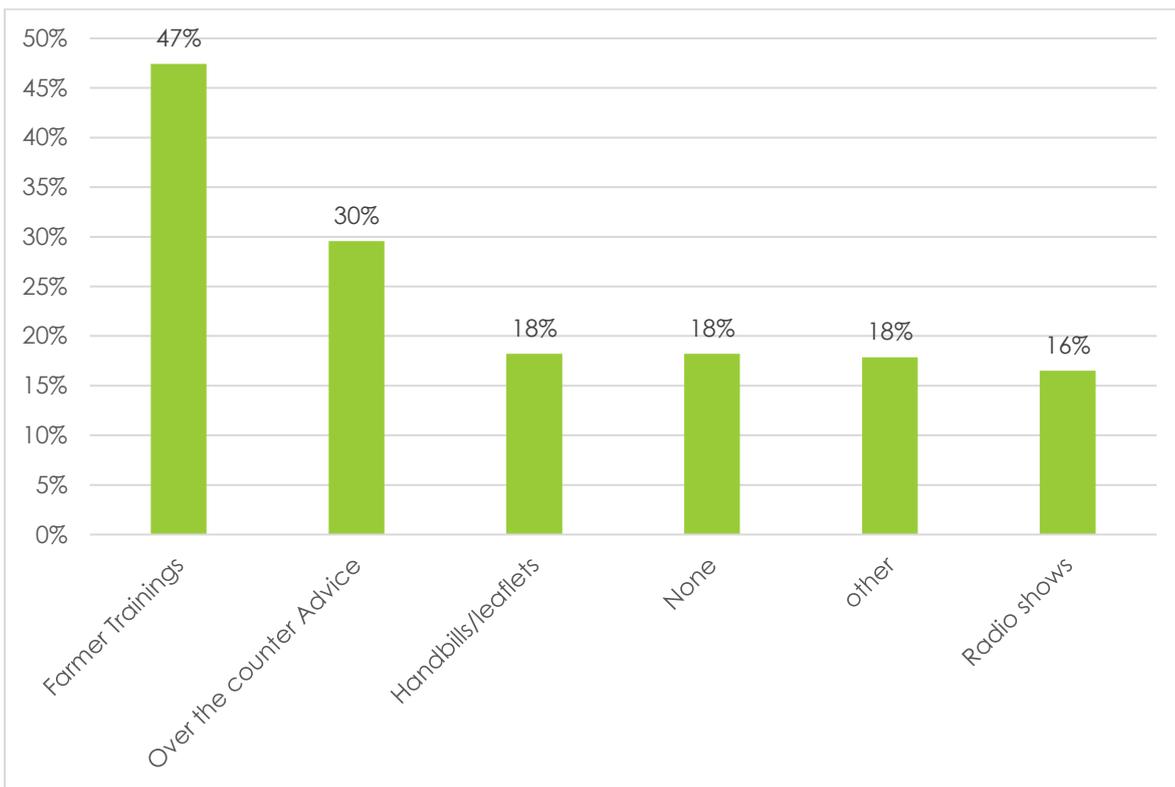
The seed producers/companies are becoming increasingly active in providing extension services to their members and other farmers. As indicated in Figure 18, most of the extension services are delivered through farmer training (47 percent), over-the-counter advice (30 percent), leaflets (18 percent), and radio shows (16 percent). However, the key challenge is that there is still a large number of farmers who lack improved seed varieties and the credit to buy the required inputs, and as such, the adoption rate is still low (Aidoo et al., 2013).

Governments may need to provide incentives to encourage the development of seed marketing channels in less-favourable areas.

**Figure 21: Awareness/demand Creation**



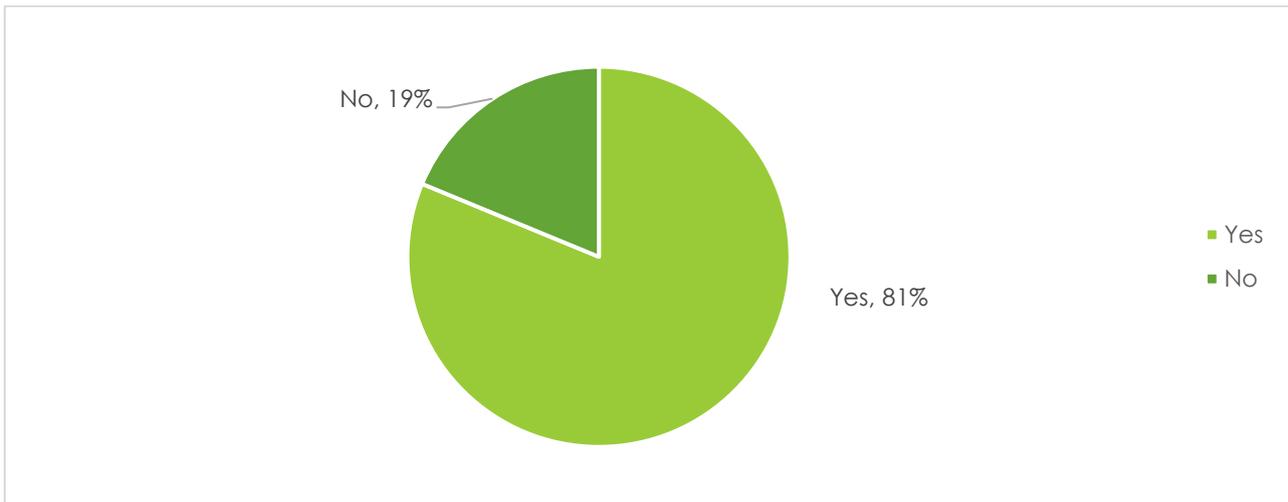
**Figure 22: Extension Delivery services**



## 4.6 Subsidy Programme

Planting for Food and Jobs has created marketing channels for the seed producers/companies. Over 80 percent of the seed producers/companies sell through the Planting for Food and Jobs (see Figure 19). While this support provides an excellent service to the seed sector, the private sector players need to use this opportunity to develop the market by churning out quality certified seeds that would engender trust and confidence in the locally produced seeds.

**Figure 23: Subsidy Market Channel for Seed Producers/companies**



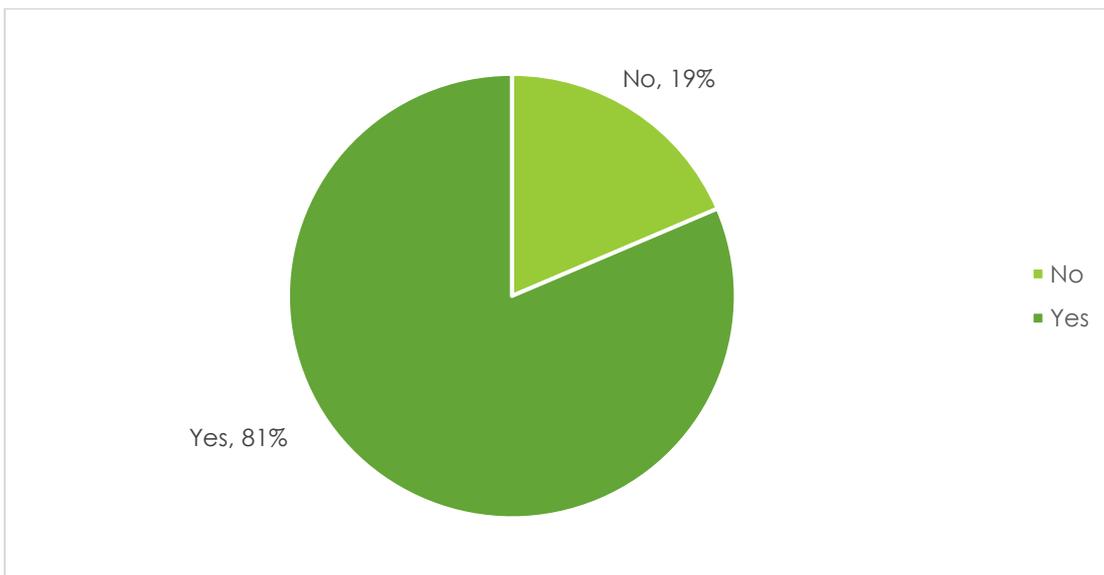
## 4.7 Capacity Building

Producing quality seed requires various skills and capacities at various levels, from planning and management of seed production to skilled farm operations (FAO, 2010). The report highlights various capacities available to increase access to quality seeds.

### 4.7.1 Training in Hybrid seed Production

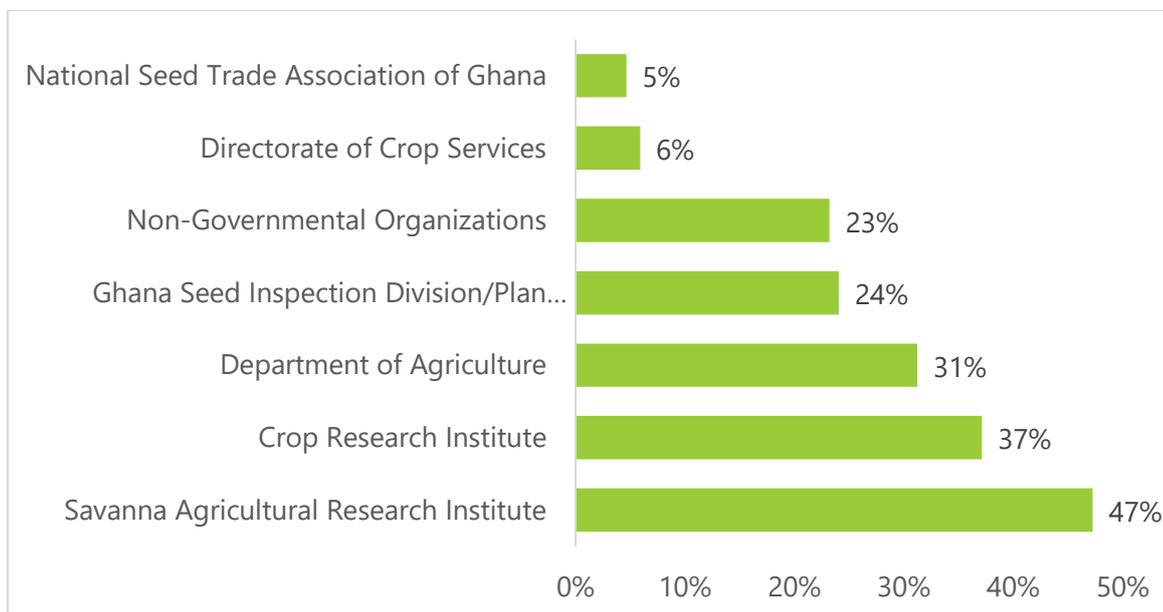
More than 80 percent of the seed producers/companies have received training on the production of hybrid seeds. The hybrid seeds are mostly imported to meet the demand by the Planting for Food and Jobs scheme. However, the production of hybrid seeds accounts for 21 percent of the total volume of seeds produced.

**Figure 24: Seed Producers/companies trained on Hybrid Seed Production**



Most of the training on the production of hybrid was conducted by the Savanna Agricultural Research Institute (SARI) and Crop Research Institute (CRI), as indicated in Figure 21.

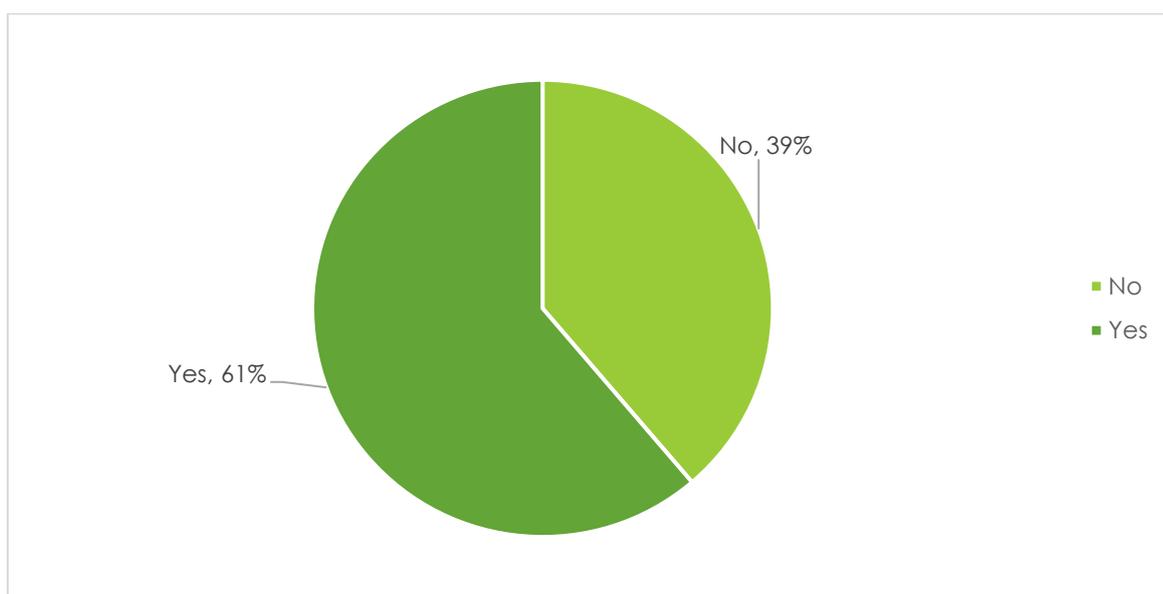
**Figure 25: Trainers of hybrid seed production**



#### 4.7.2 Seed Conditioning and Marketing

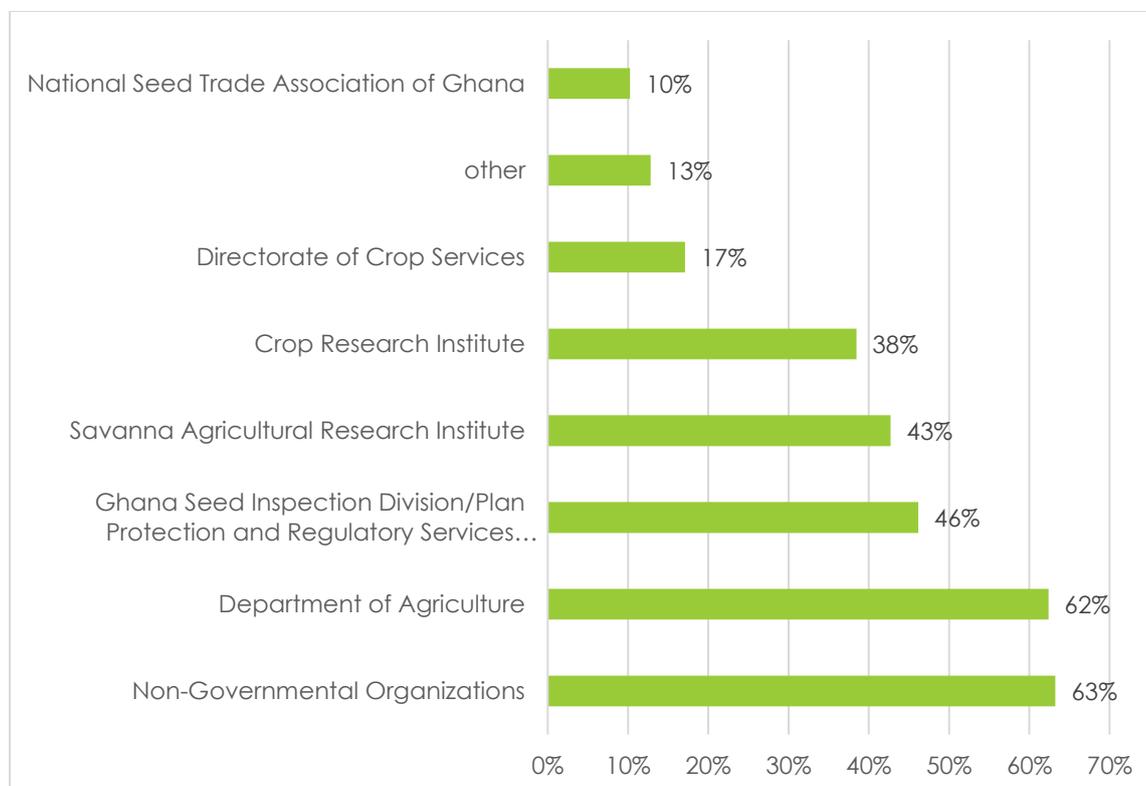
An efficient system of distributing seeds is essential for commercializing varieties. An effective communications strategy is essential for seed enterprises to thrive in a competitive world and to ensure a sustained market for certified seeds. More than 60 percent of the seed producers/companies have received training on seed conditioning and marketing. There is, therefore, the need for the remaining 40 percent to be trained in the distribution and marketing of seeds.

**Figure 26: Seed Producers/companies trained on Seed Conditioning and Marketing**



Most of the training on seed conditioning and marketing was provided by NGOs (63 percent), the Department of Agriculture (62 percent), the Seed Inspection Unit (46 percent), Savanna Agricultural Research Station (43 percent).

**Figure 27: Trainers of seed conditioning and marketing**



### 4.7.3 Training Received by Owners of Seed Producers/Companies

Improving the skills and knowledge of seed producers/companies in seed production, processing, storage, seed quality management, marketing would play a major role in assuring seed quality and improving access to improved varieties that could enhance uptake by farmers. This will keep the commercial viability of seed producers/companies.

It was realized that 75 percent of the staff of the seed producers/companies have had training in seed processing and packaging, 70 percent of the owners of seed producers/companies were trained in crop production, 67 percent were trained on crop pollination techniques, while 61 percent were trained on production of hybrid seeds (see Table 2 for details).

**Table 2: Selected Training topics received by Owners of the Seed Producers/companies**

<b>Selected topics</b>	<b>Count</b>	<b>Percentage</b>
Seed processing and packaging	132	75%
Crop production	124	70%
Technical training on production of open-pollinated seeds	119	67%
Technical training on production of hybrid seeds	108	61%
Seed quality management	104	59%
Farming as a business	101	57%
Output Marketing	58	33%
Business management	57	32%
Irrigation	38	21%
Technical training on production of other vegetative planting materials	36	20%
Conservation agriculture	35	20%
Agroforestry	22	12%
Governance	14	8%
Other	3	2%

#### 4.7.4 Training Received by Staff of Seed Producers/Companies

Similarly, the staff of the seed producers/companies had received training on crop production (65 percent), seed processing and packaging (47 percent), crop pollination (45 percent), production of hybrid seeds (39 percent), seed quality management (30 percent).

More than 60 percent of the staff of the seed producers/companies have not had training in any of the selected topics (see Table 3 for details).

**Table 3: Selected Training topics received by Owners of the Seed Producers/companies**

<b>Selected topics</b>	<b>Count</b>	<b>Percentage</b>
Crop production	119	65%
None	111	61%
Seed processing and packaging	85	47%
Technical training on production of open-pollinated seeds	81	45%
Technical training on production of hybrid seeds	71	39%
Seed quality management	54	30%
Farming as a business	53	29%
Irrigation	39	21%
Technical training on production of other vegetative planting materials	32	18%
Conservation agriculture	31	17%

Output Marketing	22	12%
Business management	19	10%
Agro forestry	15	8%
Governance	9	5%
Other	7	4%

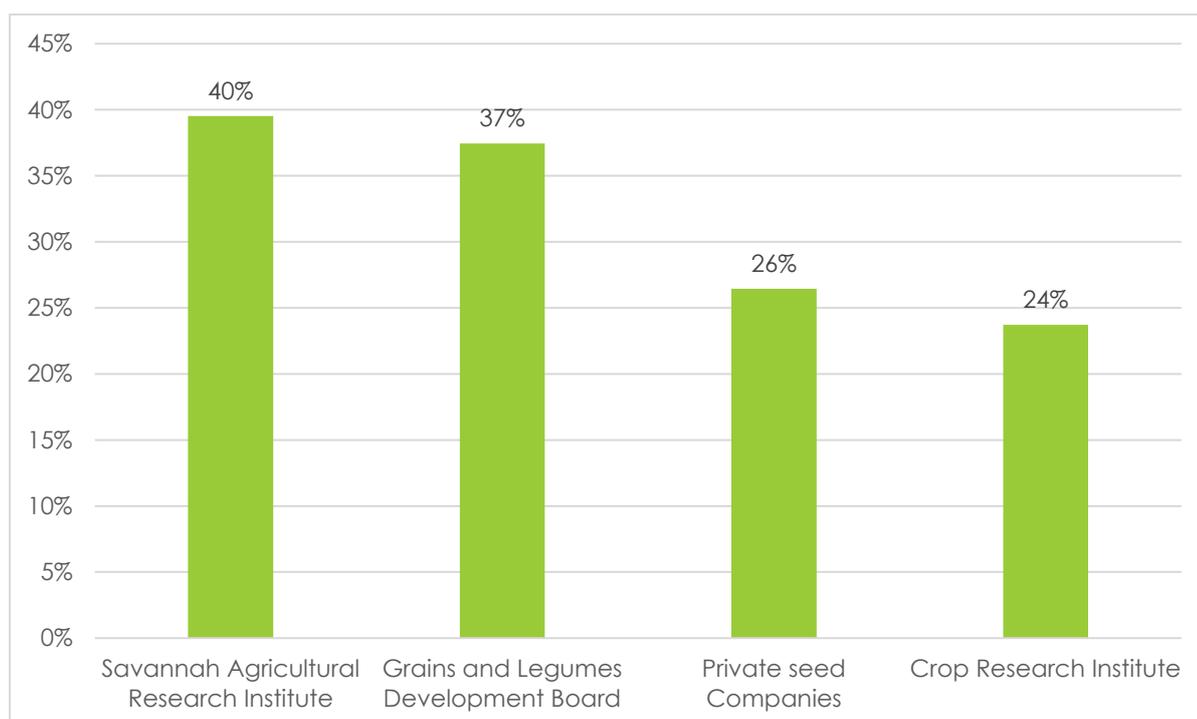
## 4.8 Access to Foundation Seeds

Seed producers/companies require easy access to newly released varieties to ensure quality improved seeds are available for farmers. This includes accessing the necessary information and the early generation seed of new varieties.

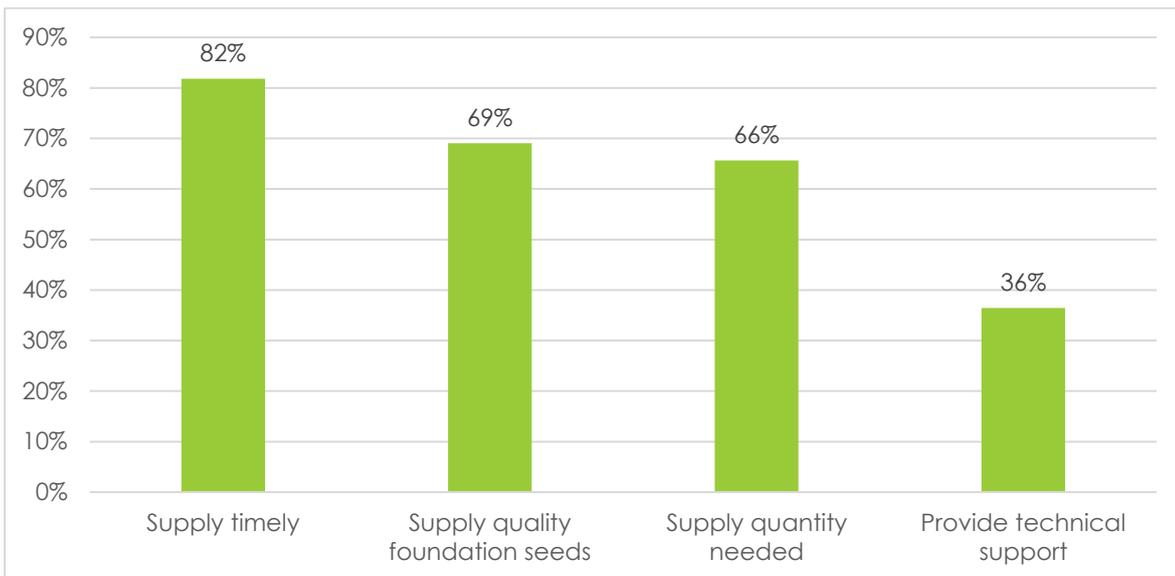
Savanna Agricultural Research Institute (SARI) was a leading organization in producing foundation seeds, with 40 percent of the seed producers/companies relying on them for their foundation seeds. Thirty-seven (37) percent of the seed producers/companies relied on the Grains and Legumes Development Board (GLDB) for their foundation seed needs, while 26 percent of the seed producers/companies relied on the private sector companies for their foundation seed needs. The Crop Research Institute had 24 percent of the seed companies relying on them for foundation seeds (see Figure 24).

Most (98 percent) of the seed producers/companies said that the suppliers of foundation seeds could meet their demands/expectations. Timely supply was one of the main reasons for choosing a particular foundation seeds supplier. Also, the quality and quantity of foundation seeds supplied were indicated as reasons for selecting a supplier of foundation seeds.

**Figure 28: Organization/Companies Producing Foundation Seeds**



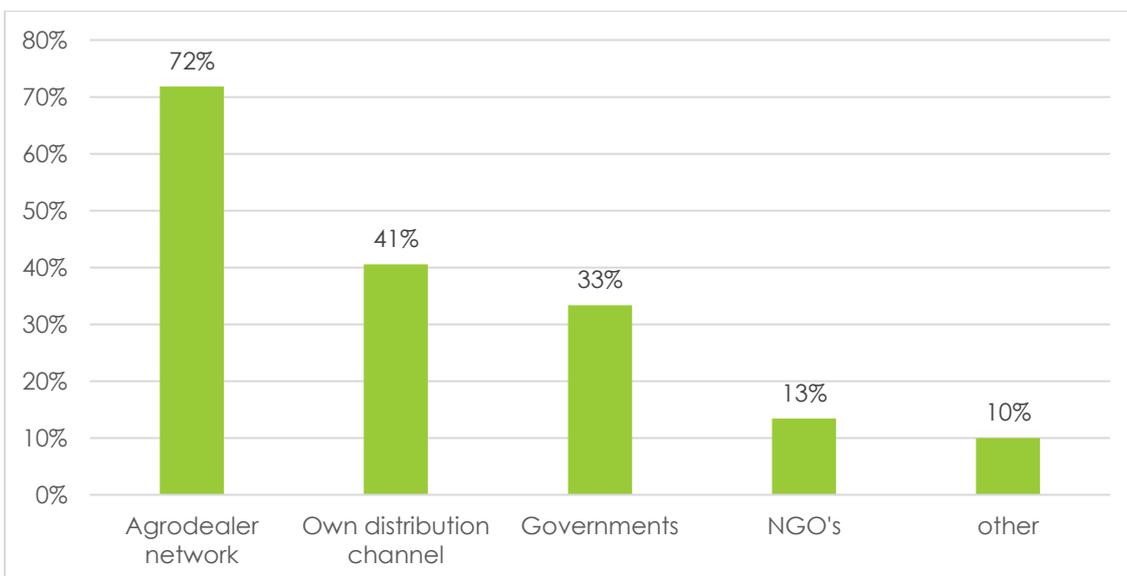
**Figure 29: Reasons for preference of supplier of Foundation seeds**



## 4.9 Marketing Channels

It was realized that in the distribution of seeds to farmers, most (72 percent) seed producers/companies relied on agro-input dealers to deliver seeds to farmers. The agro-input dealers provide a reliable channel for farmers to access certified seeds. Some seed producers/companies distribute the seeds to farmers by their own means (41 percent), Government (33 percent), NGOs (13 percent).

**Figure 30: Distribution of certified seeds**



## 4.10 Key Challenges and Priority Areas

The main challenges facing the seed producers/companies were explored. It was realized that access to finance was one of the major constraints facing the seed producers/companies. Access to credit is critical during the production phase for agro-inputs such as fertilizers, agro-chemicals, land preparation services, and paying for labour services.

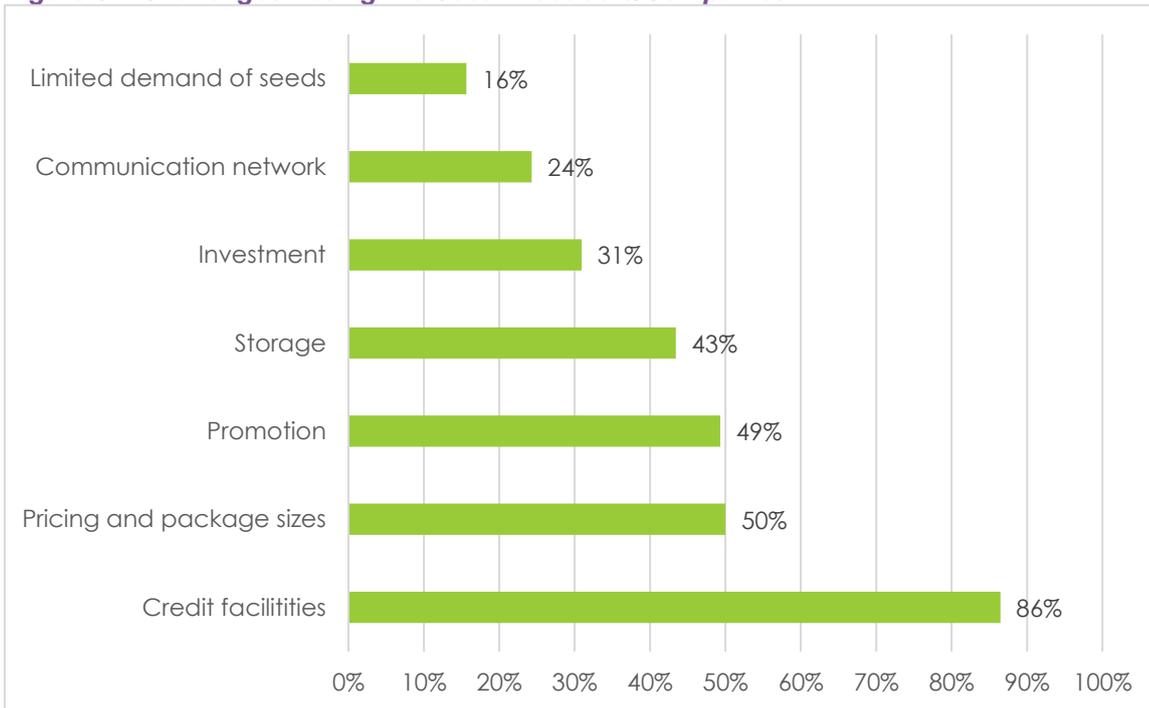
Another major challenge is the pricing and package sizes. Seed companies usually provide maize and cowpea in 1-kilogram packages. According to TASA (2016), soybeans are packaged in 50 kilograms while rice is packaged in 40 kilograms. Thus, there is a need to package it in smaller sizes to minimize smallholder farmers' waste. The formal seed companies have the resources to seek other alternatives to brand their bag in more suitable materials; semi-formal growers will depend on GSID until the industry grows. Also, GSID uses plastic bags (polyethylene), which is not optimal for all crops under warmer humid weather conditions. Therefore, the need to explore alternative packaging materials to maintain the quality of the seed.

It was realized that many seed producers/companies embark on awareness creation events to promote the use of certified seeds. However, the uptake is still low. There is a need for the Government to support promotional activities to prevent relapse and reverse the gains made in the adoption of certified seeds by smallholder farmers.

Another challenge identified by the seed producers/companies was storage facilities. Most seed companies have to use the storage facilities provided by the Ghana Seed Inspection Division. However, these storage facilities are inadequate, and some have to transport their seeds to longer distances, which adds to the production cost.

Other challenges included limited investment in the seed sector, poor communication network, and limited demand for certified seeds.

**Figure 31: Challenges Facing the Seed Producers/Companies**



From the foregoing, the following represent the opportunities that can be explored by both Government and the private sector players in the seed business.

- **Access to finance/Investment:** There is a need for seed companies/producers to form partnerships to attract the needed investment, particularly in the processing and storage facilities.
- There is a need to identify innovative and cost-effective ways of promoting the use of seeds among smallholder farmers. The traditional methods of promoting certified seeds have not yielded the desired outcome. There is a need to establish linkages among output market actors and seed producers/companies. This will help identify output markets that require certain crop varieties, enabling seed producers to produce to meet the market's needs.
- Establish private seed distribution outlets; Government can provide seed money for the youth to establish distribution outlets across the country. There is a need to work with the packaging industry to provide alternative packaging materials (for example, paper) with different sizes that would meet the needs of smallholder farmers.

# CHAPTER FIVE

## CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

Farmers everywhere depend on access to good quality seed as the foundation to their crop production system. At the same time, easy access to quality seed can be achieved and guaranteed only if there is a viable seed supply system to multiply and distribute seeds that have been produced or preserved (FAO, 2010). The Ghana seed system is developing, working with private and public sector players.

The seed industry consists of 291 seed producers and companies. The number of seed producers/companies has not seen significant growth. The gender disparity remains the same, with men dominating the seed sector. The Western regions did not record any seed producer/company. However, the total seed producers/companies/distributors in the database of the Seed Inspection Unit are 349.

The youth representation in the seed sector is abysmally low. However, the seed producers/owners of seed companies' educational levels were higher. It was realized that most seed producers and companies had received training on seed production. However, relatively few seed producers/companies have had training in seed conditioning and marketing.

Comparing the data in 2018, the number of seed producers/companies has not seen any significant change. However, there has been a decline in the total volume of seeds produced, causing a reduction of more than 20 percent compared to 2018 production volumes. However, the data from the Seed Inspection Unit paints a different picture, projecting a total volume of certified seeds of 21,593.46 metric tons, with certified maize seed production of 5,546.87 metric tons, rice (12,917.9 metric tons), and sorghum (185 metric tons). The disparity was due to the number of seed producers captured during the profiling. While the census focused on seed producers producing certified seeds in Ghana, the database of the Seed Inspection Unit included seed distributors.

Planting for Food and Jobs plays a critical market channel for the seed producers/companies, with demand for hybrid seeds soaring. However, hybrid seed production represents less than 10% of the certified seeds produced. Although 80 percent of the seed producers have been trained on hybrid seed production, the production of OPVs represents more than 90 percent.

### 5.2 Recommendations

- There is a need to develop an online system to register all seed producers/companies in Ghana, allowing members to update their records every year. It could serve as a platform for collecting seed producers' production intentions/companies. Additionally, it will ensure certification services are provided to all seed producers/companies.
- NASTAG should provide a platform to allow seed producers/companies to interact with output market actors. This will enable the seed producers/companies to produce crop varieties to meet the market's needs.
- There is a need to support women and the youth to go into seed production to increase the production and availability of certified seeds, particularly hybrid seeds.

- Access to credit and investment into some key areas of the seed sub-sector should be of paramount interest to Government and financial institutions to inject capital into the seed business. These areas include infrastructure expansion, particularly processing and storage facilities.



## APPENDIX A: CROP VARIETIES AND VOLUMES PRODUCED

<i>Crop</i>	<i>Land Size (in Ha)</i>	<i>Expected Production Volume for 2021</i>
<b>Maize</b>	<b>4,573.98</b>	<b>5,670.65</b>
Afayak	8.00	
Bihilifa	12.03	146.99
CRI Ahoodzin	169.36	334.40
CRI Ahoofe	40.00	37.00
CRI Dzifoo	15.00	1.00
CSIR SARIMAZ 1	6.07	
CSIR-Abontem	1,004.93	844.50
CSIR-CRI Opeaburoo	44.00	3.00
CSIR-CRI Tintim	54.15	4.00
CSIR-Etubi	2.00	2.00
CSIR-Omankwa	765.42	399.05
Golden Crystal	105.00	147.00
Kpari-faako	14.17	20.00
KUNJOR-wari	6.00	10.00
Obatanpa	1,357.11	1,235.97
other maize variety	97.63	234.06
RMG-Obaapa	2.00	0.12
Sanzal-sima	438.95	1,315.71
Wang-dataa	432.16	935.85
<b>Rice</b>	<b>2,948.23</b>	<b>5,060.01</b>
AGRA Rice	2,253.59	3,966.46
CRI-Amankwatia	168.64	371.00
GBEWAA RICE	168.00	110.00
other rice variety	358.00	612.55
<b>Soybean</b>	<b>866.30</b>	<b>773.96</b>
Afayak	202.51	211.45
Anidaso	40.40	0.02
Favour	258.94	226.18
Jenguma	341.26	310.32
Others	23.19	26.00

<b>Cowpea</b>	<b>138.98</b>	<b>193.93</b>
Kirkhouse Benga -1	48.10	38.10
Others	40.95	42.58
Padi-tuya	12.05	18.50
Wang Kae (No Striga)	37.89	94.75
<b>Groundnut</b>	<b>55.06</b>	<b>46.86</b>
Chinese	7.02	11.01
ICG (X) SM 87057 Yenyawoso	10.00	8.00
Nkatiesari	12.12	15.00
Others	8.07	10.00
SARINUT 1	15.22	0.22
SARINUT 2	2.63	2.63
Sorghum	33.04	16.53
Dorado	6.67	3.00
Kapaala	26.37	13.53
<b>Cassava</b>	<b>16.00</b>	<b>33.00</b>
CRI- Amansan bankye	3.00	8.00
CRI-Bankye Hema	3.00	5.00
CRI-Dudze	4.00	10.00
CRI-Essam Bankye	2.00	-
CRI-Sika Bankye	4.00	10.00
Others		
<b>Beans</b>	<b>7.83</b>	<b>135.85</b>
G 90	5.00	6.00
other beans variety	2.83	0.35
SMR 53		129.50
<b>Tomato</b>	<b>7.05</b>	<b>0.62</b>
Tomato variety	7.05	0.62
<b>Okra</b>	<b>4.50</b>	<b>7.85</b>
<b>Okra variety</b>	<b>3.00</b>	<b>5.60</b>
Others	1.50	2.25
<b>Pepper (chilli)</b>	<b>2.00</b>	<b>1.06</b>
Pepper variety	1.00	1.00
Others	1.00	0.06
<b>Grand Total</b>	<b>8,652.97</b>	<b>11,940.30</b>



Source: Field Data, 2022



## APPENDIX B: PRODUCTION PER REGION

<i>Crop</i>	<i>Land Size (in Ha)</i>	<i>Expected Production Volume for 2022</i>
<b>Ashanti</b>	<b>2,484.55</b>	<b>2,334.25</b>
Maize	1,706.31	1,671.82
Rice	626.06	597.49
Soybean	85.06	20.71
Cowpea	55.12	37.98
Sorghum	12.00	6.25
<b>Northern</b>	<b>1,238.94</b>	<b>2,351.82</b>
Maize	640.39	985.92
Rice	347.14	1,141.50
Soybean	237.37	217.35
Cowpea	12.02	7.00
Sorghum	2.02	0.05
<b>Upper West</b>	<b>1,122.83</b>	<b>1,682.76</b>
Maize	469.56	763.20
Rice	446.38	716.88
Soybean	183.80	179.48
Sorghum	11.75	10.01
Cowpea	11.34	13.20
<b>Central</b>	<b>779.70</b>	<b>1,265.50</b>
Rice	453.21	771.50
Maize	276.90	431.00
Soybean	37.44	47.00
Cowpea	12.15	16.00
<b>Eastern</b>	<b>719.25</b>	<b>1,701.04</b>
Maize	401.36	469.45
Rice	198.57	1,147.50
Soybean	111.23	77.09
Cowpea	8.09	7.00
<b>Greater Accra</b>	<b>703.45</b>	<b>25.90</b>
Rice	388.63	4.01
Maize	312.40	18.02
Soybean	2.42	3.87
<b>Upper East</b>	<b>646.62</b>	<b>1,273.90</b>
Maize	333.12	672.17
Rice	172.22	326.05
Soybean	122.43	195.59
Cowpea	14.00	80.00
Sorghum	4.85	0.10
<b>Bono East</b>	<b>389.74</b>	<b>331.17</b>
Rice	187.00	164.05
Maize	131.55	156.70
Soybean	68.78	10.30
Sorghum	2.42	0.12

<b>Bono</b>	<b>244.19</b>	<b>461.75</b>
Maize	208.31	406.26
Cowpea	20.24	20.25
Rice	12.02	30.04
Soybean	3.62	5.20
<b>Volta</b>	<b>184.35</b>	<b>225.47</b>
Rice	109.00	144.00
Maize	58.00	54.12
Soybean	13.35	17.35
Cowpea	4.00	10.00
<b>North East</b>	<b>17.80</b>	<b>29.03</b>
Maize	13.00	17.00
Rice	4.00	12.00
Soybean	0.80	0.03
<b>Ahafo</b>	<b>10.12</b>	<b>11.50</b>
Maize	8.10	9.00
Cowpea	2.02	2.50
<b>Oti</b>	<b>10.00</b>	<b>11.00</b>
Maize	8.00	8.00
Rice	2.00	3.00
<b>Savannah</b>	<b>9.00</b>	<b>10.00</b>
Maize	7.00	8.00
Rice	2.00	2.00
<b>Grand Total</b>	<b>8,560.53</b>	<b>11,715.07</b>

Source: Field Data, 2021