**NATIONAL AUDIT OFFICE**

# PERFORMANCE AUDIT REPORT ON
# PROVISION OF FARM INPUTS (SEED AND FERTILIZER) TO GROUNDNUT FARMERS BY THE MINISTRY OF AGRICULTURE

**SEPTEMBER 2021**

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| | |
|---|---|
| **AAO** | Assistant Agricultural Officer |
| **AG** | Auditor General |
| **ANR** | Agriculture and Natural Resources |
| **AO** | Agricultural Officer |
| **AQCSP** | Actual Quantity of Certified Seed Production |
| **AVCDP** | Agricultural Value Chain Development Project |
| **CEES** | Communication Education Extension Services |
| **CIF** | Cost insurance and freight |
| **CPCU** | Central Project Coordinating Unit |
| **CPMS** | Cooperative Produce Marketing Societies |
| **CRRN** | Central River Region, North |
| **CRRS** | Central River Region, South |
| **CSP** | Certified Seed Produced |
| **DES** | District Extension Supervisor |
| **DG** | Director General |
| **DLS** | Department of Livestock Services |
| **DOA** | Department of Agriculture |
| **DPS** | Deputy Permanent Secretary |
| **ECOWAS** | Economic Community of West African States |
| **FAO** | Food and Agriculture Organization of the United Nations |
| **FASDEP** | Food and Agriculture Sector Development Project |
| **FTS** | Food Technology Services |
| **GCAV** | Gambia Commercial Agriculture and Value Chain Management Project |
| **GDP** | Gross Domestic Product |
| **GGC** | Gambia Groundnut Corporation |
| **GLMA** | Gambia Livestock Marketing Agency |
| **GNAIP** | Gambia National Agriculture Investment Plan |
| **GoTG** | Government of The Gambia |
| **GPPA** | Gambia Public Procurement Authority |
| **ITFC** | International Trade Finance Corporation |
| **LRR** | Lower River Region |
| **M&E** | Monitoring and Evaluation |
| **MFC** | Mixed Farming Centre |
| **MOA** | Ministry of Agriculture |
| **MT** | Metric Tonne |
| **NAO** | National Audit Office |
| **NARI** | National Agricultural Research Institute |
| **NBR** | North Bank Region |
| **NDP** | National Development Plan |
| **NEMA** | National Land and Water Development Project |
| **NSS** | National Seeds Secretariat |
| **PAO** | Principal Agricultural Officer |
| **PLCSP** | Projected level of Certified Seed Production |

| | |
|---|---|
| **PPBs** | Parts Per Billion |
| **PPS** | Plant Protection Services |
| **PS** | Permanent Secretary |
| **PSU** | Planning Service Unit |
| **RADs** | Regional Agricultural Directorates |
| **SAO** | Senior Agricultural Officer |
| **SDG** | Sustainable Development Goal |
| **SWMU** | Soil and Water Management Unit |
| **TCSP** | Targeted Certified Seed Production |
| **URR** | Upper River Region |
| **VDC** | Village Development Committee |
| **VEW** | Village Extension Worker |
| **WALIC** | West Africa Livestock Innovation Centre |
| **WCR** | West Coast Region |

# 1.0 CHAPTER ONE- EXECUTIVE SUMMARY

## 1.1 Background

The Gambia has a population of 2,335,504 of which according to the Food and Agricultural Organization, 72% are poor and work in the Agricultural Sector of The Gambia. The Agricultural Sector employs 75% of The Gambian population and contributes to 25% of the country's Gross Domestic Product (GDP).

In addition, agriculture is a source of livelihood for 80% of the rural population which constitute about 38.73% of the total population in 2018. Gambia has a total land area of about 1.04 million Hectares of which 558,000 hectares (about 54%) are arable, out of which 320,000 hectares is cultivated, 96,000 Hectares (representing 30%) of the cultivated area is devoted for groundnut production. The backbone for any agricultural development is access to up-to-date agricultural inputs by farmers.

## 1.2 Motivation

The audit is initiated because of the challenges in the agricultural sector in relation to the provision of farm inputs (seeds and fertilizers) to groundnut farmers by the Ministry of Agriculture in the Gambia.

The Gambia's National Seed Plan and Policy was established in 2018 by the Ministry of Agriculture. Despite these interventions, inadequacy remain in certified seed production. Groundnut farmers still struggle to access and afford adequate quality and quantity of farm inputs. In 2019, the quantity of certified seed produced was 7.32% (146.30MT) of the projected quantity (1998MT[1]) and 10.29% (257.18MT) of the projected quantity (2498MT[2]) were produced in 2020.

## 1.3 Key findings

### 1.3.1 Late arrival of inputs (seeds and fertilizer)

**Late arrival of fertilizer**

Groundnut farmers across the country confirmed late delivery of fertilizers during the period under audit (2016 to 2020).

This is attributed to lack of a fertilizer policy, bureaucracies affecting the planning process and failure of suppliers to honour contractual agreements. This to a large extent negatively influence production and productivity of groundnut.

[1] National Seed Plan for the implementation of the National Seed Policy September 2018, page Vii
[2] National Seed Plan for the implementation of the National Seed Policy September 2018, page Viii

**Late Arrival of seeds**

Regional Agricultural Directors and selected groundnut farmers confirmed seeds are received lately mainly around July to August from either DOA or FAO.

The late arrival of seeds to farmers is attributed to the condition that certified seed growers are not allowed to sell seeds directly to farmers. The seeds are first sold to FAO after harvest and then later distributed to farmers by MOA.

The late distribution of certified seeds caused groundnut farmers to use seeds that were saved locally which are usually of mixed varieties with low germination capacity and low-quality yield.

### 1.3.2 Dysfunctional Seed Stores in the Gambia

During our visit (5th to 19th October 2020), we found dysfunctional stores due to their dilapidated nature. Some of those that were functioning lack basic requirements for proper seed storage.

We were informed that some of the stores were built in the 1980s and there has not been any maintenance. There was also no maintenance plan by the Ministry of Agriculture

Lack of functional seed stores has led to farmers keeping their seeds in conditions not appropriate for storage and these conditions are susceptible to insect and rodent infestations. This could affect the germination of the seeds which could lead to low yield.

### 1.3.3 Absence of recent comprehensive soil testing result

There was absence of comprehensive soil testing since 1996 which would have shown different types of soil fertility in the Gambia. This would have determined the types of fertilizer to be procured.

The absence of recent comprehensive soil testing has been attributed to inadequate working tools (such as anhydrous sodium sulphate, fume hood, exchangeable potassium (K)) and a sub-standard laboratory for soil testing. This has led to NARI not carrying out any thorough soil testing since 1996.

### 1.3.4 Limited level of Sensitization with regards to Certified Seed usage among Groundnut Farmers

About only seven (7) out of thirty-eight (38) farmers interviewed use certified seeds. The rest of them used seeds purchased from open marketplaces (Lumos) and seeds stored by them that were not checked and certified by NSS. The absence of using certified seeds by the farmers could lead to low-quality groundnut production and productivity

This problem is also attributed to inadequate extension workers, inadequate motorbikes, and limited fuel supply . This had resulted to inefficient extension services.

### 1.3.5 Limited Coordination between Stakeholders involved in the Fertilizer Procurement.

GGC as the fertilizer procuring arm of the government does not consult NARI to test the fertilizer procured before it is distributed. The reasons GGC advanced was that they do not know that NARI should be consulted before distribution.

Distribution of untested fertilizer poses the risk of applying the wrong fertilizer in terms of quality and type. This affects both plant growth and productivity. We have confirmed that no certificate of quality regarding fertilizers imported were obtained from NARI during the period under review.

## 1.4 CONCLUSION

### 1.4.1 Late arrival of fertilizers

Groundnut farmers across the country did not receive fertilizer on time during the period under audit. This was due to the absence of a fertilizer policy, delay in getting responses from key players and breach of contract agreement by the suppliers.

### 1.4. 2 Late arrivals of seeds

Groundnut farmers received certified seeds from FAO around August which is late for sowing hence defeating the purposes for which seeds were distributed.

### 1.4.3 Dysfunctional Seed Stores in the Gambia

Fifty-seven percent (57%) of the seed stores visited were completely dilapidated and not used for storage. Those that were functional lack basic requirement for proper storage.

### 1.4.4 Absence of recent comprehensive soil testing

Absence of comprehensive soil testing was due to inadequate working tools and sub-standard laboratory for testing leading to GGC procuring fertilizers that were inappropriate for groundnut cultivation.

### 1.4.5 Limited level of Sensitization with regards to Certified Seed usage among Groundnut Farmers

There was limited use of the certified seeds by the farmers due to lack of knowledge and guidance from the extension workers. This was as a result of high ratios of farmers to extension workers couple with lack of mobility, inadequate fuel and non-provision of maintenance costs.

### 1.4.6 Limited Coordination between Stakeholders involved in the Fertilizer Procurement.

There was lack of coordination between the key stakeholders. This has resulted to fertilizer distribution to farmers before they are tested by NARI., this has defeated one of the purposes for which NARI was established to promote research on adaptable fertilizer on the Gambian soil.

## 1.5 RECOMMENDATION

### 1.5.1 Late arrival of fertilizers

The Ministry of Agriculture in consultation with relevant stakeholders should formulate a fertilizer policy that would guide the fertilizer procurement process. This policy should be implemented and monitored in ensuring that right type of fertilizer is procured and delivered to farmers on time.

### 1.5.2 Late arrival of seeds

The Ministry of Agriculture should work closely with FAO to cut down the lead time of receiving certified seeds and ensure that these seeds are received and distributed to farmers in timely manner.

### 1.5.3 Dysfunctional Seed Stores in the Gambia

The Ministry of Agriculture should ensure that seed stores are restored and up to standard for effective storage. They should ensure that the ones that are functional are provided with basic requirements such as pallets, ventilation, insecticides etc.

### 1.5.4 Absence of recent comprehensive soil testing result

NARI should be supported with the necessary working tools to be able to provide soil data to GGC. This data could be used to inform them the appropriate fertilizers to be procured and curb the issue of over or under application of fertilizers.

### 1.5.5 Limited level of sensitization with regards to Certified Seed usage among Groundnut Farmers

The Ministry of Agriculture should ensure that the high farmer/extension ratio is improved with a view of reaching the FAO recommended ratio of 1:500 in other to enhance effective extension service delivery to groundnut farmers.

### 1.5.6 Limited Coordination between Stakeholders involved in the Fertilizer Procurement.

GGC should coordinate all the activities in the fertilizer procurement process by consulting all the relevant stakeholders in the earliest possible time to ensure that their various mandates executed as required.

## 2.0 CHAPTER TWO - INTRODUCTION

### 2.1 Background

The Gambia has a population of 2,335,504[3] of which according to the Food and Agricultural Organization, 72% are poor and worked in the Agricultural Sector of The Gambia[4]. The Agricultural Sector employs 75% of The Gambian population[5], and contributes to 25% of the country's Gross Domestic Product (GDP)[6]. In addition, agriculture is a source of livelihood for 80% of the rural population [7] which constitute about 38.73% of the total population in 2018[8].

Most farmers are smallholders cultivating on average 1.5 to 2 hectares per farm[9]. Gambia has a total land area of about 1.04 million hectares of which 558,000 hectares (representing 54%) are arable, out of which 320,000 hectares is cultivated, 96,000 Hectares (about 30%) of the cultivated area is devoted for groundnut production[10].

The backbone for any agricultural development/enhancement is access to up-to-date agricultural inputs by farmers[11]. These agricultural inputs include improved seeds, fertilizers, and crop protection chemicals to machinery, irrigation, and knowledge. More importantly, certified seeds are crucial for successful crop production and certainly for farm productivity and profitability.

Fertilizer is also another essential farm input that supplies nutrients to the soil that are essential for plant growth. Increased use and proper application of fertilizer and use of improved seeds certainly lead to higher crop productivity.

Farm inputs (seeds and fertilizers) are crucial for groundnut production and productivity hence serves as a pre-requisite for groundnut production and productivity. Over the years, the production of groundnut declined from 2016 to 2019 as shown in the table below.

[3] The Gambia Bureau of statistic: The Gambia 2018 Statistical Abstract page 16
[4] Gambia Case Study Prepared for FAO as part of the State of the World's Forests 2016 (SOFO)
[5] Gambia Case Study Prepared for FAO as part of the State of the World's Forests 2016 (SOFO) Page 8
[6] investing%20in%20rural%20people%20in%20The%20Gambia.pdf
[7] According to the 2015/16 Integrated Household Survey (IHS), the Gambia.
[8] according to the World Bank collection of development indicators, compiled from officially recognized sources /https://tradingeconomics.com/gambia/rural-population-percent-of-total-population-wb-data.html
[9] Extension policy of the Gambia, Background page 10.
[10] AFRICAN SOIL PARTNERSHIP WORKSHOP 20-22 MAY 2015, ACCRA, GHANATOPIC: GAMBIA; NATIONAL PRIORITIES FOR SUSTAINABLE SOIL MANAGEMENT PRESENTATION BY ABDOU RAHMAN JOBE
[11]Market-based solutions for input supply: making inputs accessible for smallholder farmers in Africa / https://www.kit.nl/wp-content/uploads/2019/10/SNV-KIT_WPS_5-2015-web.pdf

**Table 1 showing declined trend of groundnut production from 2016 - 2019.**

| Year | Metric tons produced |
|---|---|
| 2016 | 71,082.00 |
| 2017 | 57,625.00 |
| 2018 | 22,170.11 |
| 2019 | 19,977.40[12] |

The government has developed the National Seed Plan and Policy in 2018 in collaboration with the National Seed Secretariat and Food and Agricultural Organization, as an intervention for swift provision and delivery of improved varieties from research to farmers to increase groundnut production and productivity in the Gambia[13]. Despite this intervention groundnut production continues to decline.

## 2.2 Motivation

In 2017, the National Seed Secretariat was established to strengthen the quantity and quality of certified seed production in the country.

Furthermore, in ensuring that certified seeds are accessible and affordable to groundnut farmers the National Seed Plan and Policy were established in 2018 by the Ministry of Agriculture in collaboration with the National Seed Secretariat and Food and Agricultural Organization. Despite these interventions' inadequacy remain in certified seed production.

Strategic intervention stated in the National Seed Plan includes ,strengthening NARI's role in variety development and breeder seed production, modernizing and expanding foundation seed production, strengthening the collaboration in the seed value chain, strengthening seed marketing, expanding the certified seed production, enhancing extension support (promotion, monitoring and inspection, demand creation and assessment), empowering youth and women in the seed sector, restoring village seed stores and village seed banks, establishing national seed security system, installing an effective M&E system for seed sector planning and performance monitoring[14].

Despite these strategic interventions, access and affordability of adequate quality and quantity of farm inputs by groundnut farmers remains a problem in the Gambia[15]. In 2019, the quantity of certified seed produced was 7.32% (146.30MT) of the projected quantity (1998MT[16]) and 10.29% (257.18MT) of the projected quantity (2498MT[17]) were produced in 2020. See below, the table showing national seed requirement, projected level of certified seed production and actual quantity produced from 2019 to 2020.

[12] Statistic from the preharvest report 2016-2020

[13] National seed plan 2018

[14] National Seed Plan for the implementation of the seed policy September 2018, page Vii

[15] The Gambia Agricultural engagement note, fostering agricultural-led inclusive growth June 2019, World Bank Pdf

[16] National Seed Plan for the implementation of the National Seed Policy September 2018, page Vii

[17] National Seed Plan for the implementation of the National Seed Policy September 2018, page Viii

**Table 2 showing the projected level of certified seed production and actual quantity produced.**

| Year | Projected level of Certified Seed Production (MT) | Actual Quantity of Certified seed produced (MT) | Variance between PLCSP & AQCSP (MT) | %Variance between PLCSP & AQCSP |
|---|---|---|---|---|
| 2019 | 1998[18] | 146.30[19] | 1851.70 | 92.68% |
| 2020 | 2498[20] | 257.18[21] | 2240.82 | 89.70% |

**Source: Audit team Analysis**

The 2020 data is generated from the 2019 cropping season and the data for 2019 is generated from the 2018 cropping season[22].

Although input subsidies (fertilizers and seeds) to groundnut producers accounted for a large share of MOA investment spending[23], the major proportion of funding for the Agricultural sector comes primarily from development partners, which contributed an estimated amount of $163 million for the period from 2008 to 2019[24]. Despite all this funding, government funding for the agriculture sector has not gone above six percent (6%) during the past five years which is below the 10 percent Malabo recommended target[25].

Sustainable Development Goal 2 (SDG 2) to which The Gambia has subscribed aims at ending all forms of hunger and malnutrition by 2030, making sure all people have access to enough and nutritious food all year round and promote sustainable agriculture. Accessibility to quality agricultural inputs (seeds and fertilizers) will increase productivity and therefore contributes to the achievement of the sustainable development goal which would enhance the lives and livelihoods of the citizenry.

The government of the Gambia has registered its commitment to the implementation of the SDG 2030 by putting it as one of the key indicators into the National Development Plan (NDP 2018 – 2021) and by continuing to engage the private sector, civil society, and development partners in the implementation of the agenda 2030. However, stakeholders'

[18] National Seed Plan for the implementation of the National Seed Policy September 2018, page Vii & Budget estimates 2016-2020

[19] Updated 2019 seed availability Document received from NSS by email on Tuesday 27/10/2020.

[20] National Seed Plan for the implementation of the National Seed Policy September 2018, page Viii

[21] Seed availability and lab test result 2020 received from NSS 27/10/2020.

[22] the data for 2018 should have been generated from 2017 cropping season and this was the year NSS was created.

[23] National Development Plan 2018-2021 page 174

[24] National Development Plan - The Gambia Times www.thegambiatimes.com › uploads › 2018/02 › 1.-The-...pdf page 220

[25] National Development Plan - The Gambia Times www.thegambiatimes.com › uploads › 2018/02 › 1.-The-...pdf page 220

level of awareness about the SDGs is weak making it challenging for stakeholders to take ownership of the agenda 2030[26].

The Gambia being part of the fifty-seven participants from the African Union Commission in the technical convening on seed and fertilizer policy (representing government, private sector, development partners, and researchers) are ready to work more closely together to help African policy makers implement the policy that would accelerate availability of appropriate fertilizers for African's farmers since the beginning of first half of 2014[27].

Despite this commitment and effort in improving the supply and management of farm inputs, the Ministry of Agriculture is yet to develop a fertilizer policy which as an instrument would have served as a reference and guide for the implementation of fertilizer- related activities.

In addition, groundnut farmers have limited access to finance to procure agricultural inputs. Despite their fundamental role in national food production and trade, groundnut farmers tend to have little or no access to formal credit. When informal sources (such as "Osusu") of finance are available, they are usually for a short term which carries high interest cost and does not meet the financial needs of all their farming activities. Limited access to finance limits the timely provision of farm inputs to groundnut farmers[28].

Based on the factors highlighted above on the groundnut sector coupled with the challenges in the availability of farm inputs to groundnut farmers, the National Audit Office decided to conduct a performance audit on the provision of accessible and affordable farm inputs to groundnut farmers in the Gambia, by the Ministry of Agriculture and make possible recommendations for improvement of the system as well as improvement in the efficient and effective utilization of available resources.

## 2.3 Audit Objective

The objective of the audit is to assess whether the Ministry of Agriculture has ensured timely accessibility and availability of quality farm inputs (seeds & fertilizers) to groundnut farmers to increase groundnut production and productivity in the Gambia.

### 2.3.1 Specific Audit Objective

a) To assess whether GGC has ensured timely procurement and distribution of fertilizers to groundnut farmers.

[26] voluntary national review of the SDG in the Gambia, https://sustainabledevelopment.un.org/memberstates/gambia

[27] Seed and Fertilizer Policy in Africa: Recommendations to the African Union Commission/ https://www.agrilinks.org/sites/default/files/resource/files/Document%207%20Note%20for%20Commissi0oner.pdf

[28] National Development Plan 2018-2021 page 174 & 175

b) To assess the extent to which the Ministry of Agriculture through NSS supplies seeds to groundnut farmers at the appropriate time.

c) To assess whether the MOA has ensured that seed stores are available, properly maintained and up to standard.

d) To assess whether the MOA through NARI has ensured that a comprehensive soil test is conducted to provide recent comprehensive soil test results.

e) To assess whether the Ministry of Agriculture through DOA (extension workers) has created awareness with regards to the used of certified seeds.

f) To assess whether the MOA through GGC has ensured effective coordination among the various stakeholders along the fertilizer procurement chain.

### 2.4 Overall Audit Questions

Has the Ministry of Agriculture put in place measures to ensure quality and adequate quantity of farm inputs (seeds and fertilizer) are available and accessible to groundnut farmers to improve groundnut production and productivity in the Gambia?

### 2.4.1 Specific Audit Questions

a) Has the Ministry of Agriculture through GGC ensure timely procurement and distribution of fertilizers to groundnut farmers?

b) Does the Ministry of Agriculture through NSS supply seeds to groundnut farmers at the appropriate time?

c) Has the MOA put in place plans to ensure seed stores are available, restore and up to standard?

d) Does the MOA through NARI ensure that comprehensive soil test is conducted to provide recent comprehensive soil test result?

e) Has the Ministry of Agriculture through DOA (extension service) created awareness with regards to the use of farm inputs (seed and fertilizer) supplied to farmers?

f) Has the MOA through GGC ensure effective coordination among the various stakeholders along the fertilizer procurement chain?

## 2.5 Assessment Criteria

To assess the audit problem, criteria were drawn from different sources such as: legislations (Acts and Regulations), policy documents, and interviews. Detailed information is explained below:

### a) Assessment Criteria to Audit Question (a)

According to the GGC fertilizer bidding document, fertilizers should be procured on time and 50% of the consignment (fertilizer) ordered should be delivered within 45 days of signing the contract and the rest of the quantity should be delivered within 30 days thereafter at CIF value at the ports in Banjul [29] for distribution to groundnut farmers.

Furthermore, Interviewees at DOA, RADs, and Groundnut farmers stated that the ideal time for fertilizers to be available to farmers is in May and that it should be applied on groundnut two to three weeks after planting.

### b) Assessment Criteria to Audit Question (b)

According to the National seed program the MOA should ensure adequate and timely availability of quality seed to farmers at the appropriate location[30].

### c) Assessment Criteria to Audit Question (c)

The MOA should collaborate with development partners to assist in upgrading and maintaining existing seed stores for use by small-scale seed growers/groundnut farmers and provide support by establishing seed storage facilities at strategic locations for use by registered seed growers[31].

### d) Assessment Criteria to Audit Question (d)

Based on the principle of Integrated Plant Nutrition Systems, NARI should conduct comprehensive soil test to explore all possible sources of plant nutrients in an integrated manner appropriate to each farming situation[32].

### e) Assessment Criteria to Audit Question (e)

The MOA through DOA should support the private sector marketing effort with appropriate extension and promotional program such as farmer field visits and seed fairs to enhance farmers' seed utilization. This effort should involve community sensitization on certified seed usage, advertisement on recommended and available varieties by radio, television,

[29] Bidding document ICB No. ICB/NFSC/001/2017 & 2018 for the purchase of fertilizer
[30] National seed policy page 11 under section 2.1 PRIMARY GOAL OF THE NATIONAL SEED PROGRAMME
[31] National seed policy , page 19 , under section 9 ( seed storage)
[32] Research Master Plan page 166

and newspapers etc. with the aim of enhancing seed demand levels which are needed for enhancing investments in the seed sector[33].

## f) Assessment Criteria to Audit Question (f)

The MOA through GGC should ensure that all relevant stakeholders along the fertilizer procurement chain are consulted to ensure the right type of fertilizers are procured[34].

[33] According to the National Seed Policy 2018 under section 12.2 dealing with extension promotion,
[34] Interview with MOA official, NARI, GGC and DOA

## 3.0 CHAPTER THREE - DESIGN OF THE AUDIT

### 3.1 Introduction

This chapter provides detailed description of the scope of the audit, methods used to collect data, sampling techniques and methods used for data analysis

### 3.2 Audit Scope

The audit covered the provision of farm inputs (seeds and fertilizers) to farmers by the Ministry of Agriculture in all the six regions of the Gambia. It covers the period 1 January 2016 to 31 July 2020.

The selected period allowed the audit team to conduct an in-depth review and analysis to establish the trend of provision of farm inputs.

### 3.3 Sampling Techniques, Methods of Data Collection and Analysis

Different sampling methods were used to collect data from the Ministry of Agriculture and relevant stakeholders involved in groundnut production and productivity. Data collected and analyzed primarily focused on the provision of farm inputs by the Ministry of Agriculture. The sampling methods, data collection and analysis methods used are described below:

#### 3.3.1 Sampling Techniques used

To have a nationwide representation, we collected data from the Ministry of Agriculture and from the various stakeholders (NSS, DOA, NARI, GGC, and FAO) that are relevant in the provision of farm inputs to farmers in all six (6) regions of the country.

Non-probability sampling technique was used to select regions that were visited. We used the judgmental/purposive sampling method to select communities with the most prominent groundnut farmers base on the list of farmers provided by RADs, hence settlements with the highest production/yield, depots, and mixed farming centers (where fertilizers are sold) were visited. We use our expertise to select at least three (3) farmers in each region and one (1) master farmer to provide us with in-depth knowledge of the audit topic.

#### 3.3.2 Audit Methodology

We conducted interviews and/or discussions, document reviews, and physical observation/verification to obtain information on the provision of farm inputs by the Ministry of Agriculture.

**a) Interview**

Interviews and/or discussions were held with one hundred (100) officials of the Ministry comprising of staff at the central level, departments under the Ministry of Agriculture and selected farmers across the six regions of the country. These discussions were aimed at gathering information from diverse people to build a sound understanding of the provision of farm inputs by the Ministry of Agriculture and the related challenges.

Appendix 2 showing details of **staff interviewed.**

**b) Document review**

We reviewed documents relating to the provision of farm inputs to facilitate a sound understanding of the measures put in place by the Ministry towards improving groundnut production in the Gambia.

The documents reviewed enabled us to have a better understanding of the audit topic, operations, and systems to facilitate the provision of farm inputs to establish the root-causes of the identified problems which when corrected would help to improve the current situation. **Appendix 3** showing list of document review by the audit team.

**c) Physical observation/ Site Visit**

We conducted visits in all the six regions to establish the extent to which procured agricultural inputs were distributed, tested for quality and the challenges encountered in these areas so that the evidence obtained from documents reviewed and interviews could be corroborated for their validity and reliability.

Physical observations of agricultural depots and mixed farming centres were also conducted to ascertain the extent and timeliness at which agricultural inputs were distributed. In addition, the extent to which farmers were aware of the indicative prices as well as quality identification techniques and farmers' involvement during the demand establishment process was observed.

### 3.3.3 Methods for Data Analysis

We analysed the data gathered by using both quantitative and qualitative methods of data analysis and compiled them to support our findings. Various techniques were applied in presenting audit findings which include tables, figures, and graphs.

## 4.0 CHAPTER FOUR - DESCRIPTION OF THE AUDIT AREA

This chapter provides the systems and processes description for the provision of farm inputs by the Ministry of Agriculture. It covers the administrative framework for key actors and stakeholders with their main responsibilities and relationships.

### 4.1 Statutory Mandate and Roles of Key Stakeholders on the provision of farm inputs to groundnut farmers by the Ministry of Agriculture

Provision of farm inputs to groundnut farmers by the Ministry of Agriculture in the Gambia involves various stakeholders such as the Ministry of Agriculture, Department of Agriculture, National Seed Secretariat, National Agricultural Research Institute, and Gambia Groundnut Corporation. Other stakeholders include FAO, farmers, and certified seed growers. Each stakeholder plays a significant role to ensure the system for Groundnut Production and Productivity is functioning properly. Below are the detailed responsibilities of each of the above-mentioned stakeholders:

### 4.1.1 The Ministry of Agriculture

The Ministry of Agriculture (MOA) was established by an Act of Parliament. Among other activities, the Ministry is responsible for formulating policies for the development of the agricultural sector especially in the rural areas of the country[35].

The Ministry is headed by a Minister who is appointed by the President and assisted by a Permanent Secretary who is responsible for supporting the general policies and priorities of the MOA. The Permanent Secretary is assisted by three (3) Deputy Permanent Secretaries; one assists on programs and projects, one on administrative and financial matters, and the other one assist on environment-related issues.

The Ministry has seven (7) departments, each comprising specific directorates and program management units, who are responsible for coordinating their specific area of focus, but only four out of the seven departments are related to the audit topic as listed below. **Appendix 4** showing organogram of the Ministry of Agriculture.

1. Department of Agricultural Services (DOA)
2. National Agricultural Research Institute (NARI)
3. Central Project Coordinating Unit (CPCU),
4. National Seed Secretariat (NSS),

[35] https://www.developmentaid.org/#!/donors/view/152304/ministry-of agriculture

### 4.1.2 Vision of the Ministry of Agriculture

"*To transform agriculture into a sustainable, modernized, diversified production and export-oriented sector, which contributes to improved food security, farmers' livelihood, and overall economic growth*[36]*".*

### 4.1.3 Mission of the Ministry of Agriculture

"*To improve and sustain measurable levels of food and nutrition security for the population, attain a modernized sector ensuring measurable competitive, efficient, and sustainable food and agriculture value chains and linkages to markets, ensure a diversified and export-oriented production system to minimize risks in food security, farmer income and export earnings, and to ensure sustainable effective management of the natural resource base of the sector*[37]".

### 4.1.4 The Specific Objectives of the Ministry relating to the provision of farm inputs[38]

- Make farm inputs available and accessible to farmers;
- Increase local production of groundnut;
- Develop a research and development center to ensure high yielding and disease-resistant varieties of groundnut;
- Overcome challenges of aflatoxin;
- Improve existing marketing arrangements and better storage facilities;
- Re-establishment of a private sector-led cooperative system; and
- Increase the capacity of extension workers to meet the rising demand of the farming communities[39]

### 4.1.5 The Activities carried out by the Ministry of Agriculture relating to the provision of farm inputs[40]

- Supervision of activities of groundnut farmers through the Department of Agriculture throughout the farming season.
- Training and capacity building for groundnut farmers through extension workers.
- Technical advise to farmers through extension workers on best farming practices like fertilizer application methods, planting, and best storage methods to avoid post-harvest losses.
- Facilitation of farmers' access to inputs through the Department of Agriculture.
- Establishment of farmers field schools; through NSS to enhance the capacity of certified seed growers.

[36]Program based budgeting framework 2020-2022 Ministry of Agriculture.

[37]Program based budgeting framework 2020-2022 Ministry of Agriculture.

[38] National Export Strategy 2013-2017, page 33 under vision, objectives, and strategies to develop the groundnut sector.

[39] National Development Plan 2018-2021

[40]Program based budgeting framework 2020-2022 Ministry of Agriculture.

### 4.1.6 Funding for the Ministry of Agriculture

The table below shows the total budget of the Ministry of Agriculture and total government budget for the periods under audit amounting to D2,048,478,250[41] and D63,166,248,831[42] Respectively.

**Table 3 Funding for the Ministry of Agriculture[43]**

| Year | Estimates Budget to MOA (D) | Total Government appropriation for the year (D) | Percentage of the total appropriation consumed by MOA |
|---|---|---|---|
| 2016 | 313,742,923 | 7,240,290,082 | 4.33% |
| 2017 | 278,867,580 | 8,232,860,030 | 3.39% |
| 2018 | 526,067,392 | 9,308,363,003 | 5.65% |
| 2019 | 441,536,840 | 17,099,138,822 | 2.58% |
| 2020 | 488,263,515 | 21,285,596,894 | 2.29% |
| **Total** | **2,048,478,250** | **63,166,248,831** | |

**Source: estimates of revenue and expenditures 2016, 2017, 2018, 2019 and 2020**

As seen from the table, the percentage of government appropriation allocated to the MOA in 2016 was 4.33% which has reduced to 2.29% in 2020. The budgeted amount for the Ministry of Agriculture was less than 10% for all the years as stated in the Maputo declaration 2002.

The table below shows a total budget of D71,984,714 for agricultural inputs during the peiod under review

**Table 4 showing budgeted allocated for the Provision of farm Inputs by the Ministry of Agriculture**

| Year | Estimates / Budgets (D) | Approved Estimates (D) |
|---|---|---|
| 2016 | 12,950,000 | 12,950,000 |
| 2017 | 2,344,714 | 2,344,714 |
| 2018 | 7,120,000 | 7,120,000 |
| 2019 | 3,470,000 | 3,470,000 |
| 2020 | 46,100,000 | 46,100,000 |

**Source: estimates of revenue and expenditures 2016, 2017, 2018, 2019 and 2020**

### 4.2 Institution under the Ministry of Agriculture

There are various institutions that work under the Ministry of Agriculture who have stake in the provision of farm inputs (seeds and fertilizers) to groundnut farmers as given below:

[41] Budget estimates 2016-2020
[42] Budget estimates 2016-2020
[43] Budget estimates 2016-2020

### 4.2.1 Department of Agricultural Service

It was established to provide extension services to farmers in the Gambia. It is responsible for assisting farmers with technology transfer, supervision & monitoring activities carried out on their groundnut farms. The primary goal of establishing the extension system in the colonial and the immediate post-independence era was to improve the quality and quantity of groundnut exported from the Gambia. The service was created to encourage farmers to apply improved technologies from research to achieve higher yields of groundnuts and other agricultural products.[44]

### 4.2.2 National Seed Secretariat

Responsible for fostering the synergy between NARI and NSS as well as DOA in the quest for building sustainable seeds system for all and sundry in reviving groundnut production[45]. NSS is charged with the responsibility for organizing and facilitating the production and marketing of groundnut seeds in the Gambia. NSS should produce and organize other private seed growers to produce early generation seeds[46]. The Director-General of NSS may also liaise with centers of excellence in the sub-region in a situation where NARI could not provide enough breeder seeds for foundation seed production.[47] The National Seed Secretariat shall make available to the public all necessary information relating to seeds and in doing so, shall help train and build awareness of seed sector players e.g., Certified seed growers.[48]

### 4.2.3 National Agricultural Research Institute

It is responsible to foster relations with the Ministry of Agriculture to determine the types of groundnut varieties to be sourced and supervises the entire process of varietal evaluation and selection[49] and recommends the appropriate type of fertilizer for each crop [50]

It is also responsible to transmit approved research technologies on groundnut such as recommended varieties and ideal production systems to end-users such as the Department of Agriculture for further transmission to farmers, the National Seed Secretariat (NSS) for foundation and certified seed production, the Gambia Groundnut Cooperation (GGC) for marketing purposes and the Ministry of Agriculture (MOA) for policy decision making[51]. The institute has research liaison officers that transmit new technology and improved products to agricultural extension workers, NGO staff, and

[44] National Agricultural Extension policy 2018 page 15 (section 2.0 Agricultural Extension in the Gambia)
[45] National Seed Policy
[46] National Seed Policy 2018 page 12
[47] Interview with DG NSS
[48] Seed regulation March 2016 page 19
[49] Interview with the director general of NARI and other relevant staff
[50] Meeting with NARI & MOA officials
[51] National Development Plan 2018-2022 page 41

farmer-beneficiaries that were developed through adaptive research by NARI; hence they served as an intermediary between NARI and extension workers[52].

### 4.2.4 Gambia Groundnut Corporation

Responsible for coordinating all marketing activities relating to groundnut production on behalf of the government. This involves procurement of fertilizer and making fertilizers accessible to the farmers at a subsidized price in all the nine depots as listed below[53].

- Kerewan
- Kudang
- Kaur
- Kuntaur
- Barra
- Basse
- Bansang
- Tendaba
- Sarro

### 4.2.5 Regional Agricultural Directorates

The Regional Agricultural Directorates (RADs) represent the Permanent Secretary at the regional levels. They are responsible for all agricultural-related matters at the level of the regions. They coordinate the activities of the extension workers responsible for all agricultural extension on crop production; training of farmers on good practices for groundnut production, helping farmers identify their source of inputs (certified seeds). RADs facilitate the distribution of farm inputs (seeds & fertilizers) to the farmers and provide them with technical advice through District Extension Supervisors (DESs) and Village Extension Workers (VEWs) on (soil type, fertilizer type, fertilizer application methods, the timing of fertilizer application; weed management, pests, and diseases control)[54].

### 4.2.6 District Extension Supervisors

District extension supervisors provide positive behavioral changes among farmers, thus introducing them to best practices through training and field demonstrations. They are also responsible for the dissemination of useful and practical information to farmers such as improved seeds, fertilizer, pesticide, farm implements, fertilizer application time, rate, and methods, weeding methods, seed treatments methods, seed spacing and application rate, pest scouting, trained farmers on how to use Aflasafe through the village extension workers.

[52] National Development Plan 2018-2022 page 41

[53] Meeting with GGC and MOA officials on 21/9/2020 & 14/09/2020

[54] National Agricultural Extension policy 2018 and meeting with RAD officials

The District Extension Supervisors report directly to Regional Agricultural Directorates. They also help in making farm inputs (seeds and fertilizers) easily accessible to farmers by serving as agents in the mixed farming centers and help in the distribution of seed and fertilizer from projects like FAO and NEMA to beneficiaries, monitor the progress of the inputs distributed and provide feedback to them after distribution[55].

### 4.2.7 Village Extension Workers

They work directly with farmers on daily basis to advise them on best agricultural practices to increase agricultural productivity.[56]

### 4.3 Roles and Responsibilities of other Stakeholders:

### 4.3.1 Groundnut Farmers:

They are directly involved or engaged in groundnut farming, mainly private individuals.

### 4.2.2 Certified Seed Growers:

These are individuals or corporate bodies specialized in the production of seeds and duly registered for inspection[57].

### 4.3.3 Food and Agriculture Organization:

This is a nongovernmental institution that provides technical support to the Ministry of Agriculture in terms of policies and strategy development[58]. In 2018 they supported the Ministry of Agriculture to develop the National Seed Plan and Policy.

### 4.4 Process description for the provision of farm inputs to groundnut farmers by the Ministry of Agriculture:

### 4.4.1 Process Description for the provision of Groundnut Seeds

### a) Demand Establishment

The Planning Service Unit is under the Ministry of Agriculture responsible for establishing the national seed requirement for the whole country in consultation with RAD and NARI by putting into consideration the total area of land under cultivation for a particular year , multiplied by the seed rate per hectare and putting into consideration seed replacement rate per year.

[55] Meeting with DOA officials on 15/9/2020
[56] Meeting with DOA officials on 15/9/2020
[57] National Seed policy
[58] http://www.fao.org/3/a-af089e.pdf

## b) Development of Groundnut Breeder

The demand establishment data should be used by NARI to determine the quantity of breeder seed to produce, the development of groundnut breeder seeds starts on average around February to June [59]. Groundnut breeder seeds are produced by NARI serving as the first entry point for seeds in the Gambia through adaptive research. Seeds have four pillars of purity which include physical, genetic, sanitary, and physiological purity. We noted through document review that breeder seed shall conform to subscribed standards of genetic purity[60]. The physical purity and germination rate are indicated on the label attached to the container of the breeder seeds.

When NARI develops a variety and meet the desired requirements for adoption, the varietal release committee meets and releases these varieties in the National Variety Catalogue for dissemination to NSS to produce foundation seeds.

## c) Foundation Seed Production

After groundnut breeder seeds are released to the National Variety Catalogue, foundation seeds are produced by NSS around June to October every year during the wet season because NSS does not have irrigation facilities to conduct this during the dry season[61]. Foundation seed shall be the successors of breeder seed or be produced from the foundation seed which can clearly be traced to breeder seed. The production of groundnut foundation seed should be done by the NSS to maintain specific requirements of genetic purity and identity of a variety and shall meet certification standards for groundnut[62].

Foundation seed produced directly from breeder seed shall be designed as foundation seed stage I, and seed produced from foundation seed stage I, shall be designated as foundation seed-stage II, the foundation seed-stage II shall not be used for further multiplication as another stage of foundation seed, and shall be used only to produce certified seed class.

## d) Certified Seed Production & Certification

Upon completion of the foundation seed production phase, NSS invites applicants to apply or register as a certified groundnut seed producer every year and foundation seeds produce in the previous year will be used to produce certified seeds the following year, this is because both foundation seeds and certified seeds are cultivated during the wet season around June to October. The applicant must fill in the necessary form addressed to the NSS, providing all relevant information as required.

Upon receipt of the filled application form, NSS or its appointed officer in charge examines to ensure that the applicant meets the required standards i.e., observe the appropriate

[59] Information requested from NARI officials on 11.05.2020.
[60] National Seed Regulation page 38 & meeting with NARI
[61] Meeting with NSS officials
[62] Seed regulation March 2016, page 38

technical regulations as mentioned in the seed regulations, have sufficient land, sufficient and qualified technical personnel, and possess appropriate facilities and equipment for groundnut seed production[63]. Those that met the above criteria are trained by NSS to be qualified for certified seed production.

The certified seed growers' farms are accessible for inspection at any time throughout the seed growing cycle. Seed growers are inspected three (3) times by NSS from the day of growing to the harvesting of their groundnut seeds to check the isolated distance, planting space, field cleanliness or sanitation, incident of pest and diseases and verify whether the required level of fertilizer is applied.

NSS grants accreditation to any seed grower that is qualified for seed production under the seed regulation. As part of its functions, the NSS issues a certificate to individuals or corporate bodies who have met the registration requirements for certified seed production after conducting a lab test to know the quality of their seeds. Seed samples with a germination percentage of 80 and above are referred to as good quality seeds, Seed samples with germination percentage from 50 to 79 are fairly good and those who will be using this category of seed will be required to increase seed rate during planting. Seed samples with germination percentage below 49 are not good seeds and are not accepted for planting.[64]

To qualify for a certificate, the applicant pays a registration fee in accordance with the type of activity. The amount, payment modalities, and allocations of the proceeds of the single registration fee are determined by the NSS. A registration certificate issued to a qualified holder are for 3 years and renewable at the holder's request, in accordance with the applicable procedures of NSS[65].

### e) Storage of certified seed at the seed stores

Certified seed growers upon completion of the certified seed production and certification by NSS around November are required to package their seeds with chemical added and take them to a standard seed stores that has pallets, seed dressing chemicals, well ventilated in order to maintain the genenic purity of the seeds before seeds are being procured by FAO for further distribution to vulnerable farmers in the up coming farming season**.**

### f) Distribution of Farm inputs to Groundnut Farmers

FAO in collaboration with the Ministry of Agriculture organize a seed fair to empower certified seed growers and buy their seeds after harvest for distribution to groundnut farmers which is around June.The Ministry of Agriculture through the Department of Agriculture makes logistical arrangements for easy availability and affordability of fertilizer

[63] Seed regulation March 2016

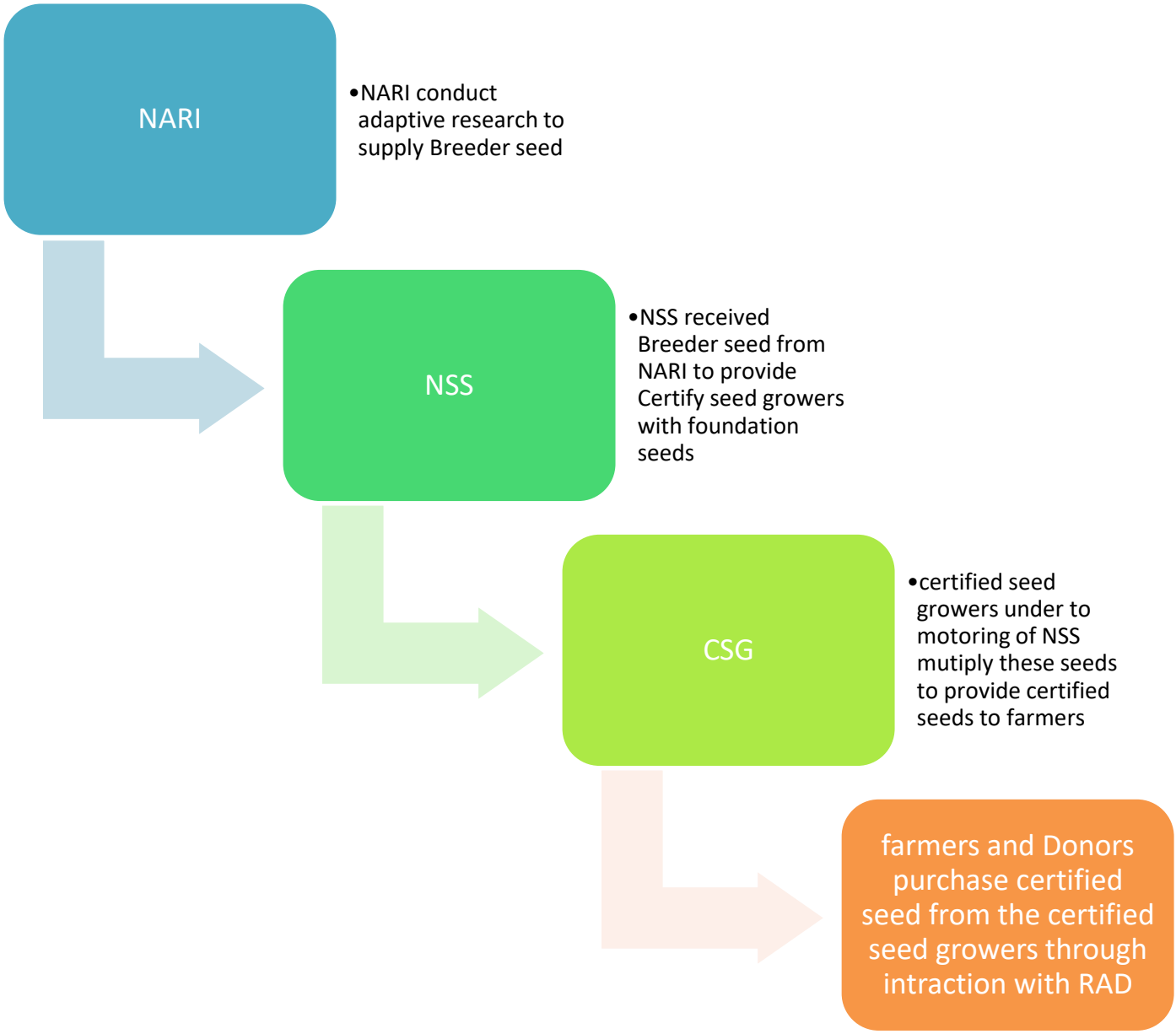
[64] SEED AVAILABILE WITH CERTIFIED SEED GROWERS AND THEIR LAB TEST RESULTS, 2020 report by NSS.

[65] Seed regulation (Registration Certificate, Article 66)

and provision of groundnut seeds to farmers when it is available through the Regional Agricultural Directors.

The Regional Directors through their extension workers facilitates the distribution of these farm inputs. If support is from FAO, a vulnerable need assessment is conducted through questionnaires to farmers in consultation with National Disaster Management Agency and Extension workers to identify vulnerable farmers.

**Figure 1: Brief description of the Formal Seed Sector**



### 4.4.2 Process Description for provision of Fertilizer

#### a) Soil survey

NARI as the supreme agricultural research institution of the Gambia is required to conduct research on different soils to know the nutrient contents of these soils in all the regions of the country in order to give recommendation on the type of fertilizer to be procured based on the result of the survey to GGC which is the body responsible for procuring fertilizer on behalf of the government.

#### b) Consultation of stakeholders to provide data needed for fertilizer procurement.

After the soil survey, the MOA through GGC should consult NARI to provide data on the recommended type of fertilizer to be procured. The Planning Service is also consulted for establishing the national fertilizer requirement for the whole country in consultation with RAD and NARI based on soil sample survey available for a particular year, area of land under cultivation, and the fertilizer requirement rate per hectare. The planning service unit have representative at regional level that collect data on the hectare of land under cultivation then multiply it by the fertilizer application rate per hectare, submit it at the planning service headquarters for it to be consolidated as national fertilizer requirement of the Gambia.

#### c) Procurement of fertilizer

The fertilizer procurement is a consultative process between NARI, the Planning Service Unit of MOA, and GGC. The process also involves.

Other stakeholders like: Société' General de Surveillance (SGS), ITFC and GPPA, which takes forty-five to ninety (45-90) days. GGC follows the open tendering procurement process whereby bidders are invited through the contract committee to send in their bids[66].

Upon receiving the bidding documents from the bidders, the evaluation team ( GGC procurement officer and its management, and representative from the MOA) review the bidding files and select the winner of the contract.

In 2020, nine (9) bidders were invited, and Farm Argo won the contract. The Ministry of Finance and Economic Affairs through an agreement with Islamic Trade Finance Corporation under the IDB project loaned GGC to procure fertilizers on behalf of the government at the world market and then sell it to farmers at a subsidized price of D700 per 50kg, though in 2016 the price per 50kg was D950. The loan amount is jointly paid by the Ministry of Finance and Economic Affairs and GGC in consultation with the line ministry (MOA) and attracts an interest rate of 5.5% payable yearly.

[66] GGC Contact Agreement Files 2016-2020

### d) Receipt and Storage of fertilizer

When the procurement process is completed and dealers delivered the fertilizer at the port of Banjul, GGC is required to confirm the quantity received at the port and load it on truck to deliver at GGC central store.

### e) Test for fertilizer Quality

When fertilizers are delivered at GGC's central store, GGC is required to consult NARI as the supreme research institute in the Gambia to conduct tests such as field trials to see whether the fertilizers received from suppliers are of the right type before distribution is been made to the regional stores for further distribution to groundnut farmers. If the fertilizer did not meet requirement, then the fertilizers are supposed to be return the respective suppliers.

### f) Fertilizer Distribution to Farmers

GGC upon receiving assurance from NARI that the fertilizer procured is the right type with the right quality, GGC is required to distribute it to farmers in all the regions at a subsidized price of D700 per 50kg bag. This procured fertilizer is sent directly to all the nine depots across the country by the GGC where this fertilizer is accessible to the farmers before the start of the rainy season for timely application on their groundnut farms.

In the previous year (2016 to 2019) farmers make payments directly to GGC to be able to receive their fertilizers at the depots. In 2020 GGC had agreed with Reliance Financial Service by opening an account with them where farmers can pay directly for their fertilizers and will be issued a receipt indicating the number of bags paid for and the location of the depot to collect it from. This method of payment was later argued by DOA who is responsible for advising and supervising farmers, that accessibility of Reliance Finance Services might be a problem for some farmers who live in very remote villages hence suggestion was made for GGC to further increase the fertilizer distribution chain to the mixed farming centers across the regions that are managed by District Extension Supervisors.

DOA writes to GGC indicating the names of the District Extension Supervisor and mixed farming centers that should be supplied with fertilizer. The farmers then make payment to these District Extension Supervisions and collect their fertilizers. The District Extension Supervisors after collecting these payments from the farmers will then make the bulk payment to Reliance Financial Service.

There are currently eighteen active corporative working with GGC; fertilizers were also supplied to the corporative to make accessibility easier. Corporative are farmers societies that buy fertilizers in bulk and then sell them to farmers. GGC does give a sales commission of D30 to these corporative, meaning fertilizer is given to them D30 less than the subsidized price i.e., D670 per 50kg bag. Private agent dealers that buy fertilizers in

bulk and sell it to farmers were also introduced in very remote villages that are far from the depots, mixed farming centers, and corporative to make accessibility easier.

## 5.0 CHAPTER FIVE: AUDIT FINDINGS, CONCLUSION AND RECOMMENDATION

This chapter presents the audit findings, conclusions, and recommendations with a view of improving accessibility and availability of adequate farm inputs (seeds & fertilizers) to groundnut farmers on time to increase groundnut production and productivity.

### 5.1 Late Arrival of Inputs (Seeds & Fertilizers)

### 5.1.1 Late Arrival of fertilizer

*The government should ensure that quality inputs (fertilizers) are made available to the farmers in a timely manner*[67]*.*

Furthermore, interview with DOA, RADs, and groundnut farmers revealed that *the ideal time for fertilizers to be available to farmers is in May as it should be applied on the farms two to three weeks after planting.*

We noted through interviews with RADs, selected District Extension Supervisors, Village Extension Workers, and the Groundnut farmers across the country that fertilizers were supplied to them lately during the period under audit (2016 to 2020) except for the year 2020.

**Table 5 shows the month fertilizers were available to RADs, Extension Workers, and Groundnut Farmers on average during 2016-2019**

| Months that Inputs were supplied | No of respondent (RADs) | No of respondent (VEWs) | No of respondent (Farmers) |
|---|---|---|---|
| June | 1 | 3 | 7 |
| July | 4 | 21 | 15 |
| August | 1 | 4 | 14 |
| **Total** | **6** | **28** | **36** |

**Source: Audit team Analysis**

As can be seen from the table 5 above, during the period 2016 - 2019 none of the stakeholders received fertilizer in May in contravention to the criteria stated above.

**Appendix 5** shows the time that inputs (seeds & fertilizers) were distributed to Groundnut farmers and the time preferred by them for inputs to be supply to them.

**Appendix 6** showing names of Regional Directors interview, time that inputs were supplied to them and the time that they prefer.

[67]Gambia National Development Plan 2018-2021

**Causes of late arrival of fertilizer.**

**I. Absence of Fertilizer Policy**

We noted that there was no fertilizer policy during the period under review that would have guided the procurement and distribution processes of the Ministry of Agriculture.

**II. Delay in getting responses from key players.**

Officials at GGC and MOA had attributed the late supply of fertilizers to delay in getting response from key players in the fertilizer procurement process. For example, GGC would always write to MOA to determine the quantity of fertilizer to be procured, MOA would consult the Planning Service Unit to provide the data and then send request for fertilizer subsidy to Ministry of Finance and Economic Affairs.

**III. Suppliers failing to deliver fertilizer on time.**

*GGC should ensure that suppliers of fertilizer adhered to the criteria set in the bidding documents that 50% of the consignment ordered is delivered within 45 days of signing the contract and the rest of the quantity should be delivered within 30 days thereafter at CIF value at the ports in Banjul, The Gambia or else the supplier's performance bond will be forfeited*[68]*.*

We have noted from the review of contract files that the late arrival of fertilizer is also caused by the failure of suppliers to deliver on time as per the contract agreement. In 2016, 2017 and 2019 the contracts were awarded to ZEINE Enterprise who was unable to deliver the fertilizer at the Banjul port as agreed.

**Table 6 Illustrates dates on which Fertilizer reached the Port of Banjul, the Gambia**

| Year | Supplier Name | Type of fertilizer | Date Contract was signed[69] | Date fertilizers was Delivered at the port. (1st Consignment) | No of Days Delay |
|---|---|---|---|---|---|
| 2016 | ZEINE Enterprise | NPK 15:15:15 | 27/04/16 | 04/07/16[70] | 50 |
| 2017 | ZEINE Enterprise | NPK 15:15:15 | N/A | 15/09/17[71] | N/A |
| 2018 | FERMAGRO | NPK 6:20:10 | 29/03/18 | 16/05/18 [72] | 3 |
| | ATLAS | NPK 15;15;15 | 26/03/18 | 09/06/18[73] | 29 |

[68] Bidding document ICB No. ICB/NFSC/001/2017 & 2018 for the purchase of fertilizer

[69] Contract Agreement documents

[70] Bill of lading 2016, MSCUVH618646

[71] Records of fertilizer discharged from the port maintained by GGC (Quire book)

[72] Bill of lading 2018

[73] Bill of lading 2018

| | | | | | |
|---|---|---|---|---|---|
| 2019 | ZEINE Enterprise | NPK 6:20:10 | 18/04/19 | 15/07/19[74] | 42 |
| 2020 | FERMAGRO | NPK 15;15;15<br>NPK 6:20:10<br>Urea | 20/03/20 | 16/04/20[75] | 0 |

We also noted that GGC did not forfeit ZEINE Enterprise's performance bond despite their failure to honor the contractual agreement over the three years.

As can be seen in table 6 above, in 2016 the fertilizer consignment arrived fifty (50) days later than the agreed time which is almost two (2) months into the planting season.

Despite ZEINE Enterprise's failure to deliver as agreed in 2016,2017 and 2018, GGC awarded 2019 contract to them. The failure of the GGC to forfeit the performance bond is not only an incentive for worst future performance by the supplier but also put at risk the production of this important cash crop of the Gambia.

According to GGC official's fertilizer distribution to various depots started immediately fertilizer reached the Port, hence we can conclude that 2016 fertilizers distribution started on the 4th of July which was two months into the planting season.

If the distributions in 2018 and 2019 started immediately the consignments arrived at Ports, we can conclude that this was also two months into the planting season.

If the right procedures were to be used in the testing of fertilizer by NARI before distributions are made to the depots and subsequently to the farmers, the delay would have been far more than two months as concluded above.

We could not establish the delay in 2017 because the contract agreement for 2017 was not presented for review. It is important to state that procurement and distribution of fertilizer in 2020 was done on time.

The absence of fertilizer policy, delay in getting responses from key players and failure of suppliers to deliver on time had led to late delivery of fertilizers to farmers. These were the contributing factors that adversely impacted on the production and productivity of groundnut. Yields were affected and eventually contributed to the low marketing of groundnuts in the country.

## Conclusion

Groundnut farmers across the country did not receive fertilizer on time during the period under audit. This was due to the absence of a fertilizer policy, delay in getting responses from key players and failure of suppliers to deliver the fertilizer as per the contract agreement

[74] Meeting notes 21/09/2020
[75] Meeting notes 21/09/2020

This had greatly affected groundnut productivity as fertilizers add nutrients to the soil to increase productivity.

**Recommendation**

The Ministry of Agriculture in consultation with relevant stakeholders should formulate a fertilizer policy that would guide the procurement and distribution of fertilizers to deports and farmers.

GGC should engage the relevant stakeholders in the fertilizer procurement in the earliest possible time to prevent potential delays and to give adequate time to deal with such delay as they begin to show up. This would ensure that fertilizers are procured and made available to farmers in a timely manner.

GGC should award contracts to suppliers that have the capacity to deliver fertilizer as per the contract agreement. Where a supplier failed to deliver as agreed, GGC should forfeited 10% of its performance bond as stated in their contract's files.

### 5.1.2 Late Arrival of Seeds

*The primary goal of the national seed program is to ensure that certified seeds are adequate and timely available to farmers at appropriate locations*[76]*.*

We noted through interviews with RADs and selected groundnut farmers that seeds were received lately around July to August from either DOA or FAO during the period 2016 to 2020. May is the preferred month for inputs to be available to ensure timely planting when rains start in June. **Appendix 5** shows the time that inputs (seeds & fertilizers) were distributed to Groundnut farmers and the time preferred by them for inputs to be supply to them.

However, we noted through interviews with certified seed growers that they are not allowed to sell seeds directly to farmers, instead they are sold to FAO after harvest. FAO supplies or channel the seeds through the MOA for final distribution to farmers. According to Permanent Secretary of the MOA, seeds from FAO are usually not received on time for distribution. The seeds were mostly received from FAO around July or August for onwards distribution to farmers by the MOA.

We were informed during our interviews with Extension Workers and Regional Agriculture Directors across the regions that it is preferable to receive the seeds in May to enable timely distribution to farmers. We also noted from our discussions with the farmers that when seeds are received after May, it is difficult to decorticate them on time for early sowing at the beginning of the rainy season.

[76] National seed policy under "PRIMARY GOAL OF THE NATIONAL SEED PROGRAMME "page 11

The late distribution of certified seeds caused groundnut farmers to continue using their own saved seeds as can be seen in **Appendix 11.** This shows the list of groundnut farmers interviewed and the type of seeds they use.

To catch up with the cropping season, groundnut farmers buy any seeds available in the market mainly from the "Lumos" (open weekly markets) and such seeds are usually of mixed varieties with low germination capacity and low-quality yield.

**Conclusion**

Seeds were not supplied on time during the period under audit to the farmers across the country defeating the purpose for which seeds were distributed. Most farmers used their own saved seeds which are low-yielding varieties and low productivity in both the local and international markets.

**Recommendation**

The MOA should closely work with FAO to cut down the lead time of receiving certified seeds and put in place all the necessary logistic to ensure that these certified seeds are received and distributed to farmers in a timely manner.

Other options for farmers' access to certified seeds on time without entirely depending on the FAO should be explored.

**5.2 Dysfunctional Seed Stores**

Seed storage is the preservation of seeds under controlled environmental conditions that maintain seed viability for long periods[77].

*Strategic intervention for Seed Security and Emergency Response in the national seed plan validated 2018 stated that all village seed stores should be restored by the Ministry of Agriculture. All seed storage facilities must have an appropriate temperature and humidity. They shall be kept tidy for effective seed conservation. In addition, storage facilities must be disinfected regularly, seed bags placed on pallets, and seed lots shall be arranged in a way that allows a passage between piles of seed to facilitate control[78].*

We conducted physical verification of forty-nine (49) seed stores in selected villages across the six (6) regions of the country from 5th to 19th October 2020. During the verification, we noted that 21 stores out of 49 representing about 43% were functional during the time of our visit even though they lack all the required standard for seed storage as stated in the criteria above, while the remaining 28 stores representing about 57% were completely dilapidated hence regarded as dysfunctional. Two of the stores were without roof over them as in Sambang Wolof and Jarra Kanuma while others have signs

[77] https://cropgenebank.sgrp.cgiar.org/images/file/procedures/chapter_6_2seedstorage_genebankmanual8.pdf
[78] Seed Regulation March 2016, CHAPTER XXII: STORAGE

of leakages. These dysfunctional seed stores are shown in the picture below and in A**ppendix 7.**

**Picture 1: showing photos of dysfunctional seed stores in selected villages visited.**


**Date pictures taken: By the Audit Team from 5 to 19 October 2020**

In an interview with the MOA officials, we noted that most of the seed stores that are dysfunctional was due to not having a maintenance plan by MOA and hence were not repaired or maintained. Some of the seed stores (like Kanuma in LRR and Sambang Wollof in CRR/S were said to have been built in the 1980s and no maintenance has been carried since then.

**Picture 2 showing seed stores of groundnut farmers inappropriate for storage.**


**Source: Picture taken by audit team 5th - 19th October 2020**

Dysfunctional seed stores have resulted in farmers storing seed in their stores which are not appropriate for storage (irregular disinfected, lack of standard pallets, inappropriate temperature, and humidity). The personal stores are prone to insect and rodent attacks which could affect the germination of the seeds.

## Conclusion

Most of the stores are dilapidated due to non-maintenance by the Ministry. Those that were functional lack the standard requirements such as pallets, seed bags and dis-infectable.

In addition, the storage arrangements in few of the ones in use failed to be adhered to the standard storage arrangement of ensuring that seed lots are arrange in a way that allow a passage between piles of seed bags to facilitate control.

**Recommendation**

The Ministry of Agriculture should ensure that seed stores are restored and up to standard for effective storage of seeds. The Ministry should have maintenance plan for the seed stores which should be implemented and monitored.

### 5.3 Absence of recent comprehensive soil testing result

*Based on the principle of Integrated Plant Nutrition Systems, soil fertility research needs to explore all possible sources of plant nutrients in an integrated manner appropriate to each farming situation[79].*

We noted that there was an absence of comprehensive soil test result since 1996. This would have shown the different types of soil fertility in the country to serve as a source of information for determining the type of fertilizers to be procured for a particular period [80].

We further noted from NARI officials that soil tests are done in the Gambia based on clients' needs for which a fee is charged. We were informed that currently the tests are limited to only three elements (PH, organic matter, and electronic conductivity) due to inadequate resources like dis-functional working tools[81]. **Appendix 8** showing a summary of soil test fees conducted by NARI.

From interviews with farmers, DES, VEWs and MOA, we noted that the rate of fertilizer application recommended by DES and VEWs are not the same rate some of the farmers were using. The recommended rate given by the DES and VEWs is 2 bags of 50kg of N.P.K 6:20:10 per hectare while some of the farmers were using 4 to 6 bags of 50kg of N.P.K 6:20:10 per hectare. Some farmers claimed that two (2) bags per hectare is not applicable base on their experience and the type of soil available.

This issue of different fertilizer application rate was brought to the attention of the Permanent Secretary of the MOA, and he stated that it is obvious that such differences would arise in the absence of recent comprehensive soil test result.

The absence of recent comprehensive soil test results has been attributed to inadequate working tools and sub-standard laboratories to test soil. For these reasons, NARI did not conduct any comprehensive soil test since 1996.

We conduct tool gap analysis using data received from NARI as a benchmark (**see appendix 9)** and noted that there should be eighteen (18) parameters and 48 elements required to conduct soil testing, but out of these 48 elements only 12 elements are available leading to tools gap of 36 elements as can be seen in Table 6 below.

[79] Research Master Plan page 166

[80] Interview with NARI officials

[81] Soil and Plant Analysis Cost Breakdown for Government Departments, Non-Governmental Organizations, Private and Commercial Flat Rates

**Table 7 showing soil testing tool gap at NARI.**

| Parameters | Number of elements required | Number of elements available | Tool Gap |
|---|---|---|---|
| PH | 3 | 2 | 1 |
| Organic matter | 2 | 0 | 2 |
| Organic carbon | 2 | 0 | 2 |
| Total nitrogen | 4 | 2 | 2 |
| Available P | 4 | 2 | 2 |
| Exchangeable Potassium | 3 | 0 | 3 |
| Exchangeable calcium | 3 | 0 | 3 |
| Exchangeable magnesium | 3 | 0 | 3 |
| Exchangeable sodium | 2 | 0 | 2 |
| Electronic conductivity | 3 | 2 | 1 |
| Extractable Zinc | 2 | 0 | 2 |
| Extractable Magnesium | 2 | 0 | 2 |
| Extractable Iron | 2 | 0 | 2 |
| Extractable aluminum | 2 | 0 | 2 |
| Exchange acidity | 3 | 1 | 2 |
| Texture | 4 | 3 | 1 |
| Bulk density | 2 | 0 | 2 |
| Moisture content | 2 | 0 | 2 |
| **Total** | **48** | **12** | **36** |

**Source: Report on Soils Laboratory Chemical and Physical Analysis Parameters received from NARI on the 19th of May 2021.**

**Appendix 9** shows tools required by NARI to conduct soil Test and tools available.

Please note that only tools highlighted under the different parameters are the ones available

**Picture 3 condition of the lab where soil test is conducted at NARI**

**Date Picture was taken on 20 November 2020 from NARI soil test lab in Brikama.**

The absence of the required number of elements such as exchangeable potassium to conduct soil test could lead to inappropriate soil test result and these could affect the amount of water, air, and nutrients available for plant growth.

Furthermore, absence of recent comprehensive soil test results had led to farmers applying fertilizer based on the type and quantity of fertilizer available. We noted that GGC supplied all the region limited quantity of same type of fertilizer (N.P.K 6:20:10) as there was no test result that would have determined the appropriate type needed in each region.

We noted that due to the inadequate supply of NPK 6: 20: 10 (suitable for groundnut cultivation), some farmers used the type NPK 15:15:15 as an alternative which usually produce more hay than better pods. This could have a negative impact on getting the national target of 80,000-100,000 metric tons for groundnut production by 2020[82]. **Appendix 10** Shows Fertilizer Application Rate by Farmers, Extension Workers and Regional Agricultural Directors

[82] National Development Plan 2018-2020

## Conclusion

Absence of comprehensive soil test result is due to inadequate working tools and substandard laboratories to conduct the test. This has led to GGC procuring fertilizers that are inappropriate for groundnut cultivation.

## Recommendation

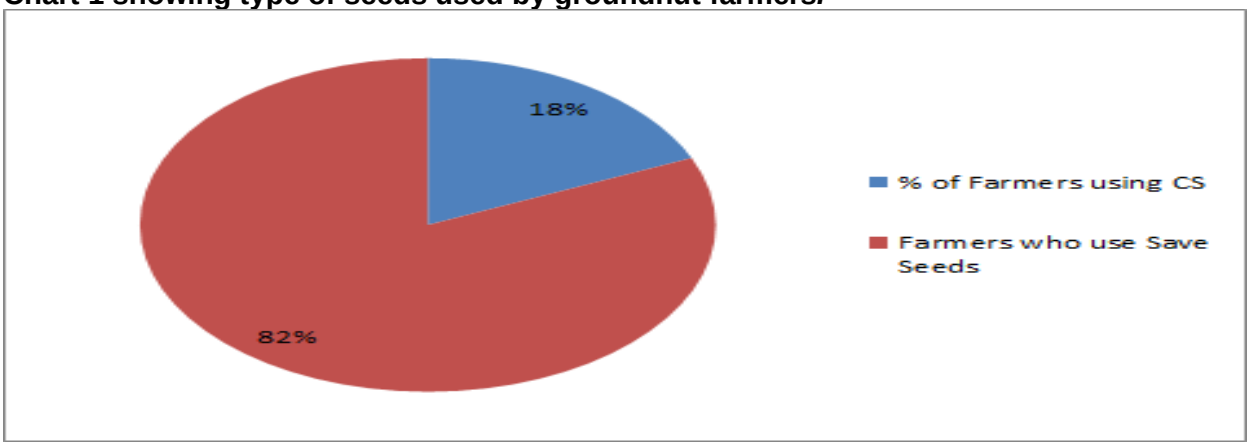
The MOA should support NARI with appropriate working tools to conduct accurate and appropriate soil testing required to know the nutrient content of different soils to be able to provide soil data to GGC which could be used to procure appropriate fertilizers. This curb the issue of over or under application of fertilizers.

## 5.4 Limited level of Sensitization with regards to Certified Seed usage among Groundnut Farmers

*Government should support the private sector marketing effort with appropriate extension and promotional programmes such as farmer field visits and seed fairs to enhance farmers' seed utilization. This effort will involve advertisement on recommended and available varieties on radio, television, and newspapers etc. with the aim of enhancing seed demand levels which are needed for enhancing investments in the seed sector*[83]*. In addition, The National Agricultural Extension Policy stated that the Department of Agriculture was established in the Gambia to provide extension services to groundnut farmers to improve the quality and quantity of the groundnut cultivated for export*[84]*.*

From a sample of thirty-eight (38) farmers interviewed, only seven (7) (representing about 18%) were using certified seeds while the remaining 31 farmers (representing about 82%) were using seeds that were not certified by NSS. **Appendix 11** showing list of groundnut farmers interviewed and the type of seeds they use.

**Chart 1 showing type of seeds used by groundnut farmers.**




[83] National Seed policy under extension promotion 12.2.1
[84] National Agricultural Extension Policy

## Causes of limited usage of Certified Seeds among Groundnut Farmers.

### a) Ineffective Extension Service Delivery

### I.High Farmer Extension Ratio

Limited usage of certified seeds among groundnut famers is attributed to the limited level of sensitisation by extension workers regarding the benefits of using certified seeds. We noted the limited number of extension workers compared to farmers as depicted in the table below. The ratios are above the FAO recommended ratio of 1:500.[85]

***Table 8*** **Showing extension farmer ratio[86]**

| Serial Number | Region | Extension / Farmer Ratio |
|---|---|---|
| 1. | NBR | 1:2000 |
| 2. | CRR/N | 1:5000 |
| 3. | CRR/S | 1:2000 |
| 4. | URR | 1:5000 |
| 5. | LRR | 1:4000 |
| 6. | WCR | 1:2000 |

**These ratia were obtained during our discussions with RADs, DES and VEWs**

Moreover, fifty-seven percent (57%) of the twenty-eight (28) extension workers interviewed indicated that they did not have the knowldge on the importance of certified seeds usage and as such are not in the position to provide any guidance to the farmers regarding the matter. **Appendix 12** shows names of extension workers and their experience with regards to certified seeds.

***Table 9 showing data on extension workers and their experience with regards to certified seeds in each region***

| Region | Number of extension workers interviewed | Number with Knowledge and experience on certified seeds | Number without knowledge and experience with regards to certified seeds |
|---|---|---|---|
| NBR | 5 | 4 | 1 |
| CRR/S | 4 | 1 | 3 |
| CRR/N | 4 | 1 | 3 |
| URR | 6 | 4 | 2 |
| LRR | 6 | 1 | 5 |
| WCR | 3 | 1 | 2 |
| **Total** | **28** | **12** | **16** |

[85] National Extension Policy page 8

[86] Data requested from the RAD

II. **Mobility Problem**

*From our discussion with the PS, we noted that the MOA should provide extension workers with fuel, motorcycles, and maintenance cost for effective delivery of extension services* [87].

From our interviews with RADs, DESs and VEWs, we noted that three (3) out of the sixteen (16) interviewed face mobility issues as they were not supplied with motorcycles by the Ministry of Agriculture.

Ninety percent (90%) of the twenty- eight (28) Extension Workers and six (6) RADs interviewed stated that the monthly fuel supply of D500.00 is not enough due to their coverage. On average one Extension Worker covers up to thirty-four (34) villages sparsely located. **Appendix 13** shows Names of Extension Workers and the number of villages under their coverage

We also noted from our interview with all the selected Extension Workers across the regions that maintenance of motorcycles is a challenge as they are not provided with maintenance costs for their motorcycles leading to them using their own money to maintain these motorcycles.

**III. No monitoring schedule by Extension Workers**

From our interview with the DESs and VEWs, we noted that only one (1) DES out of twenty-eight (28) interviewed have a written monitoring schedule to visits farmers even though they claimed to have been conducting monitoring visits. Our interview with thirty-eight (38) groundnut farmers across the regions revealed that 90% of them neither received any monitoring visits nor any sensitization on best farming practices.

The absence of a monitoring schedule has led to extension workers monitoring haphazardly resulting to ineffective extension service delivery to farmers. We were informed that during 1989 – 1999 when training and visit approaches were conducted, extension workers were mandated to prepare monitoring schedules, conduct forth nightly visits to all farmers under their coverage and were strictly monitored by their supervisors.

[87] Meeting with the PS of MOA on the 16.02.21

| Name | Designation | Region | No of Villages under coverage | | |
|---|---|---|---|---|---|
| Ebrima Nyass | DES | LRR | 17 | *Column1* | |
| Ali Njie | DES | NBR | 32 | | |
| Momodou Jammeh | DES | LRR | 33 | Mean | 34.42 |
| Kemo Jammeh | DES | NBR | 33 | Standard Error | 3.95 |
| Ousman Bajinka | DES | WCR | 26 | Median | 32.5 |
| Samba Huma | VEW | LRR | 6 | Mode | 33 |
| Omar Touray | VEW | CRR/N | 10 | | |
| Lamin Ceesay | DES | CRR//S | 24 | | |
| Bakary M. Gibba | VEW | CRR/S | 33 | | |
| Sainey Saho | DES | CRR/N | 93 | | |
| Fatou Badgie | DES | URR | 61 | | |
| Morro Sanneh | DES | URR | 42 | | |
| Mustapha Jaiteh | DES | NBR | 33 | | |
| Mai Jobe | VES | NBR | 13 | | |
| Jakaria Camara | VEW | CRR/S | 26 | | |
| Bambo Jaiteh | DES | LRR | 25 | | |
| Gibbi Sallah | VEW | CRR/S | 14 | | |
| Momodou Lamin Badgie | VEW | URR | 23 | | |
| Ousman Barjo | DES | URR | 48 | | |
| Baboucarr Ceesay | DES | URR | 86 | | |
| Abdou Ndure | DES | URR | 49 | | |
| Bakary B Drammeh | DES | CRR/S | 49 | | |
| Babucarr Bah | DES | LRR | 49 | | |
| Balla Musa Colley | DES | WCR | 49 | | |
| Pa Ceesay | DES | NBR | 33 | | |
| Nyimasata cham | VEW | CRR/N | 10 | | |
| Masanneh Jawara | DES | CRR/S | 26 | | |
| Essa Manjang | VEW | LRR | 21 | | |

**Appendix 14** Showing Number of Community Sensitization per year across the Regions.

The problem of inadequate extension workers, inadequate motorbikes, and limited fuel supply have led to extension workers not rendering effective extension services to all the villages under their purview.

The absence of using certified seeds by the farmers could lead to low-quality groundnut production and productivity as uncertified seeds composed of seeds of different varieties with different maturity dates[88].

A decline in seed fertility may also occur in farmers saved seeds due to the crossing of different varieties[89]of other small grains they cultivated apart from groundnut. Farmers often store seed inappropriately, resulting in failure to achieve good quality attained by certified seeds with the little equipment available. An uncertified seed contains more weeds (seeds of unwanted plants), broken seeds, empty shells, small and diseased seed than a certified seed.

**Conclusion**

The Ministry has failed to meet the demand for the required extension service delivery given the rising or increase number of farmers compare to service level delivery by the extension workers. Given the ratios of extension workers to farmers, it is not reasonable to think that these extension workers can effectively deliver on their functions i.e., sensitized and creation of required awareness campaigns and coaching farmers.

**Recommendation**

The Ministry of Agriculture should ensure that all groundnut farmers receive effective extension service delivery. This could be done by:

- Collaborating with relevant stakeholders to create awareness regarding certified seed usage.
- Ensuring that effective monitoring systems by the extension workers are put in place, implemented, and monitored.
- Ensuring that the current extension/farmer ratio is improved with a view of reaching the FAO recommended ratio of 1:500.

**5.5 Limited Coordination between Stakeholders involved in the Fertilizer Procurement.**

*NARI as the supreme research institute of the Gambia should conduct research (soil test analysis) on land devoted to agriculture production and recommend to GGC upon request the appropriate type of fertilizer to procure. In addition, GGC should also request data*

[88] https://agroinsight.com/downloads/african-seed-enterprises/Chapter7-The-Gambia.pdf,The Gambia: Capturing the Media J. DAVID REECE, DANIEL N. DALOHOUN, ESSA DRAMMEH, PAUL VAN MELEAND SAIDU BAH page 112.
[89] Meeting with NSS officials

*from the planning service on the area of land under cultivation, to determine the quantity of fertilizer to procure based on the recommended fertilizer application rate per hectare[90]. After procurement, GGC should inform NARI to test the fertilizers procured before distribution are finally made to farmers[91].*

From the review of GGC files and meeting with MOA officials we noted that, GGC as the fertilizer procuring arm of the government does not consult NARI to test the fertilizer before it is distributed.

The Director General of GGC noted that, they were not aware of the need to consult NARI to test the fertilizers after procurement before distribution. He noted that going forward GGC would consult NARI to test whenever fertilizers are procured. However, the Director believes that NARI did not have the required tools to test the fertilizers which led them to consult SGS (Société' Ge'ne'ral de Surveillance) to test the fertilizers that are imported**.**

Our meeting with NARI and GGC officials revealed that, limited stakeholders' coordination had led to GGC assuming that NARI cannot test for these fertilizers while NARI indicated that even though they did not have the required tools to test fertilizers, field trials could be conducted. In this case, a sample of the fertilizers are applied on crops at field level and within three (3) months quality assurance result can be released to GGC.

Distribution of fertilizer without testing poses risk of applying wrong types of fertilizer. This could affect both plant growth and productivity.

**Conclusion**

There was limited stakeholders' coordination during the period under audit. Fertilizers procured by GGC were not tested by NARI before they were distributed to farmers

**Recommendation**

GGC should put in place mechanisms to coordinate all the activities in the fertilizer procurement and distribution processes. Relevant stakeholders should be contacted on time for the execution of their various responsibilities during the process.

[90] *Meeting with NARI & MOA officials*

[91] Meeting with NARI & MOA officials

## Appendix 1 Showing sample of places visited

| No | Designation | Places selected | Region | No of places sampled | Remarks |
|---|---|---|---|---|---|
| 1 | RAD | Kerewan | NBR | 6 | There six regions in the country hence all the six were selected for the sample to be more representative |
| | | Kuntaur | CRR/N | | |
| | | Basse | URR | | |
| | | Sapu | CRR/S | | |
| | | Jenoi | LRR | | |
| | | Yundum | WCR | | |
| 2 | MFCS | Farafenni | NBR | 9 | We have selected at least one MFC from each regional for fair representation of the population. Nine MFC were selected out of twenty-five MFC. |
| | | Njau | CRR/N | | |
| | | Nyaba Kunda | NBR | | |
| | | Ndawdeh | URR | | |
| | | Fulla Kunda | URR | | |
| | | Dankunku | CRR/S | | |
| | | Kwinella | LRR | | |
| | | Kangibat | WCR | | |
| | | Jambanjelly | WCR | | |
| 3 | Depot Manager | Kerewan | NBR | 3 | There are depots in all the six regions, but three regions were selected as part of sample. |
| | | Kaur | CRR/N | | |
| | | Tandaba | LRR | | |
| 4 | Groundnut Farmers | Chaman | CRR/N | 4 | In each region three to nine farmers were selected |
| | | Kaur | | | |
| | | Touba Kunta | | | |
| | | Barajally Suba | | | |
| | | Njoben | CRR/S | 3 | |
| | | Dankunku | | | |
| | | Samba Wollof | | | |
| | | Sutokuba | URR | 4 | |
| | | Tambasansang | | | |
| | | Dampha-Kunda | | | |
| | | Dasilami | | | |
| | | Junior | LRR | 4 | |
| | | Kanuma | | | |
| | | Kiang Karantaba | | | |
| | | Kwinella | | | |
| | | Wassadu | WCR | 10 | |
| | | Mayork | | | |
| | | Bondali Tenda | | | |
| | | Sibanor | | | |
| | | Tamba-kunda | | | |
| | | Sitanunku | | | |
| | | Jagil | | | |
| | | Dadilami | | | |
| | | Nyofelleh Madina | | | |
| | | Manduar | | | |

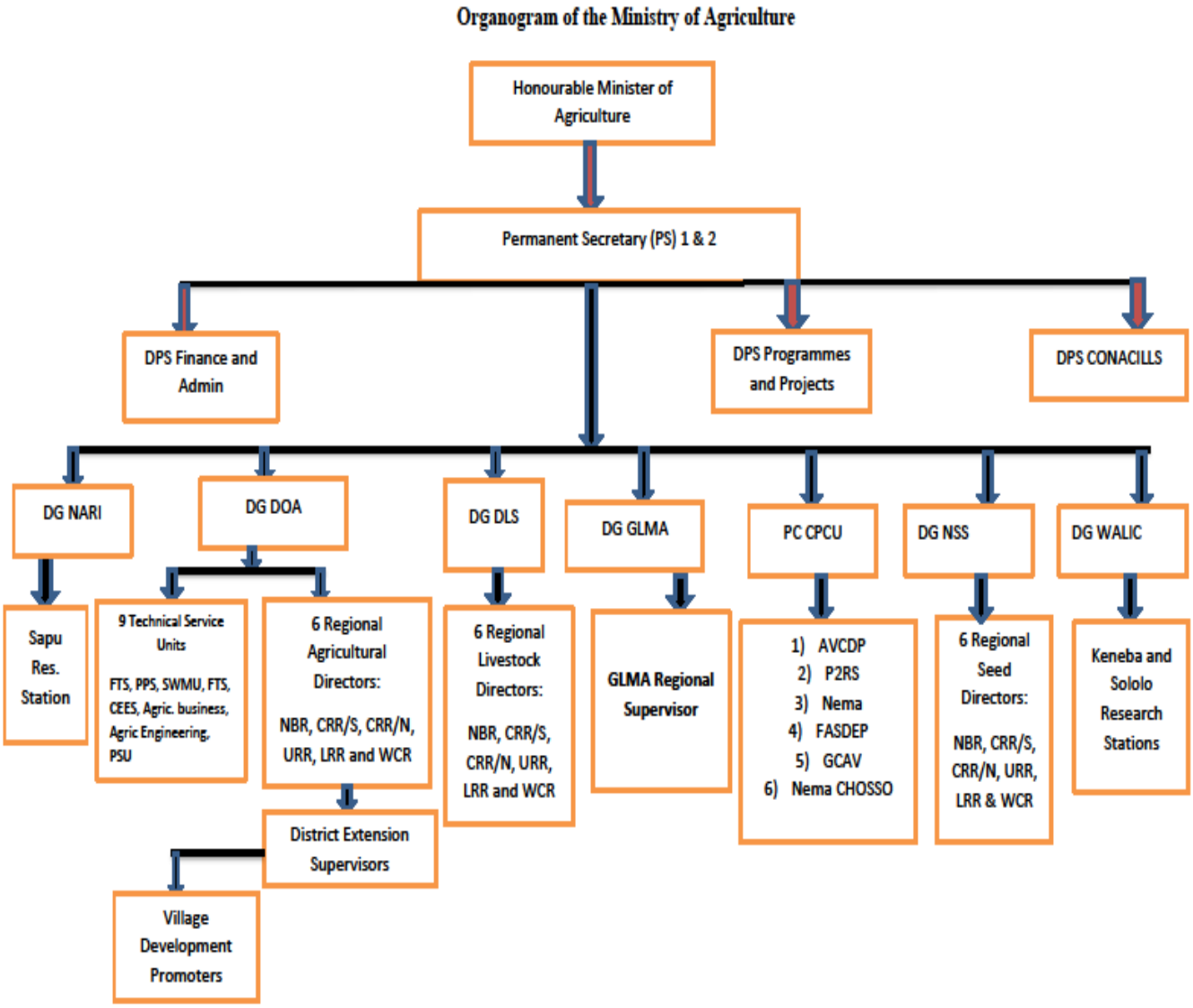
## Appendix 2 showing details of staff interviewed.

| Description of Directorates/Region | Number of Staff | Designation |
|---|---|---|
| **Central Level (Ministry)** | | |
| Ministry of Agriculture | 1 | PS MOA |
| | 3 | Other relevant staff |
| **Department /Unit Level** | | |
| Department of Agriculture (DOA) | 1 | Director |
| | 2 | Other relevant staff |
| Gambia Groundnut Cooperation | 1 | Director |
| | 3 | Other relevant staff |
| National Seeds Secretariat | 1 | Director |
| | 2 | Other relevant staff |
| National Agricultural Research Institute | 1 | Director |
| | 3 | Other relevant staff |
| Planning Services | 1 | Director |
| **Regional level** | | |
| Regional Agricultural Directorate | 6 | Regional Directors |
| | 5 | Other relevant staff |
| | 18 | District Extension |
| | 11 | Supervisor |
| | 3 | Village Extension Worker |
| | | Depot Manager |
| **Total staff Interview** | 38 | Groundnut Farmers |
| | **100** | |

## Appendix 3 showing list of document review by the audit team.

| Document review | Purpose for review |
|---|---|
| Seed quality control and marketing Act, 2014 | To know how provision are made for the establishment and function of a national seed system, to facilitate the availability of seeds to crop producers in the right time and condition and for connected matters. |
| Seed Quality Control and Marketing Regulation | To know the rules governing certification and marketing of seeds and seedlings in The Gambia with those in the other Member States of ECOWAS. |
| The Gambia National Seed Policy validated in 2018. | To know the policies put in place by the government to create an environment which will foster support from both Government and development partners for activities such as the quick delivery of new varieties from research to farmers, enhancement of the positive contribution of the informal seed sector, the rapid development of the private seed sector, particularly in the certified seed production, seed conditioning and marketing, monitoring of seed import, and the distribution of seed under emergency conditions etc. |
| National seed plan 2018 | To know plans put in place for the implementation of the national seed policy |
| Agriculture and Natural Resources Policy (ANR) 2017-2026 | This document aims at maximization of poverty reduction and enhancement of food, income, and nutrition security through the optimal utilization of the resources of the sector consistent with safeguarding the integrity of the environment, so we believed it will be relevant for our studies since groundnut serve as one of the main cash groundnuts of the Gambia. |
| seed quality assurance and certification manual | To know the features an effective seed industry which includes the certification process, Quality Control in Seed Trade and Marketing, |
| National Agricultural Sector Strategy 2015-2020 | To know what needs to be done to transform the agricultural sector to achieve its stated objectives and organizational structure of the Ministry of Agriculture. |
| Gambia National Agricultural Investment Plan (GNAIP) December (2019-2026) | To know what the government is doing to ensure sustainable use and management of national resources in support of national goals of poverty deduction, improved livelihood and increase food and nutrition security at household level. |
| Groundnut Production Statistics for the past four years (2016-2019) from the pre-harvest report. | This spell out the quantity of groundnut produce in the Gambia from 2016-2019. Its shows the decline trend in groundnut production for the period under review. |
| National Agriculture Extension Policy | This document spells out measures put in place by the government to capacitate the extension service providers, promote private sector participation in extension delivery, and capacitate stakeholders and to promote intra and inter-sectorial collaboration. |
| Sustainable Development Goal: (2) | Spelt out measures put in place by the Government to end hunger and malnutrition by 2030, making sure all people have access to enough and nutritious food all year round and promote sustainable agriculture. |
| Fertilizer contract files | To ascertain the effectiveness of the fertilizer procurement process |

## Appendix 4 showing organogram of the Ministry of Agriculture.



**Appendix 5 shows the time that inputs (seeds & fertilizers) were distributed to Groundnut farmers and the time preferred by them for inputs to be supply to them.**

| Name | Address | Tittle | inputs available Month | Preferred time for inputs to be supplied | No of months delay | Remarks |
|---|---|---|---|---|---|---|
| Fanding Jobe | Jarra Karantaba | G/Farmer | August | May | 3 | The fertilizers and seeds were not available to him on time |
| Alhagie Dampha | Jarra Soma | G/Farmer | August | June | 2 | The fertilizers and seeds were not available to him on time |
| Omar Secka | Wassadu | G/Farmer | June | May | 1 | The fertilizers and seeds were not available to him on time |
| Adama Manga | Burambang | G/Farmer | August | April / May | 3 | The fertilizers and seeds were not available to him on time |
| Adama Bah | Mayork | G/Farmer | August | August | 0 | The fertilizers were available to him on time |
| Abdoulie Joof | Sibanor | G/Farmer | June / July | May | 2 | The fertilizers and seeds were not available to him on time |
| Morri Kebba Minteh | Kiang Karantaba | G/Farmer | July | June | 1 | The fertilizers and seeds were not available to him on time |
| Karafa Badgie | Sitanunku | G/Farmer | N/A | N/A | N/A | He has not bought fertilizer for 15 years ago |
| Buba Nyassi | Sitanunku | G/Farmer | August | August | 0 | The time of fertilizer arrival is good for him |
| Omar Sonko | Jarra Kanuma | G/Farmer | August | July | 1 | The fertilizers and seeds were not available to him on time |
| Alhagie Mbaye | Sambang Wolof | G/Farmer | July | June | 1 | The fertilizers and seeds were not available to him on time |
| Momodou Sanyang | Jarra Jenoi | G/Farmer | July | May | 2 | The fertilizers and seeds were not available to him on time |
| Mariama Keita | Dankunku | G/Farmer | July | June | 1 | The fertilizers and seeds were not available to him on time |
| Nyanga Darboe | Kwinela | G/Farmer | June / July | May | 2 | The fertilizers and seeds were not available to him on time |
| Fatou Fatty | Dankunku | G/Farmer | July | May / June | 1 | The fertilizers and seeds were not available to him on time |
| Babou Boye | Njoben | G/Farmer | July / August | June | 2 | The fertilizers and seeds were not available to him on time |
| Katibi Touray | Sutukoba | Certified Seed Grower | August | June | 2 | The fertilizers and seeds were not available to him on time |
| Amy Danso | Tabasansang | G/Farmer | July | June | 1 | The fertilizers and seeds were not available to him on time |
| Yukafee Camara | Sutukoba | G/Farmer | June / July | May | 2 | The fertilizers and seeds were not available to him on time |
| Baranfang Jabbi | Sutukoba | Certified Seed Grower | July | May | 2 | The fertilizers and seeds were not available to him on time |
| Mawdo Camara | Tuba Kuta | G/Farmer | July / August | May | 3 | The fertilizers and seeds were not available to him on time |

| | | | | | | |
|---|---|---|---|---|---|---|
| Kemo Jabbi | Barajali Suba | G/Farmer | June / July | May | 2 | The fertilizers and seeds were not available to him on time |
| Alieu Kebbeh | Munyagen | Certified Seed Grower | August | July | 1 | The fertilizers and seeds were not available to him on time |
| Jim Fatma Jobe | Kerr Jarga | Certified Seed Grower | July / August | June | 2 | The fertilizers and seeds were not available to him on time |
| Habibou Kebbeh | Ndungu Kebbeh | G/Farmer | July | May / June | 1 | The fertilizers and seeds were not available to him on time |
| Buba Danso | Sika | G/Farmer | August | July | 1 | The fertilizers and seeds were not available to him on time |
| Gibbi Cham | Chamen | G/Farmer | July / August | June | 2 | The fertilizers and seeds were not available to him on time |
| Omar Jallow | Kerr Sulay | G/Farmer | July | June | 1 | The fertilizers and seeds were not available to him on time |
| Tamsir Ceesay | Dibba kunda | G/Farmer | July | June | 1 | The fertilizers and seeds were not available to him on time |
| Ousman Mbaye | Ngayen Sanjal | G/Farmer | July | June | 1 | The fertilizers and seeds were not available to him on time |
| Kaddy Fatty | Kaur | G/Farmer | July | June | 1 | The fertilizers and seeds were not available to him on time |
| Bunjaring Kanteh | Njaba Kunda | G/Farmer | August | May | 3 | The fertilizers and seeds were not available to him on time |
| Faburama Drammeh | Salikenni | G/Farmer | June / July | May | 2 | The fertilizers and seeds were not available to him on time |
| Alhagie Sarjo Kinteh | Kinteh Kunda | G/Farmer | July | May | 2 | The fertilizers and seeds were not available to him on time |
| Alhagie Baboucarr Secka | Touba Mandaur | G/Farmer | July | June | 1 | The fertilizers and seeds were not available to him on time |
| Musa Mendy | Dasilami | G/Farmer | June | June | 0 | The seeds were available to him on time, and he has never bought fertilizer before |
| Dembo Mendy | Nyofelleh Madina | G/Farmer | July | May | 2 | The fertilizers and seeds were not available to him on time |
| Pierre Mendy | Jagil | G/Farmer | - | - | - | He has never use fertilizer before and he has not received certified seeds before |

**Appendix 6 showing names of Regional Directors interviewed, time that inputs were supplied to them and the time that they prefer.**

| Names | Address | Tittle | Time that inputs are available to them | Preferred time for inputs to be given to them | Number of months of delay | Remarks |
|---|---|---|---|---|---|---|
| John Mendy | Kerewan | PAO | June | May | 1 | The inputs (seeds and fertilizers) were not given to them on time |
| Saloum Touray | | AO | | | | |
| Foday Jadama | Kuntaur | RAD | August | April / May | 3 | The inputs (seeds and fertilizers) were not given to them on time |
| Mustapha Bah | | PAO | | | | |
| Edirissa CY. Sey | | SAO | | | | |
| Alieu Jawo | | AAO | | | | |
| Karamo Minteh | Basse | RAD | July | April / May | 2 | The inputs seeds and fertilizers) were not given to them on time |
| Famara Trawally | Sapu | RAD | July | May / June | 1 | The inputs (seeds and fertilizers) were not given to them on time |
| Lading Saidy Leigh | | PAO | | | | |
| Momodou Lamin Darboe | Jenoi | RAD | July | May/ June | 1 | The inputs (seeds and fertilizers) were not given to them on time |
| | | | | | | The inputs ( seeds and fertilizers) were not given to them on time |

**Appendix 7 showing condition of seed stores in selected villages visited by the Audit team**.

| Region | Name of the village | Condition | Extension workers Remarks |
|---|---|---|---|
| NBR | Sika | Functional | - |
| | Ndunku kebbeh | Functional | Functional but small for the whole village to use |
| | Munyagen | Dysfunctional | There are two seed stores at the village one is functional but cannot keep seeds for the villagers |
| | Kuntair | Dysfunctional | Crack walls and dilapidated roofs with other materials packed in the store |
| | Kerr Jarga | Dysfunctional | Crack walls and dilapidated roofs with other materials packed in the store |
| | Kerewan | Dysfunctional | Crack walls and dilapidated roofs with other materials packed in the store |
| | Kinteh kunta Janneh ya | Functional | In good condition |
| | Njaba-kunda | Dysfunctional | Crack walls and dilapidated roofs with other materials packed in the store |
| | Salikenni | Functional | In good condition |
| | Farafenni | Dysfunctional | Crack walls and dilapidated roofs with other materials packed in the store |
| | Kerr sulay | Dysfunctional | Crack walls and dilapidated roofs with other materials packed in the store |
| | Ngayen Sanjali | Dysfunctional | Crack walls and dilapidated roofs with other materials packed in the store |
| | Dibba-kunda Wollof | Dysfunctional | Crack walls and dilapidated roofs with other materials packed in the store |
| CRR/S | Njoben | Functional | Two seed though the old seed store need maintenance |
| | Daru | Functional | In good condition |
| | Dankunku | Dysfunctional | Crack walls and dilapidated roofs with other materials packed in the store |
| | Sambang Wollof | Dysfunctional | Half of the building had fallen with no roof above |
| CRR/N | Chamen | Dysfunctional | There are two seed stores at the village one is functional but cannot keep seeds for the villagers |
| | Njau | Dysfunctional | Two seed stores at the village all not functional and two at the mixed farming center functioning |
| | Fulla kunda | Dysfunctional | Three (3) seed stores one at the village dysfunctional, two recently built at the mixed farming center but they are yet to start operation |
| | Jarumeh Koto | Functional | In good condition |
| | Wassu | Functional | In good condition |
| | Kaur Janneh Kunda | Functional | In good condition |
| | Toba kuta | Dysfunctional | Crack walls and dilapidated roofs with other materials packed in the store |
| | Barajally Subaa | Functional | Nema project built a new seed store |
| URR | Naudeh | Dysfunctional | No seed stores |
| | Sutokuba | Functional | In good condition |
| | Jah Kunda | Functional | One at the village is functional and the one at MFC is dysfunctional |
| | Dasilameh | Functional | In good condition |
| | Dampha Kunda | Functional | Though crack walls hence need maintenance |

| | | | |
|---|---|---|---|
| | Tambasansang | Dysfunctional | Crack walls and dilapidated roofs with other materials packed in the store |
| | Sandy kunda | Dysfunctional | Two seed stores none of them is functioning |
| | Fatoto | Dysfunctional | One and not functioning |
| LRR | Kanuma | Dysfunctional | Half of the building had fallen with no roof above |
| | Jarra Soma | Functional | The building is in good condition but other materials beside seeds are kept there hence defeating the purpose of a seed store |
| | Jenoi | Functional | Two village seed stores though one is dysfunctional. There are two seed stores at the MFC, and all are functional, |
| | Sankandi | functional | Though the floor needs maintenance |
| | Kwinella | Functional | One at the mixed farming center and two at the village. |
| | Kiang Karantaba | Dysfunctional | Crack walls and leakage of seed stores |
| | Japinneh | Functional | In good condition |
| | Jarra Karantaba | Functional | In good condition |
| WCR | Tambakunda | Dysfunctional | Half of the building had fallen with no roof above |
| | Wassadu | Dysfunctional | Crack walls and dilapidated roofs with other materials packed in the store |
| | Mayork | Functional | In good condition |
| | Kangibat | Dysfunctional | Crack walls and dilapidated roofs with other materials packed in the store |
| | Dasilameh | Dysfunctional | Crack walls and dilapidated roofs with other materials packed in the store |
| | Nyofelleh | Dysfunctional | Crack walls and dilapidated roofs with other materials packed in the store |
| | Mandour Wollof | Dysfunctional | Crack walls and dilapidated roofs with other materials packed in the store |
| | Jagil | Dysfunctional | Crack walls and dilapidated roofs with other materials packed in the store |

## Appendix 8 showing a summary of soil test fees conducted by NARI.

National Agricultural Research Institute (NARI) PMB 526 Serrekunda, The Gambia, West Africa.

Tel: (220) 4484 926/ 4484 925/ 4484925 Fax/ph.: 4484921

**Soil and Plant Analysis Cost Breakdown for Government Departments, Non-Governmental Organizations, Private and Commercial Flat Rates**

| Parameter/ Element | Amount in Dalasi (GMD) |
|---|---|
| **Soil Analysis** | |
| pH | 50.00 per sample |
| Organic Matter (OM) | 75.00 per sample |
| Nitrogen (N) | 75.00 per sample |
| Available Phosphorus (P) | 75.00 per sample |
| Exchangeable Potassium (K) | 75.00 per sample |
| Exchangeable Calcium (Ca) | 75.00 per sample |
| Exchangeable Magnesium (Mg) | 75.00 per sample |
| Exchangeable Acidity | 75.00 per sample |
| Cation Exchange Capacity (CEC) | 75.00 per sample |
| Exchangeable Sodium (Na) | 75.00 per sample |
| Electrical Conductivity (EC) | 50.00 per sample |
| Moisture Content (%) | 50.00 per sample |
| Oven Drying of Plant Samples | 500.00 per 72 hours |
| Nitrate | 75.00 per sample |
| Ammonium | 150 per sample |
| Textural Classification (sand, silt, and clay %) | 150.00 per sample |
| **Plant Tissue Analysis** | |
| Nitrogen (N) | 100.00 per sample |
| Phosphorus (P) | 100.00 per sample |
| Potassium (K) | 100.00 per sample |
| Soil boron (B) | 100.00 per sample |
| Soil Sulfate-Sulphur (S) | 100.00 per sample |
| Soil magnesium (Mn) | 100.00 per sample |
| Soil zinc (Zn) | 100.00 per sample |
| Soil molybdenum (Mo) | 100.00 per sample |

***Appendix 9* showing tools required by NARI to conduct soil Test and tools available.**

Please note that only tools highlighted under the different parameters are the ones available

| Parameters | Category (physical or chemical) | Instrument | Chemical Reagents | Glassware | References |
|---|---|---|---|---|---|
| pH | Physical/ Chemical | pH metre with electrodes | Calcium chloride. Buffer solution of pH4,7 and 9 | | NRI laboratory procedures |
| Organic matter | Chemical | Oven (large) 105 °C; Muffle furnace 300-400 °C | | | |
| Organic carbon | Chemical | As above x Ferrous sulphate | | | |
| Total nitrogen (N) | Chemical | Fume hood, analytical balance, hot plate electric with heat control | Anhydrous sodium sulphate; indicator-bromocresol green; Methyl red; ethanol; boric acid; concentrated sulphuric acid; sodium hydroxide Tri-hydroxyamino methane THAM (tri-) | Semi micro kjeldahl digestion unit; kjeldahl distillation unit; Erlenmeyer flash | |
| Available P | Chemical | Spectronic 20 | Bray's method No. 1 method; HCl; Ammonium fluoride; Ammonium hydroxide; Potassium hydrogen phosphate; Ammonium molybdate; boric acid; amino-naphthol-sulphonic acid | Colorimeter tubes | |
| Exchangeable Potassium (K) | Chemical | Atomic Absorption Spectrophotometer | Ammonium acetate | | |
| Exchangeable calcium (Ca) | Chemical | Atomic Absorption Spectrophotometer | Ammonium acetate | | |

| | | | | | |
|---|---|---|---|---|---|
| Exchangeable Magnesium (Mg) | Chemical | Atomic Absorption Spectrophotometer | Ammonium acetate | | |
| Exchangeable Sodium (Na) | Chemical | Atomic Absorption Spectrophotometer | | | |
| Electrical conductivity (EC) | Chemical/Physical | Conductivity meter | Potassium chloride | | |
| Extractable zinc (Zn) | Chemical | Atomic Absorption Spectrophotometer | | | |
| Extractable manganese (Mn) | Chemical | Atomic Absorption Spectrophotometer | | | |
| Extractable iron (Fe) | Chemical | Atomic Absorption Spectrophotometer | | | |
| Extractable aluminium (Al) | Chemical | Atomic Absorption Spectrophotometer | | | |
| Exchange acidity | Chemical | | Potassium chloride; sodium hydroxide; phenolphthalein indicator | Volumetric flash; burettes, funnel filtre | |
| Texture | Physical | Electrical mixer; bouyoucos hydrometre | Sodium hexametaphosphate | 1000 ml graduated cylinder; pyrex; plunger | |
| Bulk density | Physical | Oven 105 °C | | | |
| Moisture content | Physical | Oven 105 °C | | | |

## Appendix 10 Showing Fertilizer Application Rate by Farmers, Extension Workers and Regional Agricultural Directors

| Serial No. | Name | Regions | Tittle | Fertilizer Application Rate |
|---|---|---|---|---|
| 1 | Alhagie Sarjo Kinteh | NBR | G / Farmer | 3-5 bags per hectare |
| 2 | Faburama Drammeh | NBR | G / Farmer | 4-6 bags per hectare |
| 3 | Bunjaring Kanteh | NBR | G / Farmer | 5 bags per hectare |
| 4 | Kaddy Fatty | CRR/N | G / Farmer | 2 bags per hectare |
| 5 | Ousman Mbaye | NBR | G / Farmer | 5-7 bags per hectare |
| 6 | Tamsir Ceesay | NBR | G / Farmer | 3-5 bags per hectare |
| 7 | Omar Jallow | NBR | G / Farmer | 3 bags per hectare |
| 8 | Gibbi Cham | CRR/N | G / Farmer | 2 bags per hectare |
| 9 | Buba Danso | NBR | G / Farmer | 2.5 bags per hectare |
| 10 | Jim Fatma Jobe | NBR | Certified Seed Grower | 3 bags per hectare |
| 11 | Alieu Kebbeh | NBR | Certified Seed Grower | 3 bags per hectare |
| 12 | Kemo Jabbi | CRR/N | G / Farmer | 2 bags per hectare |
| 13 | Mawdo Camara | CRR/N | G / Farmer | 1 bag per hectare |
| 14 | Barafang Jabbi | URR | Certified Seed Grower | 5 bags per hectare |
| 15 | Yukafee Camara | URR | G / Farmer | 3 bags per hectare |
| 16 | Amy Danso | URR | G / Farmer | 2 bags per hectare |
| 17 | Katibi Touray | URR | Certified Seed Grower | 3 bags per hectare |
| 18 | Babou Boye | CRR/S | G / Farmer | 2 bags per hectare |
| 19 | Fatou Fatty | CRR/S | G / Farmer | 3-4 bags per hectare |
| 20 | Mariama Keita | CRR/S | G / Farmer | 5 bags per hectare |
| 21 | Mamaodou Sanyang | LRR | G / Farmer | 2 bags per hectare |
| 22 | Alhagie Mbaye | LRR | G / Farmer | 2.5-6 bags per hectare |
| 23 | Omar Sonko | LRR | G / Farmer | 4 bags per hectare |
| 24 | Buba Nyassi | LRR | G / Farmer | 2 bags per hectare |
| 25 | Morri Kebba Minteh | LRR | G / Farmer | 7 bags per hectare |
| 26 | Adama Manga | WCR | G / Farmer | 2 bags per hectare |
| 27 | Omar Secka | WCR | G / Farmer | 5 bags per hectare |
| 28 | Pierre Mendy | WCR | G/Farmer | 3 Bags per hectare |
| 29 | Alhagie Dampha | LRR | G / Farmer | 3 bags per hectare |
| 30 | Fanding Jobe | LRR | G / Farmer | 2 bags per hectare |
| 31 | Mamadou Lamin Badgie | URR | VEW | 1 bag per hectare |
| 32 | Bakary B. Drammeh | CRR/S | DES | 2 bags per hectare |
| 33 | Bakary M. Gibba | CRR/S | VEW | 4 bags per hectare |
| 34 | Sainey Saho | CRR/N | DES | 1 bag per hectare |
| 35 | Ali Njie | NBR | DES / MFC supervisor | 2 bags per hectare |
| 36 | Samba Huma | LRR | VEW | 2 bags per hectare |
| 37 | Ousman Bajinka | WCR | DES / MFC supervisor | 2 bags per hectare |
| 38 | Kemo Manneh | NBR | VEW | 2 bags per hectare |
| 39 | Mustapha Jaiteh | NBR | VEW | 2 bags per hectare |
| 40 | Nyimasata Cham | CRR/N | VEW | ¼ bag per hectare |
| 41 | Omar Touray | CRR/N | VEW | 2-3 bags per hectare |
| 42 | Baboucarr Ceesay | URR | DES | 6 bags per hectare |
| 43 | Morro Sanneh | URR | DES | 2 bags per hectare |
| 44 | Ousman Barjo | URR | DES | 2 bags per hectare |
| 45 | Mai Jobe | NBR | VEW | 2 bags per hectare |
| 46 | Gibbi Sallah | CRR/N | VEW | 2 bags per hectare |
| 47 | Abdou Ndure | URR | DES | 2 bags per hectare |
| 48 | Fatou Badgie | URR | DES | 2 bags per hectare |

| | | | | |
|---|---|---|---|---|
| 49 | Balla Musa Colley | WCR | DES | 4 bags per hectare |
| 50 | Bambo Jaiteh | LRR | DES | 2 bags per hectare |
| 51 | Baboucarr Bah | LRR | DES | 2 bags per hectare |
| 52 | Ebrima Nyass | LRR | DES | 2 bags per hectare |
| 53 | Essa Manjang | LRR | VEW | 2-4 bags per hectare |
| 54 | Jakaria Camara | CRR/S | VEW | 2 bags per hectare |
| 55 | Masanneh Jawara | CRR/S | DES | 2 bags per hectare |
| 56 | Pa Ceesay | NBR | DES | 2 bags per hectare |
| 57 | Momodou Jammeh | LRR | DES | 2 bags per hectare |
| 58 | Lamin Ceesay | WCR | DES | 2 bags per hectare |
| 59 | Momodou Lamin Darboe | LRR | RAD | 2 bags per hectare |
| 60 | Foday Jadama | CRR/N | RAD | 2 bags per hectare |
| 61 | Karamo Minteh | URR | RAD | 2 bags per hectare |
| 62 | Famara Trawally | CRR/S | RAD | 3 bags per hectare |
| 63 | Lamin MJ. Sanyang | NBR | RAD | 2 bags per hectare |
| 64 | Khaddy Bojang Saidy | WCR | RAD | 2 bags per hectare |

**Appendix 11 showing list of groundnut farmers interviewed and the type of seeds they use.**

| Serial Number | Names of Farmers | Address | Tittle | Type of seeds used | Remarks |
|---|---|---|---|---|---|
| 1. | Fanding Jobe | Jarra Karantaba | G/Farmer | Save seeds | He had never heard of certified seeds |
| 2. | Alhagie Dampha | Jarra Soma | G/Farmer | Save seeds | He had never heard of certified seeds |
| 3. | Omar Secka | Wassadu | G/Farmer | Save seeds | He had never heard of certified seeds |
| 4. | Adama Manga | Burambang | G/Farmer | Save seeds | Certified seeds are usually supply late in the middle of the rain fall |
| 5. | Adama Bah | Mayork | G/Farmer | Save seeds | He had never heard of certified seeds |
| 6. | Abdoulie Joof | Sibanor | G/Farmer | Save seeds | He had never heard of certified seeds |
| 7. | Morri Kebba Minteh | Kiang Karantaba | G/Farmer | Save seeds | He had never heard of certified seeds |
| 8. | Karafa Badgie | Sitanunku | G/Farmer | Save seeds | He had never heard of certified seeds |
| 9. | Buba Nyassi | Sitanunku | G/Farmer | Save seeds | He had never heard of certified seeds |
| 10. | Omar Sonko | Jarra Kanuma | G/Farmer | Save seeds | He had never heard of certified seeds |
| 11. | Alhagie Mbaye | Sambang Wolof | G/Farmer | Save seeds | He does not know about certified seeds |
| 12. | Momodou Sanyang | Jarra Jenoi | G/Farmer | Certified seeds | He was given certified seeds 3 years back from NSS |
| 13. | Mariama Keita | Dankunku | G/Farmer | Save seeds | He had never heard of certified seeds |
| 14. | Nyanga Darboe | Kwinela | G/Farmer | Save seeds | He had never heard of certified seeds |
| 15. | Fatou Fatty | Dankunku | G/Farmer | Certified seeds | He was given certified seeds 3 years back from DOA |
| 16. | Babou Boye | Njoben | G/Farmer | Save seeds | He has never heard of certified seeds |
| 17. | Katibi Touray | Sutukoba | Certified Seed Grower | Certified seeds | He is a certified seed grower since 2018 |
| 18. | Amy Danso | Tabasansang | G/Farmer | Save seeds | He heard about certified seeds in the village, but it was late |
| 19. | Yukafee Camara | Sutukoba | G/Farmer | Certified seeds | He was a certified seeds grower, but his certificate was terminated because of him not selling his seeds to FAO |
| 20. | Baranfang Jabbi | Sutukoba | Certified Seed Grower | Certified seeds | He was certified seeds grower since 2018 |
| 21. | Mawdo Camara | Tuba Kuta | G/Farmer | Save seeds | He has never heard of certified seeds production or its usage |
| 22. | Kemo Jabbi | Barajali Suba | G/Farmer | Save seeds | The certified seeds were given to him late |
| 23. | Alieu Kebbeh | Munyagen | Certified Seed Grower | Certified seeds | He is a certified seed grower |

| | | | | | |
|---|---|---|---|---|---|
| 24. | Jim Fatma Jobe | Kerr Jarga | Certified Seed Grower | Certified seeds | He is a certified seed grower |
| 25. | Habibou Kebbeh | Ndungu Kebbeh | G/Farmer | Save seeds | Certified seeds are not available in his village, and he doesn't know any certified seeds grower |
| 26. | Buba Danso | Sika | G/Farmer | Save seeds | Certified seeds are not available in his village, and he doesn't know any certified seeds grower |
| 27. | Gibbi Cham | Chamen | G/Farmer | Save seeds | He belief that save seeds will yield more than certified seeds on their soil |
| 28. | Omar Jallow | Kerr Sulay | G/Farmer | Save seeds | He had never heard of certified seeds |
| 29. | Tamsir Ceesay | Dibba kunda | G/Farmer | Save seeds | He had never heard of certified seeds |
| 30. | Ousman Mbaye | Ngayen Sanjal | G/Farmer | Save seeds | Certified seeds supply is limited in his village |
| 31. | Kaddy Fatty | Kaur | G/Farmer | Save seeds | He does not know about certified seeds |
| 32. | Bunjaring Kanteh | Njaba Kunda | G/Farmer | Save seeds | He does not know about certified seeds |
| 33. | Faburama Drammeh | Salikenni | G/Farmer | Save seeds | He does not know about certified seeds |
| 34. | Alhagie Sarjo Kinteh | Kinteh Kunda | G/Farmer | Save seeds | Not given He does not know about certified seeds |
| 35. | Pierre Mendy | Jagil | G/Farmer | Save seeds | He does not know about certified seeds |
| 36. | Musa Mendy | Dasilami | G/Farmer | Save seeds | He does not know about certified seeds |
| 37. | Dembo Mendy | Nyofelleh Madina | G/Farmer | Save seeds | He does not know about certified seeds |
| 38. | Alhagie Baboucarr Secka | Touba Mandaur | G/Farmer | Save seeds | He does not know about certified seeds |

**Appendix 12 showing names of extension workers and their experience with regards to certified seeds**

| Serial Number | Names | Address | Tittle | Region | Have experience with regards to certified seeds |
|---|---|---|---|---|---|
| 1. | Sainey Saho | Njau | DES | CRR/N | No |
| 2. | Nyimasata Cham | Wassu | VEW | CRR/N | No |
| 3. | Omar Touray | Fulla Kunda | VEW | CRR/N | No |
| 4. | Gibba Sallah | Jarumeh Koto | VEW | CRR/N | Yes |
| 5. | Bakary B. Drammeh | Brikamaba | DES | CRR/S | Yes |
| 6. | Bakary M. Gibba | Daru | VEW | CRR/S | No |
| 7. | Jakaria Camara | Dankunku | VEW | CRR/S | No |
| 8. | Masanneh Jawara | Dankunku | DES | CRR/S | No |
| 9. | Samba Huma | Sankandi | VEW | LRR | No |
| 10. | Bambo Jaiteh | Japinneh | DES | LRR | No |
| 11. | Baboucarr Bah | Kwinella | DES / MFC supervisor | LRR | No |
| 12. | Ebrima Nyass | Jenoi | DES | LRR | Yes |
| 13. | Essa Manjang | Soma | VEW | LRR | No |
| 14. | Momodou jammeh | Kiang Karantaba | DES | LRR | No |
| 15. | Ali Njie | Farafenni | DES | NBR | Yes |
| 16. | Kemo Manneh | Fass Njakachoi | VEW | NBR | Yes |
| 17. | Mustapha Jaiteh | Njaba Kunda | VEW | NBR | Yes |
| 18. | Mai Jobe | Kerewan | VEW | NBR | No |
| 19. | Pa Ceesay | Kuntair | DES | NBR | Yes |
| 20. | Momodou Lamin Badgie | Sandy Kunda | VEW | URR | No |
| 21. | Baboucarr Ceesay | Tumana & Fulladu District | DES | URR | yes |
| 22. | Morro Sanneh | Sutukoba | DES | URR | Yes |
| 23. | Ousman Barjo | Fatoto | DES | URR | Yes |
| 24. | Abdou Ndure | Jah Kunda | DES | URR | yes |
| 25. | Fatou Badgie | Nawdeh | DES | URR | No |
| 26. | Ousman Bajinka | Kangibat | DES / MFC supervisor | WCR | No |
| 27. | Balla Musa Colley | Sibanor | DES | WCR | No |
| 28. | Lamin Ceesay | Brikama | DES | WCR | yes |

## Appendix 13 showing Names of Extension Workers and the number of villages under their coverage

| Name | Designation | Region | No of Villages under coverage | | |
|---|---|---|---|---|---|
| Ebrima Nyass | DES | LRR | 17 | *Column1* | |
| Ali Njie | DES | NBR | 32 | | |
| Momodou Jammeh | DES | LRR | 33 | Mean | 34.42 |
| Kemo Jammeh | DES | NBR | 33 | Standard Error | 3.95 |
| Ousman Bajinka | DES | WCR | 26 | Median | 32.5 |
| Samba Huma | VEW | LRR | 6 | Mode | 33 |
| Omar Touray | VEW | CRR/N | 10 | | |
| Lamin Ceesay | DES | CRR//S | 24 | | |
| Bakary M. Gibba | VEW | CRR/S | 33 | | |
| Sainey Saho | DES | CRR/N | 93 | | |
| Fatou Badgie | DES | URR | 61 | | |
| Morro Sanneh | DES | URR | 42 | | |
| Mustapha Jaiteh | DES | NBR | 33 | | |
| Mai Jobe | VES | NBR | 13 | | |
| Jakaria Camara | VEW | CRR/S | 26 | | |
| Bambo Jaiteh | DES | LRR | 25 | | |
| Gibbi Sallah | VEW | CRR/S | 14 | | |
| Momodou Lamin Badgie | VEW | URR | 23 | | |
| Ousman Barjo | DES | URR | 48 | | |
| Baboucarr Ceesay | DES | URR | 86 | | |
| Abdou Ndure | DES | URR | 49 | | |
| Bakary B Drammeh | DES | CRR/S | 49 | | |
| Babucarr Bah | DES | LRR | 49 | | |
| Balla Musa Colley | DES | WCR | 49 | | |
| Pa Ceesay | DES | NBR | 33 | | |
| Nyimasata cham | VEW | CRR/N | 10 | | |
| Masanneh Jawara | DES | CRR/S | 26 | | |
| Essa Manjang | VEW | LRR | 21 | | |

## Appendix 14 Showing Number of Community Sensitization per year across the Regions.

| Names of Farmers | Address | Tittle | No. of Community Sensitization per year | Remarks |
|---|---|---|---|---|
| Fanding Jobe | Jarra Karantaba | Farmer | 1 | There is normally community sensitization once every year |
| Alhagie Dampha | Jarra Soma | Farmer | 2 | There is normally community sensitization twice every year |
| Omar Secka | Wassadu | Farmer | 0 | He has never heard of any sensitization in the village from 2016-2020 |
| Adama Manga | Burambang | Farmer | 0 | He has never heard of any sensitization in the village from 2016-2020 |
| Adama Bah | Mayork | Farmer | 0 | He has never heard of any sensitization in the village from 2016-2020 |
| Abdoulie Joof | Sibanor | Farmer | 0 | He has never heard of any sensitization in the village from 2016-2020 |
| Morri Kebba Minteh | Kiang Karantaba | Farmer | 1 | There is normally community sensitization once every year, but he has never attended it |
| Karafa Badgie | Sitanunku | Farmer | 1 | There is normally community sensitization once every year, but he has never attended it |
| Buba Nyassi | Sitanunku | Farmer | 0 | He has never heard of any sensitization in the village from 2016-2020 |
| Omar Sonko | Jarra Kanuma | Farmer | 2-3 | Sensitizations are normally conducted 2-3 times every year in the village |
| Alhagie Mbaye | Sambang Wolof | Farmer | 1 | The last sensitization conducted was in 2018 |
| Momodou Sanyang | Jarra Jenoi | Farmer | 2 | There is normally community sensitization twice every year |
| Mariama Keita | Dankunku | Farmer | 1 | There is normally community sensitization once every year, but he has never attended it |
| Nyanga Darboe | Kwinela | Farmer | 0 | He is not aware of any sanitization program in his village from 2016-2020 |
| Fatou Fatty | Dankunku | Farmer | 2 | There is normally community sensitization twice every year |
| Babou Boye | Njoben | Farmer | 0 | He has never heard of any sensitization in the village from 2016-2020 |
| Katibi Touray | Sutukoba | Certified Seed Grower | 1 | The last sensitization conducted was in 2016 |
| Amy Danso | Tabasansang | Farmer | 0 | He has never heard of any sensitization in the village |
| Yukafee Camara | Sutukoba | Farmer | 1 | The last sensitization conducted was in 2016 |
| Baranfang Jabbi | Sutukoba | Certified Seed Grower | 1 | The last sensitization conducted was in 2016 |
| Mawdo Camara | Tuba Kuta | Farmer | 0 | He is not aware of any sensitization program in his village from 2016-2020 |
| Kemo Jabbi | Barajali Suba | Farmer | 1 | There is normally community sensitization once every year, but he has never attended it |

| | | | | |
|---|---|---|---|---|
| Alieu Kebbeh | Munyagen | Certified Seed Grower | Not frequent | There is normally community sensitization in the village but not frequent |
| Jim Fatma Jobe | Kerr Jarga | Certified Seed Grower | Frequently | There is normally community sensitization in the village including sensitization on certified seeds |
| Habibou Kebbeh | Ndungu Kebbeh | Farmer | 0 | He is not aware of any sentization program in his village from 2016-2020 |
| Buba Danso | Sika | Farmer | 1 | There is normally community sensitization once every year, but he has never attended it |
| Gibbi Cham | Chamen | Farmer | 0 | There is no sensitization program in the village; some farmers in the village do not even know how to apply fertilizer and how to use farm implements and how to sow seeds. |
| Omar Jallow | Kerr Sulay | Farmer | 0 | He is not aware of any sensitization program in his village from 2016-2020 |
| Tamsir Ceesay | Dibba kunda | Farmer | 0 | He is not aware of any sensitization program in his village from 2016-2020 |
| Ousman Mbaye | Ngayen Sanjal | Farmer | 0 | There is no sensitization program in the village since 30 ago |
| Kaddy Fatty | Kaur | Farmer | 2-3 | Sensitizations are normally conducted 2 -3 times every year |
| Bunjaring Kanteh | Njaba Kunda | Farmer | 0 | He is not aware of any sensitization program in his village from 2016-2020 |
| Faburama Drammeh | Salikenni | Farmer | 0 | He is not aware of any sensitization program in his village from 2016-2020 |
| Alhagie Sarjo Kinteh | Kinteh Kunda | Farmer | 3-4 | Sensitizations are normally conducted 3 -4 times every year in the village, Radio sensitization is also done |
| Alhagie Baboucarr Secka | Touba Mandaur | Farmer | 0 | He is not aware of any sensitization program in his village from 2016-2020 |
| Musa Mendy | Dasilami | Farmer | 1 | Sensitizations are normally conducted once every year |
| Dembo Mendy | Nyofelleh Madina | Farmer | 0 | He is not aware of any sanitization program in his village from 2016-2020 |
| Pierre Mendy | Jagil | Farmer | 0 | He is not aware of any sensitization program in his village from 2016-2020 |

## GLOSSARY

**Lumos:** Is a traditional weekly local market where buyers and sellers meet to exchange goods and services.

**Certified seeds:** Is an offspring of foundation seeds produced under conditions that ensure maintaining genetic purity and its production is supervise and approved by certification agency which is known as the National Seeds Secretariat in the Gambia (NSS).

**Fertilizer:** Is a chemical or natural substance added to soil or land to increase its fertility.

**Pallet:** Is a flat wooden or metal instrument which is put on the floor on which goods are place or stored.

**Groundnut hay:** Is the leftover crop residue after the groundnuts are picked off, it has protein and use for animal feed.

**Dilapidated store:** Is a building in a state of disrepair or destruction as a result of age or neglect.

**Osusu :** Tt is a contribution made by group of people with the aim of assisting one another by given out loan to its members on a small scale with interest payable within a short period.