The ROAD to RECOVERY

EXPERIENCES OF LIBERIA, SIERRA LEONE AND GUINEA AFTER EBOLA

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# ACRONYMS

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<tr>
<th>ACRONYM</th>
<th>Description</th>
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<tbody>
<tr>
<td>ASIWA</td>
<td>Alliance for Seed Industry for West Africa</td>
</tr>
<tr>
<td>CAADP</td>
<td>Comprehensive Africa Agriculture development Program</td>
</tr>
<tr>
<td>CARI</td>
<td>Central Agriculture Research Institute</td>
</tr>
<tr>
<td>CORAF/WECARD</td>
<td>West and Central Africa Council for Agricultural Research and Development</td>
</tr>
<tr>
<td>CILSS</td>
<td>Comité Inter-État pour la lutte contre la Sécheresse au Sahel</td>
</tr>
<tr>
<td>CNOP-G</td>
<td>Confédération Nationale des Organisations paysannes de Guinée</td>
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<tr>
<td>HIV</td>
<td>Human Immune deficiency Virus</td>
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<td>ECOWAS</td>
<td>Economic Community of West African States</td>
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<td>EVD</td>
<td>Ebola Virus Disease</td>
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<td>FBOs</td>
<td>Farmer Based Organizations</td>
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<td>USAID</td>
<td>United States Agency for International Development</td>
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<td>MRU</td>
<td>Manu River Union</td>
</tr>
<tr>
<td>NEPAD</td>
<td>New Partnership for Africa’s Development</td>
</tr>
<tr>
<td>IRAG</td>
<td>Institut de Recherche Agronomique de Guinée</td>
</tr>
<tr>
<td>LPMC</td>
<td>Liberia Produce Marketing Corporation</td>
</tr>
<tr>
<td>MAFFS</td>
<td>Ministry of Agriculture, Forestry and Food Security, Sierra Leone</td>
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<tr>
<td>NERC</td>
<td>National Ebola Response Centre</td>
</tr>
<tr>
<td>RESSP</td>
<td>Rapid Ebola Seed Support Program for Farmers</td>
</tr>
<tr>
<td>ANPROCA</td>
<td>Agence Nationale de la Promotion Rurale et du Conseil Agricole</td>
</tr>
<tr>
<td>PUAPA</td>
<td>Projet d’urgence d’Appui à la productivité Agricole</td>
</tr>
<tr>
<td>RESDP</td>
<td>Rapid Ebola Seed Distribution Project</td>
</tr>
<tr>
<td>PTBA</td>
<td>Programme de Travail et de Budget Annuel</td>
</tr>
<tr>
<td>UEMOA</td>
<td>Union Economique Et Monétaire Ouest Africain</td>
</tr>
<tr>
<td>SLesCA</td>
<td>Sierra Leone Seeds Certification Agency</td>
</tr>
<tr>
<td>WAAPP</td>
<td>West Africa Agricultural Productivity Programme</td>
</tr>
<tr>
<td>WASP</td>
<td>West African Seed Programme</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organisation</td>
</tr>
</tbody>
</table>
Picture 1: Seeds from Guinea arriving in Liberia
The road to recovery

Picture 2: CORAF/WECARD Executive Secretariat at Dakar, Senegal
The West and Central African Council for Agricultural Research and Development (CORAF/WECARD) was established in 1987 as the conference of Heads of African and French Agronomic Research Institutions. In 1995, it expanded its coverage to include English and Portuguese speaking countries of West and Central Africa. Its membership currently includes institutions of the National Agricultural Research Systems in 23 countries including Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Congo, Cote d’Ivoire, Democratic Republic of Congo, Gabon, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Saô Tome and Principe, Senegal, Sierra Leone and Togo.

CORAF/WECARD intervenes in these countries covering a total land area of 12.3 million km² with a total population of 433.2 million inhabitants, 75% of which are engaged in agriculture. While economic growth rate within the region is estimated at about 7%, the average proportion of people living on less than US$ 1.25 a day in the areas of intervention of CORAF/WECARD is estimated at 48.5 per cent – ranging from 10 per cent in Cameroon and Gabon, to 80 per cent in Liberia. This figure is however declining in all countries in the region. Average yield gap across key commodities has been relatively high and estimated at 75 per cent with average economic growth rate is of 7 per cent. CORAF/WECARD’s strategic vision and mission (Box 1) is geared towards addressing the related challenges.

BOX 1: CORAF/WECARD’S VISION AND MISSION

CORAF/WECARD VISION
“…A sustainable reduction in poverty and food insecurity in WCA through an increase in agricultural-led economic growth and sustainable improvement of key aspects of the agri-cultural research system…”

CORAF/WECARD MISSION
“…Sustainable improvements to the productivity, competitiveness and markets of the agri-cultural system in West and Central Africa by meeting the key demands of the sub-regional research system as expressed by target groups…”
The West Africa Agricultural Productivity Program (WAAPP) is an ECOWAS initiative coordinated by CORAF/WECARD in 13 member countries of the Economic Community of West African States (ECOWAS). Guinea Bissau, Cape Verde and Mauritania (a non-ECOWAS member) are expected to join the program soon. The development objective of the Program is to generate and accelerate the adoption of improved technologies in the participating countries' top agricultural commodity priority areas that are aligned with the sub-region’s top agricultural commodity priorities, as outlined in the ECOWAS Agricultural Policy (ECOWAP). The four components of WAAPP are: Enabling Conditions for Regional Cooperation in the Generation, Dissemination and Adoption of Agricultural Technologies; National Centres of Specialization/Strengthening the Research System; Support to Demand-Driven Technology Generation, Dissemination and Adoption and; Project Coordination, Management, Monitoring and Evaluation. Based on priority commodities and interventions that would drive socio-economic growth, each country has chosen commodities and technologies of comparative advantage and also ensures dissemination to other countries.

Picture 3: Field Visit of the WAAPP Liberia Coordinator to a certified seed production Field
The West Africa Seed Program (WASP) is another program of CORAF/WECARD. The specific objective of WASP is to increase availability and use of quality seeds through increased production of quality improved certified seeds in West Africa from 12% to 25%. At the on-set of WASP in 2012, the seed industry was facing critical challenges in the seed value chain which limited farmers’ access to quality seeds. The challenges included, limited technical and financial capital, weak and poorly developed local seed enterprises, lack of seed demand forecasting capabilities to engage the private sector, and week mechanisms to enforce seed laws and regulations in order to facilitate seed trade. The WASP’s results are delivered through four axes: Alliance for Seed Industry for West Africa effectively coordinated and sustained; ECOWAS Seed Regulations implemented; Supply of breeder seeds increased; and supply of foundation and certified seeds by the private sector increased.

The WAAPP and WASP over the past years have developed, tested and applied models and modules for strengthening regional and national agricultural seed systems. These were used as effective mechanisms to respond to the urgent seed needs of Farmers for the agricultural recovery initiative in the three EVD affected countries from 2014 to 2016.
ACKNOWLEDGEMENT

This Monograph “The Road to Recovery: Experiences of Liberia, Sierra Leone and Guinea after Ebola” is a syntheses of the ECOWAS-led initiative which mobilized seeds from Member States in West Africa for supply to farmers in addressing the foreseen challenge of food insecurity during and after the Ebola epidemic in Liberia, Sierra Leone and Guinea and to strengthen the seed systems in these countries in building resilience. The support by the Governments and people of Burkina Faso, Benin, Cote d’Ivoire, Ghana, The Gambia, Guinea, Liberia, Mali, Niger, Nigeria, Sierra Leone, Senegal and Togo is highly appreciated.

The Editors express their gratitude to ECOWAS, UEMOA, CILSS and the Mano River Union Secretariat, Ministries of Agriculture of the Member States for their leadership role, the World Bank, USAID-West Africa Mission, AfricaRice, IITA, AFRICALEAD, Custom Authorities, the Private Sector, Farmer Organizations, Truck Drivers, NGO’s and all those who contributed to the initiative. The greatest gratitude goes to the Almighty God who provided life, strength, wisdom and resources needed.

*Picture 5*: Certified Seeds being transported from Guinea to Liberia
The road to recovery

Liberia, Sierra Leone and Guinea alongside Côte d’Ivoire constitute the Manu River Union in West Africa. The population of Liberia, Sierra Leone and Guinea where the Ebola epidemic occurred stand at 4.3 Million, 6.0 Million and 11.8 Million respectively. The initial projections for economic growth in 2015 for Guinea, Liberia and Sierra Leone before the Ebola epidemic were 4.3%, 6.8% and 8.9% respectively. However, with the incidence of the epidemic, these projections dropped to -0.2%, 3% and -2.0%. The World Bank Group estimated the 2015 GDP losses for the three countries to be almost $2.2 billion. By August 2015, over 28,000 people had been infected by the virus and 40% (11,290) had died. Thus the Ebola crisis took a heavy toll on the fragile economies and human lives. The agricultural and food sectors in these countries were severely affected.

Seeds saved by farmers for planting had been consumed by farm families due to the shortage of food, coupled with the uncertainty of surviving the epidemic. There was an acute shortage of agricultural labor force which further exacerbated the food insecurity situation. In Liberia, nine out of ten people were food insecure and in Sierra Leone two out of three as at June 2015. Overall, the risk was so high real that over one million people could go hungry unless they had reliable access to food and emergency measures taken to safeguard crop and livestock production.

It was within this context that the need for mobilizing seeds in the region for supply to these countries was considered a priority activity to mitigate the impact of the Ebola out-break on agriculture. It was considered the most effective approach in view of the situation on the ground, while also emphasizing that speed was of the essence in view of the existing (and closing) time window prior to the 2015 cropping season. The 4,113 tons of certified rice, maize and cowpea seeds supplied, benefited 240,113 farm families, 45% being women in 2015. With an average farm family size of five, 1,309,180 people were expected to have been touched in 2015.

FOREWORD

Liberia, Sierra Leone and Guinea alongside Côte d’Ivoire constitute the Manu River Union in West Africa. The population of Liberia, Sierra Leone and Guinea where the Ebola epidemic occurred stand at 4.3 Million, 6.0 Million and 11.8 Million respectively. The initial projections for economic growth in 2015 for Guinea, Liberia and Sierra Leone before the Ebola epidemic were 4.3%, 6.8% and 8.9% respectively. However, with the incidence of the epidemic, these projections dropped to -0.2%, 3% and -2.0%. The World Bank Group estimated the 2015 GDP losses for the three countries to be almost $2.2 billion. By August 2015, over 28,000 people had been infected by the virus and 40% (11,290) had died. Thus the Ebola crisis took a heavy toll on the fragile economies and human lives. The agricultural and food sectors in these countries were severely affected.

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Dr Marc Lapodini Atouga
Commissioner, Department of Environment and Water Resources, ECOWAS
Additional 8,400 tons of seeds multiplied in the three countries, are to benefit at least 450,000 more farm families in 2016. The new improved crop varieties supplied are tolerant to common stresses (iron toxicity, soil salinity, pests and diseases), climate-smart and yield over 2-3 times those of farmers’. Farmers can save their seeds and continue to plant these for at least three years without significant decline in yield. With spill-over benefits to other farmers through farmer-to-farmer exchanges, the initiative is expected to benefit almost 2,000,000 people in two years. Thus the initiative to support Liberia, Sierra Leone and Guinea with seeds is driving agricultural recovery programs and facilitating the achievement of food security. The long term plan is to strengthen the seed systems and the agricultural sectors of these countries as well as the ECOWAS sub-region in building resilience to future shocks. This Monograph entitled "The Road to Recovery: Experiences of Liberia, Sierra Leone and Guinea after Ebola" gives an overview of the Ebola virus outbreak, the impact on the agricultural sector of the affected countries and the remedial actions taken by the ECOWAS Commission, Member States, CORAF/WECARD, AfricaRice and other partners, particularly the World Bank and the USAID/WA. It also shows the potential impact of the initiative on the countries which were affected.

Dr. Marc Lapodini ATOUGA,
ECOWAS Commissioner in charge of Agriculture,
Environment and Water Resources
DEDICATION

To all Hero Farmers in Liberia, Sierra Leone and Guinea who lost their lives to the Ebola Virus Disease outbreak in 2014-2015

Picture 6: Ebola Virus Disease Commenced from the Rural Communities Joni Byker/Samaritan’s Purse
1. INTRODUCTION

1.1. The Ebola Haemorrhagic Fever

March, 2014, the first cases of the outbreak of Ebola virus in West Africa were noticed! This was noted as the most complex Ebola outbreak since the virus was first discovered in 1976. There were more cases and deaths in this particular outbreak than all previous cases combined (Peter, C.J and Peters, J.W. 2015). Starting from Guinea, it spread across land borders to Sierra Leone and Liberia. The Virus then reached Nigeria through a passenger who travelled from Liberia by air and subsequently to the United States of America, Senegal, Mali and Europe, notably by travelers. There were instances where health workers who came to the affected countries in West Africa from Great Britain, Spain and USA were also infected and taken back home. The most severely affected countries: Guinea, Liberia and Sierra Leone were noted as having very weak health systems, lacked human and infrastructural resources and had recently emerged from long periods of armed conflict and political instability.

The Ebola Hemorrhagic fever is a symptom of the presence of the Ebola virus disease (EVD). It is generally transmitted to people from wild animals and subsequently spreads in human populations through human-to-human transmission. The average EVD fatality rate is around 50%, having a range from 25% to 90% in past outbreaks (Bardi, 2014). The illness is characterized by high body temperature of about 39°C, vomiting of blood (hematemesis), diarrhea with blood, retrosternal abdominal pain and others, resulting in death after a mean of three days(!)

August 8, 2014, the World Health Organization (WHO) declared the West Africa outbreak a public health emergency of international concern under the international health regulations of the year 2005. As at that time, there was no confirmed and licensed Ebola vaccine although some new vaccines were undergoing evaluation.

*Picture 7: Ebola Virus Disease Victims on the Streets Of Liberia*
1.2. Socioeconomic Effects of the Ebola Virus Disease

The population of Liberia, Sierra Leone and Guinea where the Ebola epidemic occurred stand at 4.3 Million, 6.0 Million and 11.8 Million respectively. Before the incidence of Ebola, the agricultural sectors were experiencing appreciable recovery in the Mano River Union countries, especially after the civil conflicts that affected Sierra Leone and Liberia. As of 2010, WHO reported 42% of Liberians as food insecure and 42% of children as mal-nourished (WFP, 2010). Rice is the major staple crop in Liberia, Sierra Leone and Guinea. In these countries rice was cultivated on 336,000 hectares, 549,022 hectares and 1,466,352 hectares respectively. Certified seed supplies in these countries over recent years had been low, estimated below 5% on the average. Agriculture remains the main stay of the economies, being the major source of livelihood, particularly employment and food.

January 2015, the World Bank reported that the Ebola crisis devastated the Agriculture and food sectors in West Africa, making hunger a problem for greater numbers of people (World Bank, 2015). The president of the International Fund for Agriculture (IFAD) Dr. Kanayo Nwanze signaled the alarming situation that in Guinea, Liberia and Sierra Leone, farmers were leaving their crops to rot as they stayed home in fear. Up to 40% of farms had been abandoned due to fear in Sierra Leone. There were food shortages in other countries because regional trade had been disrupted (UN, 2014). The representative of the International Monetary Fund (IMF), Gerry Rice commented that the Ebola outbreak had an acute macroeconomic and social impact on the three already fragile countries in West Africa (IMF, 2014).

February 2015, the WHO reported 23,000 confirmed, probable and suspected cases of Ebola with an estimated 9,000 deaths. There were many unknown cases in Liberia, Guinea and Sierra Leone.
August 2015, over 28,000 people had been infected by the virus and 40% (11,290) had died. Families were forced to reduce their food intake to one meal a day. Guinea, Liberia and Sierra Leone as well as neighboring Senegal had a price hike in basic commodities. In Liberia, prices of the main staple foods (cassava and imported rice) increased by 30%. A survey conducted by the World Food Program (WFP) during the same period revealed that certain families were consuming food that costs less, such as cassava instead of rice. Farm families resorted to consuming seeds instead of saving them for the next planting season. The food producing zones of Bong County in Liberia, Kenema and Kailahun in Sierra Leone, Lofa and Gu Deck Dedou in Guinea were among the highest hit areas where hundreds of farmers lost their lives. Statistics showed that 170,000, 120,000 and 230,000 people became food insecure and the figure was expected to increase to 300,000; 280,000 and 170,000 by the end of 2015 in Liberia, Sierra Leone and Guinea respectively (WFP, 2014). The restricted regional and international travels to and from the affected countries, decisions by the three governments to quarantine various districts within the countries and restrictions on internal movements in order to contain the spread of the virus, further aggravated the food insecurity situation.

The World Bank reported that even those living in the most remote communities in Liberia where Ebola had not been detected, suffered the economic side effects of this terrible disease. Thus, it was advised that relief efforts must focus not only in areas directly affected by the virus but also on those in the poorest communities where access to markets, mobility and food scarcity continued to worsen (Rice, 2014). The CEOs of an NGO Street Child, Tom Dannatt and Kelfa Kargbo issued the following statement:

If we can put seed in the hands of farmers before mid-May, they can still get it in to the ground in time to look forward to the October harvest. This is an incredible worrying situation. It’s very late but it is not yet too late. We urge large organizations on the ground in Sierra Leone to act now. Give or lend farmers seed!
(Street Child, 2015).
Agricultural exports account for 57% of GDP in Sierra Leone, 39% in Liberia and 20% in Guinea. The agriculture sector employs over two-thirds of the rural population in the affected countries. These countries are net food importers and with the outbreak of the Ebola epidemic, food trade with neighbouring countries and internal production were severely affected. These resulted in food insecurity and high food prices. Vulnerable segments of the society, in particular women who operated the majority of agricultural small businesses were severely affected. In Liberia, the loss in overall informal trade mostly affected the livelihoods of female traders, who represent nearly 70% of the informal traders and breadwinners in rural households (WFP, 2014).

**Figure 1:** The Socioeconomic Relationships of Ebola Virus Disease Outbreak (Modified from United Nations Economic Commission for Africa, 2015)
2. THE INTERVENTION

2.1. Events leading to the Intervention

In support of the economic stabilization programs of Liberia, Sierra Leone and Guinea after the Ebola epidemic, a rapid recovery seed intervention program was initiated by the ECOWAS Commission. The initiative was coordinated by CORAF/WECARD through the WAAPP and WASP mechanisms in collaboration with partners which included the AfricaRice, the Private Sector and other regional and national stakeholders. The major funding was provided by the World Bank.

The spirit of solidarity has always been the feeling that brings the ECOWAS member states together to address common challenges confronting the region. This same feeling brought the ECOWAS commission, member states, the World Bank, USAID, AfricaRice, the Private Sector and other partners together to respond to the urgent need and to develop lasting solutions to (i) the food insecurity situation that emerged as a result of the Ebola Virus Disease and (ii) the threat to the agricultural development agenda of Liberia, Sierra Leone and Guinea. In this vein, 13 WAAPP/WASP Countries and AfricaRice met in Dakar in December, 2014 and mapped out the seed needs of the three countries, as well as short and medium term actions, which included the mobilization of seeds from Member States.

The total supply of certified seeds in West Africa during 2015, which stood at 314,000 tons, represented 103% increase over the 2013 supply (182,000 tons), provided an opportunity to mobilize the needed seeds. The supplies of the three classes of seeds (breeder, foundation and certified seeds) of the major cereals (maize, rice, sorghum and millet) and legumes (cowpea and groundnuts) in West Africa during 2015 are provided in Table 1. It is worth to mention that the land area covered by certified seeds in the region increased from the original 12% in 2012 to over 20% in 2015.

Figure 2: Mapping Out Preferred High-Yielding Crop Varieties
The road to recovery

Estimates of the seed requirements of the three countries were made for the 2015 cropping season and validated by the recipient countries and stakeholders. To facilitate procurement and transactions, MoUs were signed between the seed supplying and receiving countries. The initiative was planned in three phases: (i) Mobilization of seeds for use by farmers in the 2015 cropping season, (ii) Seed production in 2015 for use by farmers in 2016 and (iii) Strengthening the capacity and improving infrastructure with the goal of building resilience to shocks and ensuring stable seed supply and use in Liberia, Sierra Leone and Guinea. The total budget for Phases 1 and 2 was USD 17.6 Million.

Table 1: Seeds Produced for the 2015 Planting Season, West Africa

<table>
<thead>
<tr>
<th>Seed Class</th>
<th>Rice (T)</th>
<th>Maize (T)</th>
<th>Sorghum (T)</th>
<th>Millet (T)</th>
<th>Cowpea (T)</th>
<th>Ground-nut (T)</th>
<th>Total (T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breeder Seed (T)</td>
<td>116</td>
<td>47</td>
<td>33</td>
<td>16</td>
<td>6</td>
<td>21</td>
<td>209</td>
</tr>
<tr>
<td>Foundation Seed (T)</td>
<td>8,700</td>
<td>4,000</td>
<td>1,486</td>
<td>547</td>
<td>202</td>
<td>304</td>
<td>15,239</td>
</tr>
<tr>
<td>Certified Seed (T)</td>
<td>144,500</td>
<td>113,600</td>
<td>9,000</td>
<td>16,500</td>
<td>3,900</td>
<td>26,500</td>
<td>314,000</td>
</tr>
</tbody>
</table>

Mobilization of seeds for farmers in the 2015 Planning season

In country Seed production for use in 2016

Strengthening the capacity and improving infrastructure

• Resilience to shocks in improved seed systems
• Food security and livelihoods improved

Figure 3: The three Phases of the Ebola Seed Intervention Initiative
The Results Framework for the Seed Intervention

CORAF/WECARD takes a strong institutional view to learn from monitoring its development programs and has a principle of integrating M&E approaches in all projects that it coordinates. In its coordination interventions, the organization is committed to the use of sound approaches for performance management and reporting.

In line with this, CORAF/WECARD set up a robust M&E system to track progress in performance and to show evidence of results at all levels of implementation. The performance management system involves a continuous review of data management tools and procedures to keep harmony in planning, managing, tracking and documenting progress. The WASP Result Framework is aligned with the results frameworks of CORAF/WECARD and the Economic Growth office of the USAID/WA. The goal of WASP is “improved sustainable Agricultural Productivity” and the strategic objective of WASP is “expanded availability of quality seeds”. It is within this context that the Results framework (Figure 4) for the Ebola seed intervention was developed. The framework provides guidelines for data collection, analysis and management and reporting on the indicators to inform effective decision-making and program implementation.
**GOAL**: Sustainable agricultural led socio-economic growth in target countries improved

**Specific Objective**: Resilience to shocks in National Seed Systems improved

**Specific Objective**: Food security and livelihoods improved

**Result 1**: Increased availability and use of quality seeds

- **IR 1.1**: Increased production of improved seed varieties
- **IR 1.2**: Increased farmer beneficiaries of distributed seeds

**Result 2**: Enhanced economic empowerment of farmer beneficiaries

- **IR 2.1**: Improved household income
- **IR 2.2**: Crop yields per hectare increased

**Result 3**: Improved quality of life of Ebola affected households

- **IR 3.1**: Quantity of grain consumption in Households increased
- **IR 3.2**: Improved household expenditure

*Figure 4: Results Framework for the West African Ebola Seed Support Intervention*
2.2. The EBOLA Seed Support Partnership

A number of partners were mobilized (Figure 5) at the outbreak of the Ebola epidemic and came up with the emergency solution to tackle the foreseen hunger.

**ECOWAS CORAF (WAAPP)**
**WRAP-UP Steering Committee**
**Meeting in Senegal**
**(Nov/Dec, 2014)**

Planing for 2015 Seed Requirements by Stakeholders

Categorization of Seeds by Variety, Quantity, and Transportation Costs

Drafting of MOUs / Signing of MOUs by Supplying and Receiving Countries
Development of Data Collection and Reporting Tools

Estimation and Validation of 2015 Cropping Season Requirements by Stakeholders

Transfer of Funds to Supplying Countries

4,113 tons of certified seeds and 261 tons of foundation seeds Mobilized from 8 Countries at the value of USD 17.6 Million

Movement of Seeds (Trucks) facilitated and Monitored By ECOWAS, CORAF/WECARD, World Bank

*Figure 5: The Ebola Seed Support Partnership framework*
### 2.3. Mobilization and Movement of Seeds

A total of 4,384 tons of seeds were mobilized. Certified seeds for direct planting by farmers during the 2015 cropping season totaled 4,113 tons (3,696 of rice; 307 of maize, and 110 of cowpea). These were planted on an estimated area of 110,000 ha of land. In addition foundation seeds totaling 261 tons (255 tons of rice; 2 tons of maize and 4 tons of cowpea) were procured for the production of 8,510 tons certified seeds within the three affected countries for use by farmers during the 2016 cropping season. The seeds were from Benin, Burkina Faso, Cote D’Ivoire, Ghana, Guinea, Mali, Niger, Nigeria, Senegal and Togo.

**Picture 10**: Truck Loads of Seeds from Burkina Faso to Liberia and Sierra Leone

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**Rice Seed transportation**

**Maize Seed transportation**

**Cowpea Seed transportation**
The movements of trucks across the international borders were facilitated by the use of ECOWAS endorsed permits with the cooperation of Ministries of Agriculture and Custom Authorities in the respective countries within the context of the ECOWAS free movement protocol. The processes from seed preparation (treatment, bagging, loading), departure, arrival, reception, storage and distribution were monitored and documented to serve as lessons and experiences for future interventions. Departure and Arrival Ceremonies were graced by Ministers of Agriculture and Heads of States. Press conferences were held and Press Releases issued during these ceremonies where special promotional items such as T-Shirts and caps were distributed to attendants.

*Picture 11: Seeds being packed in a warehouse in Liberia*
2.4. Reception and Distribution of Seeds

To facilitate regional seed trade, specific conditions were required to be fulfilled, which included: (i) labelling of seed bags with information on weight (in kg), properties and quality attributes such as germination (%), moisture content (%), variety name among other labelling requirements and (ii) phytosanitary certification. The seed companies/enterprises in conjunction with the WAAPP coordinating units were responsible for ensuring that the seeds purchased met the quality standards of the ECOWAS with the cost of seed testing borne by the private seed suppliers. Upon arrival, the seeds were subjected to laboratory tests to ensure conformity to the labelling information, particularly germination and physical purity. An advice was given for the relevant tests (germination, physical purity and moisture content) to be conducted not later than 24 hours after receipt of the seeds. The satisfactory test results for germination, physical purity and moisture contents were ensured before the final payments were made. Transportation of the seeds was efficiently monitored and technical and financial project reports were produced.

In Liberia, a letter signed by Honourable Sekleu E. Wiles, the Acting Minister of Government of Liberia inviting all stakeholders was sent forth from the Ministry of Agriculture, Republic of Liberia to Honourable Dr. Kaba Hadja Saram Daraba Secretary General of Mano River Union Sierra Leone. The Letter reads:

The Government of Liberia through its partners has embarked on an Economic Stabilization and Rapid Recovery Seed Intervention Program created to bridge the seed gap for farmers as a result of the Ebola Virus Disease. The Government of Liberia has begun receiving Seeds (rice, maize and cowpea) from West African Countries under this quick impact initiative. As a means of creating a massive awareness of the seed distribution ahead of the planting season, the Ministry of Agriculture has planned an official launching program which is expected to take place on Friday, April 17th, 2015 in Gbarnga, Bong County beginning at 11am at the IPMC Warehouse where some of the seeds are stored. The Vice President of the Republic of Liberia, His Excellency Ambassador Joseph N. Boakari will officially launch this intervention.

(Sekleu, W. E., 2014)
In Sierra Leone, the Ministry of Agriculture, Forestry and Food Security sent out an invitation to more than 30 key stakeholders of WAAPP, to the official launching and reception ceremony for the Rapid Ebola Seed Support Programme for farmers at the Seed Multiplication Compound, Makema, Road in Makini which was scheduled for 11th May, 2014.

The excepts of the letter reads: to receive the Trucks from Guinea at the Sierra Leone Border; the Project Coordinating Unit of WAAPP Sierra Leone had a bilingual informant constantly on the Guinea-Sierra Leone border charged with the responsibility of informing WAAPP-Sierra Leone Headquarters in Freetown whenever trucks arrived. Once the trucks arrived at the border, WAAPP Sierra Leone officials worked with the border control/customs officials to process them within reasonable timeframe. The consignments were then taken to the Kambia MAFFS Office for preliminary assessment and testing of the seeds for purity and germination by the Sierra Leone Seeds Certification Agency (SLeSCA). The trucks were then escorted to one of the four hub stores; seeds that needed further cleaning were sent to the seed processing facility for processing. At the Hub stores, store keepers tracked quantities received, and damaged and underweight bags were harmonized. An internal transportation mechanism was called up to transport the seeds from the Hubs to the district Stores. At the District Stores the seeds were checked and distributed to the various community blocks.

At the block stores, a joint team of senior staff of MAFFS, Farmers’ federation, representatives from community chiefs, local council representatives oversaw the distribution. The Farmers were assured of receipt of seeds through pre-arrival visits to farmer fields by the MAFFS team. The Monitoring and Evaluation Teams ensured full documentation of the distribution, vetting of beneficiaries and, tracked the use of the seeds by geo-referencing the farms by collecting coordinates of beneficiary farms in all locations. Snap shots of all seed beneficiaries were taken and a database of beneficiaries developed.

The Ebola outbreak negatively impacted on farmers throughout the country leaving most of them incapacitated to continue their farming activities in the coming seasons. Against this backdrop, the World Bank as one of its many Ebola Response Supports to the agriculture sector is supporting the provision of planting seeds to ensure the availability of seeds in the coming years. Seeds provided include rice, maize and cowpea. As a key stakeholder in the implementation of WAAPP in Sierra Leone, you are hereby invited to participate in the launching program. We look forward to your participation in this important ceremony.

(Sesay, S. J. 2014).
Figure 6: The Seed Assessment and Dissemination Cycle
2.5. Results

The support resulted in the supply of 12,623 tons of certified seed in 2015 and 2016. Out of these, 4,113 tons comprising rice, maize and cowpea were mobilized from the ECOWAS member states and supplied directly to farmers for planting in the 2015 cropping season on 110,000 hectares of land (Table 2).

Table 2: Phase 1 - Certified Seed Mobilized from the ECOWAS Member States in 2015

<table>
<thead>
<tr>
<th>2015 Benefits</th>
<th>Maize</th>
<th>Rice</th>
<th>Cowpea</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certified Seeds (Tons)</td>
<td>3,696</td>
<td>307</td>
<td>110</td>
<td>4,113</td>
</tr>
<tr>
<td>Land Coverage (Ha)</td>
<td>97,200</td>
<td>12,350</td>
<td>11,000</td>
<td>110,430</td>
</tr>
<tr>
<td>Estimated Grain Produced (tons)</td>
<td>291,600</td>
<td>49,400</td>
<td>22,000</td>
<td>363,000</td>
</tr>
</tbody>
</table>

In 2015, a total of 240,113 individuals benefited from the mobilized seeds. This total constituted 113,513; 78,500 and 48,100 beneficiaries for Liberia, Sierra Leone and Guinea respectively (Table 3). 255 tons of rice from the foundation seeds mobilized, additional 8,510 tons of rice certified seeds were produced in 2015 cropping season for use by farmers in 2016.

Table 3: Phase 1 - Beneficiaries of Distributed Seeds (Gender disaggregated)

<table>
<thead>
<tr>
<th>Country</th>
<th>Male</th>
<th>Female</th>
<th>Youth</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sierra Leone</td>
<td>40,806</td>
<td>37,694</td>
<td>45,341</td>
<td>78,500</td>
</tr>
<tr>
<td>Liberia</td>
<td>63,105</td>
<td>50,328</td>
<td>62,431</td>
<td>113,513</td>
</tr>
<tr>
<td>Guinea</td>
<td>29,900</td>
<td>18,200</td>
<td>26,816</td>
<td>48,100</td>
</tr>
<tr>
<td>Total</td>
<td>133,811</td>
<td>106,222</td>
<td>134,558</td>
<td>240,113</td>
</tr>
</tbody>
</table>
The second phase resulted in the production of 8,510 tons of seeds which were expected to benefit over 450,000 farmers from Liberia, Sierra Leone and Guinea. This will cover an area of 336,000 ha of land with a projected production of 1,344,000 tons of rice paddy. Significant spill over effect is the benefit to many farmers in the communities, bringing about a radical transformation to the agricultural sector of the countries (Table 3)

<table>
<thead>
<tr>
<th>2016 Expected Seed Supply</th>
<th>Rice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certified Seeds (Tons)</td>
<td>8,510</td>
</tr>
<tr>
<td>No. of Beneficiaries</td>
<td>450</td>
</tr>
<tr>
<td>No. of Ha. (Beneficiaries)</td>
<td>336,000</td>
</tr>
<tr>
<td>Grain Produced (tons)</td>
<td>1,344,000</td>
</tr>
</tbody>
</table>

Picture 12: NERICA L20 Certified Seed Multiplication
In Liberia, a Harvest Ceremony which took place on 23rd January, 2016 in Gbendi, Nimba County is highlighted in a story below:

A Story from the 164 Hectares of Certified Seed Rice Cultivated in Nimba County, Liberia from Foundation Seed Received

The Gbedin Rice Project is just one of the many forms of support that the World Bank is engaged with within the Agricultural Sector. It has built the capacity of farmers and their organizations, as well as other relevant actors in the agriculture sector. The Dokodan Farmers’ Cooperative in Gbedin, Nimba County, where 164 hectares of low land rice was cultivated through AfricaRice-WAAPP Liberia arrangement started in October 2015. With full support from the Bank. Out of 385 ha of certified rice seed established in Liberia under the support to produce 1,136.5 tons of seed, 164 ha was cultivated to NERICAL-19 by this cooperative with 250 members. Three cropping cycles are possible per year using the early maturing varieties developed by AfricaRice. The Dokodan Farmers’ Cooperative is among the best farmer groups trained by AfricaRice and CARI. They are a promising seed producing organization and with the establishment of the National Seed Board in progress by the MOA, there is an ambition to develop the group into a certified seed company in Liberia.

The variety, Nerica L-19 matures in three-and-a-half months and yields between 3-4 metric tons per hectare. The purpose of this initiative is to ensure that certified seeds are available for Liberian farmers in the next three to four years. Prior to this, in December 2015, 18.5 hectares of certified upland seed rice had been harvested at the CARI/Kpatawee seed multiplication site which made it possible for a lowland paddy production which is currently going on. The initiative has helped improve the knowledge, skills and competence of the farmers in rice production, which has eventually improved their livelihoods (MOA, 2016).
The road to recovery

2.6. Appreciation of Socio-Economic Turn-Around

Many commendations were received relating to the restored hope for the future that the intervention brought to the countries.

Mama Isata Mansaray, Henry Koroma and an anonymous Farmer of Sierra Leone commented as follows:

I had to struggle with my five children through the trying times; we consumed every grain that was left and I had been selling my clothes to make ends meet. This seed is like being reborn. I will farm and do business again after harvesting.

We had to cease our farming activities and seldom visited our farms. We ate all our Rice Seeds. The World Bank has given us seeds at the right time to continue farming. These seeds will help us survive again.

We cleared the land to plant but could not do it because of Ebola. Everybody left and the bush started growing there again. The seeds will help us because we plan to extend our farm from three to five hectares.

The Sierra Leone Agricultural District Technical Advisor, Mr Sayo Tarawalli comment on the 7th of November, 2016

Sierra Leone is looking forward to rebrand its image and rebuild its economy. In the Northern District of Kambia, 700 Rice Farmers have come together to form an agricultural business centre. It is hoped that such small and medium sized businesses will provide employment and exportation of rice will soon come (CNN, 2016).
Vice President Joseph N. Boakai has called for more budgetary support to agricultural programs in Liberia in order to save the two hundred million United States dollars spent annually to import rice, the staple commodity in the country. Vice President Boakai said “this is a new beginning for agriculture in Liberia and the sector needs our support as a Government.”

Agriculture Minister Dr. Moses M. Zinnah said at the harvest ceremony that agriculture holds the future to Liberia’s economic problems and that agriculture is at the turning point. He disclosed that local farmers in 2015 produced more rice than in previous years.
2.7. The Challenges and Lessons

The ECOWAS policy on free movement of people and goods came under test. Despite the success, border controls and extortions generally constituted a major hindrance. Moreover, some border officials were either ignorant of the regional trade rules or ignored them. Movements at the Ghana-Cote d’Ivoire border, through Cote d’Ivoire and at the Cote d’Ivoire-Liberia border were difficult. In certain cases, seeds from Togo, Ghana and Niger were off-loaded at the Liberia-Cote d’Ivoire border for trucks from Liberia to pick them. In other cases, alternative routes which were longer and more costly were used. Thus seeds from Burkina Faso, Nigeria and the second batch of seeds from Togo had to pass through Mali and then Guinea to enter into Sierra Leone and Liberia while trucks carrying cowpea seeds from Niger had to spend one-and-a-half months in Cote d’Ivoire.

The road from Cote d’Ivoire to Liberia was mountainous and in certain situations, trucks could not climb. This necessitated emptying the trucks to enable them go over the mountains for seeds to be carried on heads to join them at the other side.
The unnecessary restrictions to movement by border officials, payments of unofficial border fees, delays in obtaining the required documentations, etc. constituted major challenges to transportation of the seeds, which undermined the ECOWAS policy of free movement. These coupled with occasional breakdown of vehicles resulted in incurring extra costs, late arrival of some seeds for planting and seed quality deterioration in some cases.

Guinea, with a relatively stronger seed system was able to mobilize most of its seed needs internally and able to supply seeds to Liberia. Knowing that disasters such as this and others, including drought, floods, pests and disease outbreaks are eminent, efforts should be made to strengthen the seed and agricultural systems in general to build resilience. Despite the challenges, opportunity offered by the regional seed market to the private sector was enhanced. The protocols for regional seed trade were tested and respected to a large extent and all seeds transported were been subjected to quality control and phyto-sanitary certification protocols. Contract models for regional seed trade were developed and tested between 10 seed supplying countries (Burkina Faso, Cote d’Ivoire, Ghana, Guinea, Mali, Niger, Nigeria, Senegal and Togo) on one side and the three receiving countries. On arrival, seeds were tested in conformity with the regulation and seeds that did not meet the quality standards were rejected under provisions made in the contract.
### Table 5: The SWOT Analysis Matrix of the Intervention

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Existence of policies to support regional seed trade and free movement of seeds</td>
<td>• Immense delays in administrative procedures for the movement of seeds</td>
</tr>
<tr>
<td>• Opportunity exists in West Africa to expand the regional seed trade</td>
<td>• Excessive restriction at borders, which results in delay in delivery of seeds, quality deterioration and increased cost.</td>
</tr>
<tr>
<td>• Best practices for the supply of seeds, properly classified, categorized and tagged with information on variety, preferred ecologies and costs exist.</td>
<td>• Inadequate adherence to the ECOWAS and UEMOA protocols for free movement and regional trade</td>
</tr>
<tr>
<td>• A system for monitoring trucks traveling in long distances from supplying to receiving countries exists</td>
<td>• Language barriers across countries</td>
</tr>
<tr>
<td>• Appropriate crop varieties to respond to crises exist</td>
<td>• Unpredictable crises, effects of climate change and political instability in the region</td>
</tr>
<tr>
<td>• Expertise and capacity in plant breeding and seed technology exists for seed sector improvement and response to crises.</td>
<td>• Poor road network and infrastructure for effective regional seed trade</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Increased seed trade and other economic activities</td>
<td>• Non-compliance with the ECOWAS and UEMOA Protocols for free movement and regional trade</td>
</tr>
<tr>
<td>• Country focus on the production of high quantities of seeds of specific crop varieties of national comparative advantage promotes cross-border seed trade, efficiency in sharing genetic materials and regional integration</td>
<td></td>
</tr>
<tr>
<td>• A high potential exists for investment in seed intervention programs, especially by the Banks.</td>
<td></td>
</tr>
</tbody>
</table>

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**The road to recovery**
3. PERSPECTIVE

Searching for solutions to support agricultural and economic recovery programs after crises has been the trend in Africa. In the case of seed supply at the advent of crises, getting adequate quantities of certified seeds of preferred crop varieties could be a challenge. Thus, strengthening the resilience of seed systems and the agricultural sector in general in ECOWAS member countries will be the obvious and a sustainable solution.

3.1. Capitalising on the Experience from the Intervention

A proposed workshop would seek to improve the regional seed trade and forge a strategy to build resilience to future crises. It would bring stakeholders from the ECOWAS, UEMOA, CILSS, National Seed Systems, CORAF/WECARD, CGIAR, International and Local Seed Companies, Custom Authorities, Ministries of Trade and of Regional Integration, Farmer Organizations, Technical and Financial Partners, FAO, Seed Initiatives and Programs (AGRA, AfricaSeed, WAAPP, WASP, etc.) to achieve the following: (i) Success, challenges and lessons learnt documented and shared for future interventions, (ii) A strategy and partnership to improve regional seed trade and to respond to crises of similar dimension developed.

In the past, the CORAF/WECARD region had experienced the Fall Army Worm and Locust invasions and drought, and recently the Ebola epidemic. CORAF/WECARD is presently better positioned to strengthen the agricultural sector and the seed system in the region through it’s regional and international networks, global partnerships, alliances, platforms and stakeholders. Continued strengthening of the West African seed system with special emphasis on the weaker countries will be a long-term vision of this seed intervention initiative. Various intricate points of intervention have been identified as necessary for building resilience in the national and regional seed systems in West Africa. These points and others are the current areas of focus of CORAF/WECARD, which is briefly discussed beneath.

3.2. Quick Diagnoses

Quick visits backed by reviews and update of secondary information to determine the major constraints and opportunities will be necessary.

3.3. Human Capacity Strengthening

Churning out well-trained seed scientists and entrepreneurs in the seed value chain to increase seed system expertise in the countries is essential. Focus will be on breeder seed production and variety maintenance techniques, laboratory practices, seed policy and regulations, seed business and marketing,
economics, and forecasting/modelling. This will complement the capacity development efforts in plant breeding through the support of WAAPP and AGRA in resolving the challenges of the delivery of quality seeds of new genetic materials to farmers. Coaching and mentoring frontline functionaries including seed system personnel on best practices and workable models from other countries such as Nigeria and regions or continents like Asia will be options to be considered for support.

3.4. Infrastructure
Provision of a modern germplasm conservation system to ensure that stress-tolerant and preferred materials are safely kept is envisaged. In the light of climate variability and the need for dry-season seed production, facilities for supplementary irrigation will be essential.

In addition, warehouses, facilities with seed drying, processing and treatment equipment, storage and distribution facilities would need to be provided. Laboratory infrastructure for research and quality control is essential.

3.5. Seed System Coordination and Regional Integration
The WASP will continue to use its experience through its ECOWAS confided role to coordinate regional and national alliance formation and, regional and national seed committee to support the countries concerned. The countries will be supported to effectively become regional players through effective participation of the Alliance for Seed Industry in West Africa (ASIWA) and the West Africa Seed Committee (WASC/COASem-CRSU). The ASIWA serves as a sustainable, inclusive, effective platform to facilitate consultation and dialogue among West African seed industry actors, enable expanded cooperation between public and private seed stakeholders, and drive collaborative learning to expand production, supply and use of quality seed in West Africa. An electronic seed market platform www.waxis.net created for the Alliance is enhancing information exchange and seed marketing online. In effect, a Seed Sector Alliance spearheaded by the WASP, has taken off in the sub region, with private sector orientation to be a convening point for seed sector stakeholders, a communication hub and market facilitation and a seed industry development platform (CORAF/WECARD, 2015).

The WASP has enormous experience in linking the private sector to new and international partners and through the support given to AFSTA, to strengthen the AFSTA West Africa affiliate and the National Seed Trade Associations. These experiences will be intensified in Liberia, Sierra Leone and Guinea who had not been part of the WASP focal countries.
3.6. Up-Scaling the WASP Modules and Models

The WASP will continue to use its four axes to support alliance creation, implementation of seed regulation, support to NARS/CGIAR to supply breeder seeds and support to the private sector to supply foundation and certified seeds as well as its experiences in program management and monitoring and evaluation in the 3 countries. The WASP over the past two-and-half years has developed and tested models and modules for strengthening regional and national seed systems, which it will use to strengthen the seed systems of the remaining eight countries. These are modules for gender mainstreaming in seed systems and for capacity strengthening along the seed value chain, an application for plant variety catalogue development, directory for seed sector stakeholders, model for implementation of seed regulation, tools for estimating seed demands, models for business plan development and Public-Private-Partnership in the supply of seeds of new genetic materials from the CGIAR (AfricaRice, IITA and ICRISAT) and the NARS to the private sector. These tested instruments - modules, models and tools will be used to strengthen the seed system in the other West Africa Countries including Liberia, Sierra Leone and Guinea.

3.7. Upscale Breeder, Foundation and Certified Seed Supplies

The WASP had collaborated with the CGIAR and the NARS in its seven focal countries to supply breeder seeds to the private sector through Public-Private-Partnership. At the same time, the WASP and AGRA have accompanied the privates sector to strengthen their technical and agribusiness capacities to multiply and market foundation and certified seeds. This experience will be extended to the three countries concerned in ensuring effective supply of seeds to farmers.

3.8. Partnership

Strong leadership, support and goodwill provided by the ECOWAS Commission and other stakeholders facilitated resource mobilization and seed movements across frontiers. The ECOWAS Commission Directorates showed keen interest in the monitoring of the initiative. Within the supplying and receiving countries, the Ministries of Agriculture supported the processes by providing the required documents for seed mobilization, testing and transportation. Within the receiving countries (Liberia, Sierra Leone and Guinea), the Ministers spearheaded the process of seed reception, contract management and linkages to the other relevant ministries such as Ministries of Trade and regional integration in providing guidance in regional trade. The combined strength of WAAPP and WASP resulted in an effective coordination at both regional and national levels. The financial support and technical guidance provided by the World Bank gave a strong push in achieving success. The expertise of AfricaRice in rice was brought to the forefront in identifying appropriate varieties and in providing technical expertise in rice technology and innovation in the production of seed and paddy rice.
**Figure 7**: Key points of Intervention poised at Food security and Resilience

**Table 6: The Stakeholders Map**

<table>
<thead>
<tr>
<th>Meet their needs</th>
<th>Key Players</th>
</tr>
</thead>
<tbody>
<tr>
<td>• ANPROCA CNOP-GCNS SLeSCA</td>
<td>• World Bank MAFFS USAID FAO</td>
</tr>
<tr>
<td>• FBOs RPSDP GAFS PSG</td>
<td>• CORAF/WECARD NERC CEDEAO</td>
</tr>
<tr>
<td>• PTBA LPMC PIU SECRETARIAT</td>
<td>• SMS DFFP INSAH/CILSS AfricaRice</td>
</tr>
<tr>
<td>• CARIRMC AED</td>
<td>• ECOWAS COMMISSION, FED, SMP, RARC SMP, IITA, CARI, RESDP</td>
</tr>
<tr>
<td>• NaFFSL</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Least Important</th>
<th>Show consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td>• PTBA LPMC PIU SECRETARIAT</td>
<td>• IRAG MOA</td>
</tr>
<tr>
<td>• CARIRMC AED</td>
<td>• PTBA PUAPA ACC</td>
</tr>
<tr>
<td>• NaFFSL</td>
<td>• DNA</td>
</tr>
</tbody>
</table>
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5. REFERENCES


3. CORAF/WECARD, 2015, Annual Report, West Africa Seed Program: Implementation of the ECOWAS Harmonized Seed Regulation C/REG.4/05/2008


6. Peter, C.J and Peters, J.W. 2015, An Introduction to Ebola: The Virus and the Disease. Special Pathogens Branch, Division of Viral and Rickettsial Diseases, National Centers for Disease Control and Prevention, 1600 Clifton Road, N.E, Atlanta, GA 30333.


11. UN, 2014, “Interview with Kanayo F. Nwanze, President of the International Fund for Agricultural Development”’


12. 'USAID, 2014, Ebola and other Viral Disease Outbreaks: Implications for Economic Growth and Trade’’. USAID


13. WAAPP-Sierra Leone, 2015, “Regional Seed Trade and Seed Movement in West Africa in Response to the Ebola

Crisis in Liberia, Sierra Leone and Guinea” May to August Progress Report by the Agricultural productivity


14. World Bank, 2015, ‘’Giving New Life to Farms in Ebola Affected Countries”’. IBRD IDA News,


15. WFP, 2014, Report on food prices up 24 percent in Ebola hit countries-WFP.

www.reuters.com/article/2014/10/7/health-e.


Needs Assessment Capacity’’, Monrovia.
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