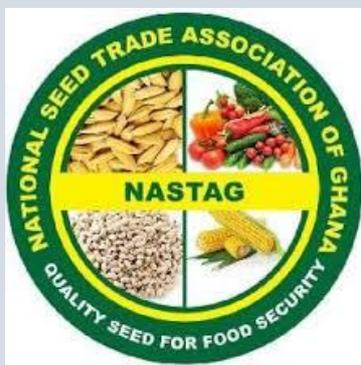


Assessing the Contribution of Planting for Food and Jobs (PFJ) Programme to Improved Seed Security in Ghana

Submitted to:

**The National Seed Trade Association of Ghana
(NASTAG)**

No. 666/14 kwei Okyrema Street, Dzorwulu
Accra, Ghana



By:

Shaibu Baanni Azumah (Ph.D.)

(Technical Support, NASTAG)

Asdev Consult.

C/O P. O. Box TL 407. Tamale, Ghana



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Executive Summary

Seed is the fundamental life-blood of agriculture and the foundation of successful farming for smallholder crop farmers in Ghana. Seed is one of the most crucial elements in the livelihoods of agricultural communities and has been identified as being very important for any crop-based production system. The government of Ghana is working with seed producers through NASTAG, to supply improved seed of selected crop species to farmers across the country under the government's flagship Planting for Food and Job (PFJ) programme – which has the supply of seed as one of the major pillars. Under the seed supply pillar of the PFJ, certified seeds are to be provided to farmers at a 50% subsidy.

PFJ has run for over three years with some successes and challenges. This report highlights from the perspective of the Ghanaian seed companies/producers, the successes of the Planting for Food and Jobs (PFJ) Programme, challenges and the way forward for the programme in sustaining private seed sector businesses in Ghana. The report also assesses the PFJ's contribution to improving seed security in Ghana looking at it from the angle of Availability, Accessibility, Varietal suitability, Quality, Distribution and Marketing of seed.

Overall, seed availability, accessibility, quality, varietal suitability, marketing and distribution of certified seeds have all improved through the initiative. Farmers have increased the use of certified seeds as a result of PFJ programme because of increases in supply of improved seeds. The major challenge of seed companies/producers under the PFJ programme is the delayed payment for seeds supplied annually under the programme. The protocols under the programme implementation also affects the seed companies/producers.

By way of recommendation, seed companies/producers are calling for a revision of the pricing mechanisms and payment schedules to make their businesses profitable and responsive to the seed need of the country.

List of acronyms

Acronym	Definition
FAO	Food and Agriculture Organisation
GoG	Government of Ghana
MoFA	Ministry of Food and Agriculture
NASTAG	National Seed Trade Association of Ghana
PFJ	Planting for Food and Jobs

Introduction

Ghana's agriculture sector continues to play significant roles in the socioeconomic development of the country. These roles are diverse but more importantly, in ensuring food security, improving livelihoods of the rural dwellers, and an avenue for industrial growth of the country. One of the inputs for agricultural development is quality seed (Abebe and Alemu, 2017). Thus, the basis for agricultural productivity improvement in terms of any crop is quality seed (Pelmer, 2005).



According to Azumah et al. (2019) and Mula et al. (2013), seed is the fundamental life-blood of agriculture and the foundation of successful farming for smallholder crop farmers in the dry-land tropics. Seed is one of the most crucial elements in the livelihoods of agricultural communities and has been identified as being very important for any crop-based production system (Etwire et al. 2013).

Food security is heavily dependent on the seed security of farming communities (Azumah et al., 2019). The use of quality seed can contribute significantly toward increasing grain yield and daily food intake (FAO, 2017). The Ghana National Seed Plan (2015) also affirms that quality seeds are a prerequisite to successful agriculture and constitute a major pathway for achieving the national food security goal of Ghana. The plan further asserts the need for the availability and intense utilization of quality seeds that are adapted to the target production environments. However, inadequate availability or non-availability of quality seeds and certified seeds for crop production seems to be the main production constraint in northern Ghana.

The seed system of Ghana represents the entire complex organization, individual and institutions associated with the development, multiplication, processing, storage, distribution and marketing of seed in the country. The seed system includes informal (traditional) and the formal system. The informal seed system serves about 80% of farmers across all major food crops in Ghana. Improving yield require that seeds are provided from formal systems where

the genetic properties of the seed are not only tested but improved. Quality seed is a major determining factor of higher yield and quality of crop production, hence an effective way of responding to increasing food demand (Wimalaskera, 2015). With this recognition, the 2017 PFJ programme by government of Ghana has one of its pillars dedicated to seed production and distribution.

The Planting for Food and Jobs Programme

The goal of the PFJ policy that was introduced in 2017 is to modernize the agriculture sector to improve food security, reduce poverty and create employment opportunities. As a result, five key pillars were designed for policy action as:

- (1) provisioning of subsidized (at 50%) certified seeds;
- (2) subsidized (at 50%) fertilizer;
- (3) e-agriculture;
- (4) market opportunities; and
- (5) free extension services.

The provision of subsidized seeds and fertilizer to the farmers is to reduce the financial burdens on the farmers.



On improved seeds, credible private sector seed companies/producers were to be identified under the policy and supported both financially and technically to produce quality and affordable seeds of some selected crops.

By far, certified seeds (hybrid or improved) are provided to farmers on a timely basis and at the right quantities demanded by farmers. This pillar of the PFJ programme is prime, considering that it is only when farmers are able to obtain improved seeds for production that the other four pillars of the programme becomes relevant to the overall goal (achieving food security, employment creation especially for the youths, increase export and supply of raw materials to the industry [MoFA, 2018]). As such, an assessment of the pillar to outline success stories, failure stories, challenges and how successes can be sustained and improved is important going forward.

Consultant's understanding of the assignment

The consultant understands the role to include:

1. Researching and completing a report on the successes of the PFJ initiative, challenges and the way forward for the programme in sustaining Private Seed Sector businesses in Ghana. Overall, this contributes to the sustainable programme initiatives of NASTAG.
2. Representing NASTAG members to make a presentation on, "*Assessing the PFJ's contribution to improving seed security in Ghana (Availability, Accessibility, varietal suitability, Quality, Distribution and Marketing)*" at the 2nd National Seed Business Forum in Accra, Ghana.

Approach/Methodology ¹

This study was conducted using information from a cross section of both NASTAG and non-NASTAG member across Ghana. From random number generation from a list of about 42 NASTAG members and five(5) potential/non-NASTAG members, a total of 16 companies/producers and agriculture institutions (See Table 1) were selected for the study. One representative from each company/producer group was selected by the company to respond to the questionnaire on behalf of the company/producer group.

Mixed approaches, using both desk review of literature and interview of selected NASTAG and potential/non-NASTAG members deeply involved in the Planting for Food and Jobs (PFJ) program was conducted. The data was analyzed using descriptive statistics and where necessary, a case-by-case analysis for respondent's perception.

¹ A report that capture the collective views of the respondents would be presented at the 2nd National Seed Forum in Accra, Ghana, via power point presentation and discussions.

Table 1: List of stakeholders to be interviewed

NASTAG member companies interviewed					
Company	Contact Person	Phone #	Email Address	Location	Position
1. RMG Ghana Ltd	Roland Quaye	0208258383	roland.quaye@rmgconcept.com	Accra	General Manager
2. Enepa / AMG Ltd	John Banda	0243506905	kwabena.banda@gmail.com	kumasi	
3. Qualiseed Co. Limited	Benjamin Nyarkpo	0235557917	Benjamin.nyarkpo@qualiseed.com	Accra	General Manager
4. Antika Co.Ltd	Seidu Mubarak Abdulai	0246199328 0244815877	mubarakseidu1909@gmail.com	Wa	Deputy M D
5. IWAD Ghana Ltd	David Konlan	0242887233	David.konlan@iwadghana.com	Tamale	
6. Premium Foods CoLtd	Prince Andoh	0244480069	pkoandoh@premiumfoodsg.com	Kumasi	General Manager
7. M&B Seeds	Ben Kemetse	0208411722	bkemetse1@yahoo.com	Ho	
8. SeedPAG National	Francis Adzalo	0246219068	adzalofrancis@gmail.com		National President
9. Yonifah Seeds Co. Ltd	Seth Havor	0201442624	sethp7881@gmail.com	Dodekope	
10. K. Asempah Enterprise	Francis Asempah	0244620695	asemkodjo18@gmail.com	Nkawie	C.E.O
11. Peasant Farmers Association of Ghana (PFAG)	Charles Nyaaba	0203035672	ckknyaaba@yahoo.com	Accra	Program Officer
Non-NASTAG member companies interviewed					
12. Agrimat Co Ltd	Dora Nketiaa Anokwa	0208122867	dora@agrimatghana.com	Accra	Head, Administration
13. Omnifert Ltd		0556590330	dominic.donkor@ominifert.com	Accra	Seed Expert
14. Brakatu Farms	Philip Quaye	0208138320	efkyei@yahoo.com	Accra	Director
15. KNUST (FAG)	Prof. Akromah	020 813 9755		kumasi	
	Prof. Ben Banful	024 220 5319		kumasi	
16. Integrity Commodities	Gideon Quaye	0246440275	intergritycomodity@gmail.com	Accra	C.E.O

Implementation design of the PFJ programme

The role of NASTAG

NASTAG is an association that culminated from a resolution by all relevant seed value chain actors and or Associations in 2015 and officially launched in 2017. The association is dedicated to supporting the competitiveness of Ghana's seed value chain through business and technical capacity building of its members, promotion of effective collaboration among and between actors, advocacy, regulation and standardization and provision of general seed information.

NASTAG has positioned itself to support the industry players to develop their niche to the fullest potential for individual and collective benefits; ultimately contributing to enhancing agricultural production that will improve farmers livelihoods and overall agriculture in Ghana. NASTAG's roles are therefore in two folds:

- internal (to deal with its members), and
- external (to engage with GoG and other partners).

During a training session on strategic development planning in 2017, NASTAG considered the need to partner MoFA to supply local seeds to support the PFJ programme and have since played a significant role in the implementation of the programme. To improve the quality of local seeds production, MOFA, FAO and KNUST collaborated with NASTAG in one instance, and with WACCI and LCIC in another instance to improve the skills of the NASTAG members (including SeedPAG members) in hybrid seed production. This is contributing to the increased supply of quality locally produced hybrid seeds by members to Ghanaian farmers under the PFJ programme.

Views of NASTAG members / Seed stakeholders on the performance of the PJF programme

Seed varieties produced by seed companies

Analysis of the information gathered showed that about 75% of the seed companies/producers engaged in the production of both foundation and certified seeds while the remaining 25% produced only certified seeds. Table 2 shows the various seeds produced by the seed companies/producers.

Table 2: List of seed varieties by zone

Crop	Northern zone	Southern Zone
Maize	Opeaburo, Wang-Basig, Wang-Dataa, Sanzal-Sima, Bihilifa, Kpari faako,	Opeaburoo, Tintim, Suhadoo, Similenu, Kunjor Wari, Obaatanpa, Abortem, Suhundoo, Ahordzin Kunjor Wari, Similenu
Rice	AGRA Rice, Jasmine	Amankwetia, AGRA Rice, Legon 1 or Ex Bika.
Soya beans	Favor, Afayak, Jenguma	Afayak and Favour
Sorghum	Doraldo, Kapaala,	Dolrado, Kapaala
Cowpea	Wang Kae, Songotra, Paditua, Kpari faako.	Kirkhouse; Wang Kae; Padituya; Songotra.

Seed varieties supplied under PFJ programme

The major seed varieties supplied under the PFJ programme are as follows:

- **Maize:** Opeaburo, Wang-Basing, Wang-Dataa, Sanzal-Sima, Bihilifa, Kparifaako, Salinkawana, Wangdataa and Sanzalsima.
- **Rice:** AGRA Rice, Jasmine
- **Soya beams:** Afayak, Jengumo and Favour

Effect of the PFJ programme on profit of seed producers

From the analysis, all the seed companies/producers indicated that the PFJ programme significantly contributed to an increase in their visibility and network among input dealers and other stakeholders in the seed sector, and that they were able to distribute more seeds as a result of the increased willingness of farmers to use certified seeds.

About 75% of the seed companies/producers especially those in the southern sector indicated that, the introduction of the PFJ programme enabled them strengthen their staff capacity by recruiting and training additional staff.

When asked whether or not PFJ has contributed to increase in their profit margins, 75% (especially those in the southern sector) responded in the negative while 25% of the respondents responded in the affirmative.

The seed companies/producers that responded in the affirmative noted that the programme resulted to an increase in their sale of certified seeds by almost 100%. On the other hand, those who responded in the negative, cited that not only was there a delay in the payment for seeds supplied under the programme but also, the profit margin per kilogram of seed supplied under the programme was lower than that supplied outside the programme. They argued that these had led to their inability to settle loans, which were contracted at high interest rates.

Successes of the PFJ programme

The successes relating to the provision of subsidized certified seeds was also assessed under five areas as follows:

Availability of improved seed: This has to do with the physical presence of the certified seeds at the right time and quantity. There was a general consensus among the seed companies/producers and dealers that, there was an upsurge in the availability of the required improved seeds to the farmers. The availability of a specific crop variety entails that all seed varieties are available in sufficient quantities to meet existing demand. This also include timely availability of a wide range of varieties that are both agro-ecologically adapted and responsive to farmers' needs.



According to some of the respondents, the PFJ programme implemented over the past three

years has led to the availability of several varieties from which farmers can make their own choices. The availability of certified seeds was however not universal for all crops. The results showed that certified and quality seeds of groundnut and cowpea for instance were scarce, while seeds of maize, rice and sorghum were abundant (*Report of a seed company*). These observations suggested that the objectives of the certified seed pillar under PFJ was to a large extent on track towards its achievement.



Accessibility to improved seed: Seed accessibility indicates the ability of the farmers to pay for the right quantity of seeds required. For seed to be accessible, several delivery channels must be in place to reach the smallholder farmers even in the remotest areas. Additionally, farmers need adequate information on the

varieties. Therefore, a good number of outlets must exist for farmers to make informed seed purchase choices. Primarily therefore, the provision of subsidized certified seeds to the farmers under the PFJ programme is aimed at increasing the accessibility of certified seeds by the farmers. The affordability has implications on the preference for the right seed by farmers. The assessment reveals a high accessibility rate to certified seeds by the farmers as indicated by the seed companies. This has reflected in an increase supply of certified seeds by the seed producers.

Varietal suitability: Varietal suitability is the fitness of a seed variety to a particular production environment or agro-ecology. Thus, it describes the extent to which crop varieties are preferred and adapted to farmers' conditions. Importantly, it also concerns the identification of what varieties farmers are using, which ones they prefer and why their preference. Generally, a suitable seed variety is accepted by farmers. But it is important to note that the acceptance of a variety of certified seed may exhibit a normal adoption path where adoption rate would differ by time.



The seed companies/producers indicated that although the varietal suitability per the history, purpose and request of particular variety by farmers is high within a geographical location of the country and based on which particular varieties are produced by the companies/producers, they are largely unable to tell the extent of its impact on the PFJ policy.



Quality: The quality of seed indicates the physiological attributes and seed health. It includes the germination potential of the seed, physical purity, moisture content, free from diseases or disease organisms and has the ability to produce good grains. Therefore, seeds with high germination, purity and with all other related parameters defined are identified as

quality seeds. Seed quality attributes are essential parameters of seed security because of their potentially positive or negative impact on the farmer's ability to successfully establish a crop in the field and to have reasonable yield. Seed must be available in quality that meets farmers' expectations, the labeled specifications or the regulated standards. The seed companies/producers indicated that they produce quality certified seeds to ensure increased yields of the farmers. However, this is not without some challenges.

For instance, a seed company/producer indicated that some non-traditional suppliers to the seed companies tend to compromise the quality of their seeds. This is particularly through the labelling of non-certified seeds with labels of the certified seed producers/companies. This has been a challenge to seed marketing even prior to the PFJ programme but aggravated in the past three years. Similarly, another seed company/producer indicated that although the presence of PFJ has resulted in the proliferation of several certified seed producers, companies, suppliers to support the initiative of the government, quality standard checks have not been effective and/or being compromised. For another company/producer, although the companies ensure the production of quality seeds, it is uncertain whether the PFJ has led to an improvement in the quality churned out in general.

Distribution and Marketing: The distribution of improved seed describes the chain from the seed producers' location to the farmer's field while marketing is the availability of input shops for the selling of certified seeds. Generally, certified seeds are distributed to farmers through the input dealers. Responses from the seed companies/ producers suggested that, one

achievement of the PFJ based on annual reviews and recommendations from stakeholders has resulted in the efficient utilization of the agro input distribution outlets. This they believe would help sustain the seed trade business in the future. By inference, The PFJ programme concretely has contributed to an improvement in the distribution network and marketing of certified seeds. However, the respondents were emphatic that the documentation processes of seed distribution and marketing under the PFJ was excessively laborious.

Challenges of the PFJ programme

This session elaborates the challenges with the introduction and implementation of the PFJ programme as they pertain to seed producer/companies in Ghana. The challenges reflect the views of the seed companies/producers with consequential future effects on businesses and the seed industry in Ghana.

1. ***Undue delays in payment for seeds supplied to the PFJ programme*** – Every company makes business decision prior to initiating a move to take up the challenge of seed production. This has been the same with business relating to PFJ where government relies heavily on the private sector for the success of the programme. Unfortunately, responses from all companies/producers interviewed indicated that the lack of respect for the contractual agreements between them and the government (in terms of payment within the agreed time frame) has not helped in any way to grow their businesses. Over the three-year period of the implementation of PFJ, payment for goods and services provided have delayed beyond the contracts agreed period of six months. The implication being a total shut down of businesses if one does not have the support of other persons/ partners to help them get their payment in distress situations.
2. ***Complex administrative bureaucracies in seed distribution*** - The PFJ programme is a nationally (centrally) regulated program and this pose administrative bureaucracies in the distribution of certified seeds and payment of claims. Seed Companies/Producers outside of Accra would have to find their ways to complete formalities in Accra on related payment processes for seed supplied. The back and forth administrative protocols requiring movement from the national to the district levels cause a lot of delays in the disbursement of claims/funds. This has also introduced corruption into the programme since some individuals were able to benefit from such bureaucracies by pushing through their personal interests.
3. ***Unavailability of financial support² from banks*** - The lack of a fund for the seed companies /producers reduce their capability to invest in expanding the quantities of certified seed produced. Like many actors in the agricultural value chain, the lack of

² Nevertheless, one of the main challenges facing NASTAG is funding. The association was in the past, funded by USAID via APSP and ATT projects. The association would have to be funded by its own members based on the services it provides and other institutional activities it performs (USAID, 2017, p53)

funds is a major challenge to commercializing production. There is lack of knowledge, innovation and interest by the financial institutions for seed businesses and agriculture on the whole to inform decision making to provide financial assistance in support of agriculture development particularly due to the associated risks. As a nationally determined programme, there is the need to include financial assistance packages to the seed producers/companies and or seed value chain actors in general to make seed business financially sustainable. This is an essential way by which the local seed stakeholders can deliver 100% quality certified seeds and services required by farmers in the country.

4. ***Inadequate foundation seeds*** – There was a general consensus among the seed producers/companies about the inadequacy of foundation seeds that affect the seed production chain. Certified seeds are produced from foundation seeds that come from research institutions in the country. Therefore, the lack of it limits the production level of the certified seed producers. Because of this direct link between certified seed and foundation production, any challenge that affect the production of one of these seeds would automatically affect the other.
5. ***Farmers' failure to buy seeds*** - If farmers fail to buy seeds, the company bears 100% cost. The uncertainty associated with farmers' decisions on the type of seed to plant has implications on the seed producers under the PFJ programme. Where seeds are produced without market, the seed producers incur complete loss. The ability or inability of the farmers to buy certified seeds is dependent on a number of factors. Primarily, because most farmers are small-scale producers, they tend to rely on saved seeds for production. Although this is one of the reasons for the provision of subsidized certified seeds under the PFJ programme, reports from the seed producers/companies indicated that some farmers continued to use saved seeds to complement the inadequate certified seeds supplied to them under the PFJ programme.
6. ***Poor or varied understanding of PFJ modalities by MoFA staff*** especially at the district level on the implementation of the PFJ programme. There seem to be non-uniformity in the understanding and implementation strategy of the PFJ programme. This could be due to diversity of political interference at the various locations in Ghana. This has introduced mistrust into the programme as the seed producers/companies do not know who to believe or how to reconcile different information provided to them by different persons under the programme.

At national level also, some specific (general) challenges have been identified by the seed producers/companies to affect seed production in Ghana. These include:

1. **High interest charges on credit.** In addition to the low interest by financial institutions to provide loan facilities to the seed producers/companies, high interest charges on the loans discourages the seed producers/companies from requesting for the loans in the first place. Where loans are acquired, high interest charges affect the ability to pay loans on time.
2. **Climate change and poor irrigation for regular production.** Environmental changes especially erratic rainfall affects seed producers. Unfavourable climate continues to affect the desire by seed producers/companies to improve the genetic qualities such as shape, colour, vigor, viability and the general health of the seeds. Weather aberration especially during seed setting has led to severe fluctuations in overall seed production and the quality of the seeds produced. Similarly, severe environmental conditions can sometimes lead to total crop failure, presenting serious financial consequences to the seed producers.
3. **High energy and labour costs.** Seed producers rely on energy and labour for seed production, processing, and packaging. Therefore, the rising cost of energy and wages certainly plays on the economics of seed production by affecting the cost of production.
4. **Slow responsiveness of regulatory agencies to practical needs of the private sector.** This has reflected in the non-operationalization of the various seed laws and plans due to the poor allocation of state resources to the sector.
5. **Lack of government's commitment to support the development of the local seed sector.** Aside the allocation of percentage to local seed suppliers under the PFJ programme, there is no political drive by government over the years to enhance local certified seed production and trade in the country. Even under the PFJ programme that aimed to supply certified seeds to farmers, the subsidy does not affect the seed production processes. There is also undue delay in the payment of locally procured seeds – allowing those that import to have a leverage over the local seed producers.
6. **Lack of adequate capital to operate smoothly.** Seed producers have limited funds and which limits their production and investment decisions. For instance, given enough capital, seed producers can distribute seeds to farmers and input dealers in on credit basis – which could enhance their businesses.
7. **Poor seed uptake by farmers** - usually due to the lack of knowledge about the benefits of

improved seeds or the lack of money to purchase and use improved seed.

8. *Inadequate early generation seeds (EGS) for the production of hybrids and certified seeds.*³

Conclusions

This report provided details on the successes and challenges of the PFJ programme by GoG pertaining to the seed sector of Ghana. It took account of the views of members of NASTAG – a key stakeholder in the implementation of the programme. It also details the strategies required to improve certified seed delivery to farmers under the programme.

Overall, the provision of certified seeds under the PFJ programme has been successful from the perspective of private seed producers. This success stories stretched from improvements in the availability, accessibility, quality, varietal suitability, distribution and marketing of seed as many farmers are mentioned to have been reached with improved seed since 2017.

These successes are however not without challenges. The major challenge to the seed producers/companies under the PFJ programme is a delay by government in payment for seeds provided to the farmers. As a result, the seed producers/companies recommended that, to ensure an effective implementation and sustainability of the programme, measures should be put in place to ensure prompt or timely payments for seeds supplied. They also argued that about half of the payment is done at the point of purchase or upon successful distribution of the seeds to the farmers.

³ Points 6, 7 and 8 are articulated under the specific discussion under the challenges with the implementation of PFJ programme

Recommendations for sustaining private seed sector businesses

The seed companies /producers outlined a number of recommendations for improving and sustaining private seed sector businesses post PFJ programme. These include:

1. **Wider Consultation with seed business stakeholders on fixing the prices of seeds and modalities for phasing out:** This imply revising the price-fixing mechanism for the seed supplied under the programme. This should involve bringing private seed producers (Member of NASTAG) to the table to deliberate on and consider the unit prices of various seeds on an annual basis. Setting prices without recourse to the seed producers puts their businesses under jeopardy since many a time, the returns from sales of seed in some seasons do not match the cost incurred in producing the seeds.
2. **Consider down payment relative to contract sum for mobilization and continuous seed production.** Respondent indicated that an initial percentage payment by government relative to the contract sum should be made to support the seed companies to effectively and timely deliver seed to farmers, continue seed production and offset credit facilities accessed. This could be a panacea for sustainability of seed business.
3. **Leverage on the PFJ to build a credible seed system in Ghana:** Drawing from the fact that some companies supply sub-standard seed under the programme. It is recommended government access seed through NASTAG that represent all seed companies in Ghana. This to a large extent, would help build a credible seed system that guarantees quality and building a private sector system to deliver premium seeds to farmers. Seed suppliers should pass through NASTAG not private contractors that have no knowledge of the seed sector of Ghana. This will help to check seed adulteration. NASTAG is in the process of implementing a seed traceability system to track the production and supply of quality seed to the Ghanaian farmer.
4. **Review of the PFJ implementation Modalities:** Even though most respondents (members of NASTAG) appreciated efforts to enhance the quality of seed extended to farmers, it is recommended that government work closely with the private sector to thoroughly review the PFJ programmes. There should be a reduction in the bureaucracies and paper works involved in supplying seed to the PFJ programme. More personnel could be recruited and deployed at local level to supervise sales at the outlets and to help speed up the documentation process.
5. **Enhance Capacity of PFJ implementation Process, including clearly defined**

Roles: There is the need for proper role definition and redistribution on the PFJ programme. District Directors of Agriculture and MMDCEs should be given the authority to verify and sign waybills. A committee rather than a schedule officer should be put in place at the regional for the preparation of forms B and C among others.

6. Procurement of local seeds should be given priority (preferably 80% of all seeds should be locally procured). This only does not support our forex but also gives the programme the indigenous definition as it is supposed to have. Payment made to seed producers will also go a long way to support investments into the seed sector and to move it towards a modernize sector that is desired.
7. **Enhance Quality Basic Seed Production:** Research Institutions should be supported to increase the production of Early Generation Seeds (EGS) for Seed Companies to be able to multiply.
8. Local Seed Companies should be supported financially with soft loans. If possible, the PFJ programme can pre-finance the production regimes for various seed growers and be reimbursed with various quantities of seeds to be supplied to farmers in the following year.

In terms of general improvement in the private seed sector of Ghana (*and not directly related to the PFJ programmes*), the following recommendations were made by the seed producers:

- A fund should be created to invest in the seed sector. This means the operationalization of the Seed Fund. Seed business needs a lot of capital to operate, and must be done with the best practices in mind.
- A stronger seed value chain must be developed to facilitate effective linkages along the chain. This should be coordinated by the secretariat of NASTAG, and given permanent recognition in national policy documents on seed.
- We must focus on the developing and encouraging a model around the establishment of out-grower schemes. This could avail a lot of improved seed at local/community level.
- There should be intensification in the efforts to create awareness about the benefits of using improved seeds by smallholders. This could be done by supporting the setting up of many technology/seed demonstrations farms at various locations to educate farmers to enhance improved seed uptake by farmers.

- There should be improvement in regulation and quality assurance practices by seed producers. NASTAG could be partnered by the government to ensure this.
- Government should enhance access to affordable production credit for seed growers and also support capacity building programmes for seed producers in Ghana.

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Appendices

Appendix 1: Interview guide for seed companies

CHECKLISTS FOR DATA COLLECTION FROM STAKEHOLDERS IN THE SEED SECTOR OF GHANA

Consent: My name is Dr. Shaibu Baanni Azumah, a Researcher for NASTAG. We are conducting a brief survey to assist the sustainable programme Initiatives of NASTAG and require your assistance. This will lead to an understanding of the successes of the Government of Ghana's planting for food and jobs (PFJ) initiative, challenges and the way forward for the programme in sustaining private seed sector businesses in Ghana.

I am assuring you of full anonymity and wish to add that your responses would be used solely for the purpose stated above. I am inviting you to answer the following questions if you agree to participate in this study.

Thank you.

1. Name of seed company/organisation:
2. How many employees do you have in this company?
3. Location of company:
4. For how long have you been in the seed business?years
5. Please list the crops and names of varieties provided by your company

Crop		Names of varieties
Maize		
Rice		
Soya beans		
Sorghum		
Vegetables (Please specify)		

6. Which seed varieties did you supply to PFJ? Fill out the table below.

Crop	Qty supplied to PFJ (kg)		
	2018	2019	Planned for 2020
Maize			
Rice			
Soya beams			

7. What type of seed(s) does your company produce?

(1) Foundation (2) Certified (3) Both

8. Please describe your marketing chain:

.....

9. For how long have you been involved with the “planting for foods and jobs (PFJ)” programme?.....

10. Has your staff strength increased as a result of your involvement with the PFJ programme? (1) Yes (2) No

11. If yes in Q10, how many additional employees were recruited as a result of the PFJ programme?

12. Do you think the PFJ policy has led to an increase in your profit? (1) Yes (2) No

13. Explain your answer in Q12:

.....

14. What do you think are the successes for your seed company under the “PFJ” programme?

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15. From your perspective, what is the effect of the “PFJ” policy on seed security in terms of:

- a) Seed availability?

- b) Seed quality?

- c) Seed accessibility by farmers?

- d) Varietal suitability of seeds?

- e) Distribution of seeds?

- f) Marketing of seeds?

16. What do you think are some challenges faced by your company under the PFJ programme?

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17. What suggestions do you have for the improvement of the seed component of the PFJ Programme?

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18. What are the general challenges to seed production in Ghana?

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19. What do you think should be done to improve private seed sector businesses in Ghana?

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20. Any other comments: