

**To:** FAO Reps. - Mr Benjamin Adjei & Mr Jefferson Attipoe  
Facilitators - Prof. Benjamin Banful, Prof. Akromah & Dr Alex Kena

**Cc:** MoFA Reps. - Dr Solomon Gan Ansah & Mr Rowland Addo  
NASTAG - Mr Thomas Havor, President

**From:** The NASTAG Secretariat (Contact Person: Augusta Nyamadi – Clottey)

**Date:** May 10, 2019

**Subject:** **REPORT ON TRAINING OF NASTAG MEMBERS ON HYBRID MAIZE SEED PRODUCTION**

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This report gives a summary of a 3-day training held in Kumasi for selected National Seed Trade Association of Ghana (NASTAG) members on Hybrid Maize Seed Production.

NASTAG over the past three years has had a very good working relationship with the Ministry of Food and Agriculture (MoFA) to grow the seed industry and move the private seed sector forward. This working relationship has even become more cordial through the introduction of the government's initiative programme "Planting for Food and Jobs, thus increasing demand for improved seeds across the country.

Maize, which is the main staple food in Ghana and produced in large quantities by small holder farmers is overly dependent on Open Pollinated Variety (OPV) seeds for production of grains resulting in relatively low yields with limited profit margins to the farmer. To have a turnaround of fortunes for the farmer through the enhancement of yields, and aiming at enhancing yields, the Ministry of Food and Agriculture (MoFA) in collaboration with the Faculty of Agriculture of the Kwame Nkrumah University of Science and Technology (FA-KNUST) and NASTAG decided to build the capacity of some seed producers in hybrid maize seed production which has the potential of increasing grain yields by about 30 % with the corresponding increase in incomes for the farmer. The capacity building efforts which have been phased into three segments to correspond with the crop calendar is being funded by the Food and Agriculture Organization (FAO).

In the first segment, twenty (20) selected and interested NASTAG members were invited for the training at FA - KNUST from April 23 – 25, 2019. The objective of the training is to build the capacity of the private seed producers on the best practices of hybrid seed production and marketing. A total of 17 out of the 20 originally confirmed participants reported and participated fully in the training facilitated by a team of lecturers from the FA – KNUST namely Prof. Ben Banful, Prof. Richard Akromah and Dr Alex Kena. *(Please see attached list of Participants).*

The training started with an official opening session where a brief welcome note was given by the Dean of the Faculty of Agriculture, Prof. Ben B. Banful. This was followed by brief statements from the President of the NASTAG – Mr Thomas Havor; a representative from FAO – Mr. Jefferson Attipoe; and the National Seed Specialist / Deputy Director, Crops Services Directorate of MoFA – Dr. Solomon Ansah.

In summary, all three statements emphasized the need to enhance seed production towards increased agricultural productivity and as such, prudent for all the sector players to augment each other's efforts in an attempt to effectively make judicious use of the limited resource for maximum gains. One of such identified interventions is the capacity enhancement of the seed producers / companies in hybrid seed production to contribute to driving the growth of agriculture in Ghana. It was therefore the expectations of all three that, this training would contribute to the participants' increased capacities to result to increase in maize yields.

The first day was devoted to the theoretical session of the training with the second and third days devoted to field practical activities.

Subjects treated after reiteration of the objectives and the course content of the training by Professor Akromah included:

- Site selection for hybrid seed production;

- Development of inbred lines;
- Learning the characteristics of inbred lines and their hybrids;
- The genetic basis of hybrid vigor (Heterosis);
- Choosing parents for hybrid seed production (general Combining ability and specific combining ability).

The presentations delivered in a concise and practical manner, allowed participants at the training to ask peculiar and very practical questions related to the subject matter for clarification; making the theoretically session very interactive and appreciated by all.

To have a practical feel of the areas discussed on the first day of the training, the second day was devoted to practical land preparation, field layout and plot demarcation for planting. The field activities were led and facilitated by the FA – KNUST Field Manager, Mr Kankam (with over 30 years' experience in the field) with backstopping from Prof. Richard Akromah and Dr Alex Kena. With guidance from the facilitators, each participant partook in the field layout and demarcation exercise. This was followed with the planting of the hybrid seeds with specific guidance, comments and questions for clarification to either confirm individual participant's thoughts on a process / methodologies adopted at their respective field levels and/or enhance their knowledge on the subject matter.

Following the field layout exercise and demarcation, a group of participants dibbled for the planting of the seeds with a group planting the female lines while the last group planted the male lines at a ratio of 3:1 hybrid Maize seed with reference to the theory session from day 1.

The third day was devoted to spraying the field with a recommended herbicide, where some participants took turns to try their hands on the activity using the knapsack sprayer. Each activity at the field was observed critically with questions for clarification from the facilitators and where appropriate collectively discussed for the outcome. Some participants also shared their field experiences which served as precautions for all present and/or as take-home lessons.

The table below gives a summary of the evaluation of the training session at the end of the 3-day event:

#### **ACHIEVEMENT OF OBJECTIVES**

<b>QUESTIONS</b>	<b>RESPONSE</b>	<b>TOTAL SCORE</b>
<b>1. I know what Hybrid maize is</b>	Fully Agree	14
	Mostly Agree	1
	Partly Agree	1
	Not Agree	0
<b>2. I appreciate the importance of hybrid maize in increasing maize production in boosting the seed business in Ghana</b>	Fully Agree	14
	Mostly Agree	2
	Partly Agree	0
	Not Agree	0
<b>3. I have a clear understanding of hybrid vigor (Heterosis) and combining ability</b>	Fully Agree	11
	Mostly Agree	5
	Partly Agree	0
	Not Agree	0
<b>4. I know the different types of maize hybrids that can be developed (single, three-way, double cross hybrids)</b>	Fully Agree	10
	Mostly Agree	6
	Partly Agree	0
	Not Agree	0
<b>5. I can select inbred lines to be used as parents in hybrid seed production</b>	Fully Agree	6
	Mostly Agree	6
	Partly Agree	3
	Not Agree	

6. I can select a site for hybrid maize seed production	Fully Agree	14
	Mostly Agree	2
	Partly Agree	0
	Not Agree	0
7. I can set female to male ratio on the field during hybrid maize seed production	Fully Agree	14
	Mostly Agree	1
	Partly Agree	1
	Not Agree	0
8. I clearly understands the need to carry out rogueing and detasseling on the field during hybrid maize seed production	Fully Agree	15
	Mostly Agree	1
	Partly Agree	0
	Not Agree	0
9. I understands the need for isolation either by distance or time in hybrid maize seed production	Fully Agree	15
	Mostly Agree	1
	Partly Agree	0
	Not Agree	0
10. I understand the importance of harvesting at the right time and at the right moisture content	Fully Agree	13
	Mostly Agree	3
	Partly Agree	0
	Not Agree	0
11. I understand the need for post-harvest operations such as drying, sorting, shelling, cleaning, grading, seed treatment and packaging of hybrid seeds	Fully Agree	13
	Mostly Agree	3
	Partly Agree	0
	Not Agree	0
12. I understand the importance of installing a good storage facility for seed storage to maintain viability.	Fully Agree	11
	Mostly Agree	5
	Partly Agree	0
	Not Agree	0
<b>Overall Assessment</b>		
13. Did you find the workshop relevant?	Yes	16
	No	0
14. Was the balance between theory and practical acceptable?	Yes	15
	No	1
15. Was the choice of location acceptable?	Yes	14
	No	
16. Was accommodation provided acceptable?	Yes	14
	No	2

**Que 14.** No, Because the practical sector was not controlled, leading to questions and answering. Not structured as compared to the theory

**Quest 16 No, Because**

1. Water is key for breakfast, but was not part of the arrangements.
2. The service provided were not good enough.
3. They should work on the mosquitoes.

## RECOMMENDATIONS AND CONCLUSION

Generally, the participants were very impressed with the methodology adopted in enhancing their knowledge on hybrid maize seed production. It is however generally recommended that;

1. The presentation which was identified to be very practical and simplified for easy assimilation be transformed into a **“PRACTICAL HANDBOOK FOR HYBRID MAIZE SEED PRODUCTION IN GHANA”** at the end of the third phase of the training. The Executive Secretary of NASTAG held preliminary discussions with the facilitators in this regard for possible consideration and would follow up accordingly with FAO for a collaborative work in this respect.
2. Similar training for hybrid sorghum production be considered on the premise that, demand for Sorghum seeds far outweighs supply on annual basis. As a major staple and also in high demand for the breweries in Ghana, NASTAG is considering similar training on Sorghum hybrid seed production to help increase production for both domestic and regional consumption. This would also be considered for further discussion.
3. The NASTAG secretariat on behalf of its members will explore further opportunities from FAO to support in hybrid seed production at the field level. The secretariat will further explore also this opportunity for consideration by FAO and other Programmes and Projects.

In conclusion, the NASTAG secretariat on behalf of the Executive Council of the Association and participants in the training wishes to express a profound appreciation to the FAO, the FA – KNUST training team and the MoFA for the support to NASTAG members and by extension the Private Seed Sector in Ghana for our collective benefit.

## NEXT STEPS

The training was planned comprehensively for 10 days but staggered into three segments to coincide with the critical production and harvesting phases of quality hybrid seeds production and ultimately ensure that participants are taken through the full cycle. In this regard, the second phase of the training is scheduled to take place at the same venue from June 9<sup>th</sup> to 11<sup>th</sup>, 2019.

### LIST OF PARTICIPANTS - KNUST HYBRID MAIZE SEED PRODUCTION TRAINING

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## TRAINING SESSION IN PERSPECTIVE



*Fig.1: A GROUP PICTURE AFTER OPENING SESSION*



*Fig2: MOFA REP. DEVILERY BRIEF SPEECH AT THE OPENING SESSION*



*Fig. 3: THEORY TRAINING SESSION ON HYBRID MAIZE SEED PDN*



*Fig. 4: DEMACATING FIELD TO PLANT HYBRID MAIZE SEED*



*FIG.5&6: DIBBLING IN READINESS FOR PLANTING OF HYBRID MAIZE SEED*