



REPUBLIC OF GHANA

MINISTRY OF FINANCE

TRAINING REPORT



A comprehensive report on a training under the 'youth in innovative agriculture programme' facilitated by Agri-Hub Consortium Ltd for over 500 farmers and would be farmers in the Central Region of Ghana. The training focused on six key farming areas (Maize farming, Piggery, Agro-processing, Poultry, vegetable farming and Tubers- Cassava & Yam). The training programme took place from 20th to 24th May 2022 at Windy Lodge-Winneba



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EXECUTIVE SUMMARY

This is a report on a training programme facilitated by Agri-hub Business Consortium Ltd. on behalf of the Ministry of Finance and Economic Planning (MOFEP) and the National Entrepreneurship and Innovative Programme (NEIP) to train over six hundred (600) participants in six (6) key farming areas/models (Maize farming, Vegetable farming, Piggery, Agro-processing, Poultry farming and Tubers-Cassava & Yam) as part of the youth in innovative agriculture programme under the Ghana Cares 'Obaatanpa' programme.

The "Youth in Innovative Agriculture Programme" is intended to complement the planting for Food and Jobs and Rearing for Food and Jobs (PFJ/RFJ) initiatives with a targeted programme to support commercial farming and to attract educated youth into farming. This effort seeks to change the negative perception the youth have of participation in agriculture. The programme has become necessary and vital to facilitate food and nutrition security in the country and for other good reasons including, the reduction in rural -urban migration and food importation bill, increase productivity, attract educated youth in agriculture among many others.

The key objective of this training programme was to provide participants with required knowledge and skills (in the chosen field/model) in mitigating the constraints through the adoption of good agricultural practices that will lead to increase productivity and profitability while ultimately resulting in local food sufficiency.

The programme which took place at Windy Lodge-Winneba from the 20th to 24th May 2022 had two (2) sessions a day with a 4hour duration per session and had a blend of theoretical, practical and proven farming practices intended to help farmers enhance their productivity, reduce loses and ultimately improve their business consciousness. It was facilitated by two (2) experienced Consultants/practising farmers from Agri-Hub Business Consortium Ltd.

While the use projector and powerpoint presentation was the mode of training delivery; images, videos and the use of the local language (Fanti & Twi) was predominant in ensuring better understanding of the subject matter. Facilitators additionally deployed an interactive and engaging approach in their delivery to encourage participation and open discussion of key issues. Each area/ model was expertly handled in ensuring all key issues were better addressed, questions answered and best practices laid out for adoption by participants to improve productivity. The programme with an expected participation of 610 people, attracted over 450 participants representing 73% turnout.

From the perspective of the facilitators, the training will benefit the participants in several ways including but unlimited to the improvement in general work quality, increase yield, improve farm management skills, cost reduction due to reduce in wastage, increase networking opportunities, better business consciousness and improvement in income.

Despite the good intentions for the programme, there were two challenges (the distribution of the participants and amount of money allotted for refreshing participants). While the participants came from all the districts in the Central Region which made selecting a venue tough, the GHS10 allocated for snack/lunch per participant was very small under the present economic circumstance.

All in all, the programme was very successful from the view point of the organisers and facilitators as well as from the feedback received from participants per the training evaluations system deployed by the company.

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1.0 INTRODUCTION

This is a report of a training programme organized and facilitated by Agri-Hub Business Consortium Limited on behalf of National Entrepreneurship and Innovation Programme (NEIP) and the P and the Ministry of Finance and Economic Planning (MOFEP) as part of the Youth in innovative agricultural programme under the broader Ghana Cares ‘Obantanpa’ Programme.

2.0 GHANA CARES “OBAATANPA” PROGRAMME

The Ghana Cares ‘Obaatanpa’ programme was launched in November 2020 as a response to the devastating of Covid-19 on Ghana’s economy. The programme was the Government’s approach to mitigating the health and economic challenges created by COVID-19. The programme presents concrete steps the government of Ghana will take over the medium term to revitalize the country’s economy and accelerate national transformation toward Ghana Beyond Aid.

The pandemic had extensive economic impacts. GDP growth is sharply down. Instead of the 6.8 percent originally projected, the country achieved 1.9% GDP growth for 2020. Across the private sector, informal businesses, micro, small and medium enterprises (MSMEs), as well as large businesses were also affected terribly, especially in the hospitality, education, manufacturing and agricultural sectors.

For the public sector, the Government’s public finances came under strain, with a projected deficit around 11% for 2020, compared with 4.7 percent of GDP originally programmed. Ghana CARES was a two-phase programme that builds on the immediate actions already taken by Government under the Coronavirus Alleviation Programme (CAP).

- A. Phase 1: Stabilize the Economy (July – December 2020).** This phase of the programme aimed at continuing to relieve hardships on Ghanaians by reducing the cost of basic services, ensuring food security, protecting businesses and workers, and further strengthening the health system. Specific measures to be undertaken by Government are described below:
 - a. Temporary Reduction in the Cost of Basic Services
 - b. Ensure Food Security
 - c. Support Businesses and Workers
 - d. Strengthen the health system
 - e. Pass Urgent Legislation

- B. Phase 2: Revitalize and Transform the Economy (2021 - 2023).** Focused on accelerating the implementation of the Ghana Beyond Aid agenda; in particular, by providing support to the private sector in targeted sectors in order to accelerate competitive import substitution and export expansion in light manufacturing; and by optimizing implementation of Government economic flagships and key programmes for greater results and financial sustainability. Specific government initiatives under this phase included the following:
 - a. Support Commercial Farming and Attract Educated youth into Agriculture
 - b. Build Ghana’s Light Manufacturing Sector
 - c. Develop Engineering/machine tools and ICT/digital Economy Industries
 - d. Fast Track Digitization
 - e. Develop Ghana’s Housing and Construction Industry:
 - f. Establish Ghana as a Regional Hub
 - g. Review and optimize Implementation of Government Flagships and Key Programmes

3.0 YOUTH IN INNOVATIVE AGRICULTURE

- a. **What Is It?** As part of the broader Ghana Cares ‘Obantanpa’ programme the “Youth in innovative agriculture programme’ which among others is intended to complement the planting for Food and Jobs and Rearing for Food and Jobs (PFJ/RFJ) initiatives with a targeted programme to support commercial farming and to attract educated youth into farming. This effort seeks to change the negative perception the youth have of participation in agriculture.

The introduction of the “Youth in Agriculture programme” is necessary and vital to facilitate food and nutrition security because of the following reasons but not limited to;

- Reduction in rural -urban migration
- YIAP provides productive alternatives for the engagement of the youth to reduce crime and other social vices
- New crop varieties and animals’ strains/breeds
- Less soil pollution since there will be regular advice and supervision by professions from MOFA
- Increase productivity in agriculture sectors
- Reduction in Import bill of the country
- Image change of people engaged in agriculture.
- Increase employment particularly rural employment

- b. **Key Objectives:** The youth in agriculture has the following objectives

- Making youth accept farming as a commercial business venture
- Generate appreciable income to meet farmers domestic and personal needs
- Youth will improve their standard of living through improved income
- Youth will be motivated to stay in rural areas as inputs will be delivered at their farm gates on credit basis and interest free
- Produce enough food crops, meet and fish using modern methods

This will improve our food security, attract younger generation into agriculture to replace aging farmers, and also improve the scale, quality and reliability of feedstock for our agro-processing industry.

- c. **Components of the programme:** This programme has four (4) components

- Crop farming
- Livestock and Poultry
- Fisheries and Aquaculture
- Agribusiness

4.0 RATIONALE OF THE TRAINING PROGRAMME

- a. **Objective for the programme:** The aim of the training programme was to provide participants with required knowledge and skills (in the chosen field/model) on how to mitigate the constraints through the adoption of good agricultural practices that will lead to increase production and profitability, ultimately resulting in local food sufficiency.
- b. **Rationale for the choice of models:** The training programme had five (5) models thus Maize Farming, Piggery, Poultry, Vegetable Farming, Tubers (Cassava and Yam). While the details of the models would be given in ensuing pages, the importance of choice of these models for the ‘Youth in agriculture programme cannot be over-emphasized.

- While Maize is principal staple crop, produced and consumed in Ghana and contributes to about 65% of daily per capita cereal consumption; 38% of all meat consumption in Ghana goes to pork.
 - The choice of these 5 models is intended to improve its commercial production and by extension for the country to be self-sufficient and produce raw materials needed for industrialization of the country.
- c. **Focus of facilitators:** The focus of facilitators was to train participants on all five (5) models and re-orient them from the nature of farming which is predominately rain-fed and subsistence to more commercial approach. Commercial farming is a business and therefore requires business mindedness as opposed to existing approach were the business side is taken for granted.

5.0 PRE-TRAINING ACTIVITIES

- a. **Data sorting & fine-tuning:** The data as received had to go through some sorting and fine-tuning. The data included some duplications thus same information on an individual appearing twice. This removal of the duplications left a total of 610 participants.
- b. **Venue Search:** Upon the mining of the data Winneba was chosen as a central location to host the training while Windy lodge was also chosen for its conference sitting capacity (150 and above) and its unique location on the Winneba Junction to Winneba town road.
- c. **Date Classification:** The data received had to be the classified according to the choice of model by the participants. For example, participants who chose 3 models like Poultry, Livestock (Poultry) and maize farming were placed on all the 3 models and were expected to be present for the training on all those models.
- d. **Design of training schedule (Time Table):** The training was slated to take place over a 4-day period. Each day was divided into 2 sessions of 4 hours dedicated to each session. This therefore meant that the programme took 4 days over 8 sessions. Because of the huge numbers for maize and agro-processing, the delivery of those trainings were divided into 2 sessions each (Morning and Afternoon)
- e. **Calling of participants:** After the allocation of participants to sessions, participants were called individually to inform them of the training, the venue, date(s) and session assigned.
- f. **Text Messaging:** The calls were followed up with text messages to remind participants of the training and fortify the information delivered through the phone calls.
- g. **Training material and presentation design:** The team developed the training materials and the powerpoint presentations for all the 5 models. The materials were done with the participants in mind (a mix of educated and uneducated persons). Simple English and more visuals were used to ensure an appreciation and better understanding of the subject matter.

6.0 NATURE OF THE PROGRAMME

- a. **Programme Models:** The focus of the training was on five (5) key farming areas and so facilitators were tasked to deliver training on these areas. The areas were;
 - **Maize farming:** The cultivation of maize for food, feed for animals and as a source of industrial raw material for other industries.

- **Pig farming:** The raising and breeding of domestic pigs as livestock principally for food.
 - **Tubers (Cassava & Yam):** The cultivation of cassava and yam for food and as raw materials for other industries in the country and abroad.
 - **Agro-processing:** The process of value addition to the agricultural produce by various methods like grading, sorting and packaging. A technique of manufacturing and preserving food substances in an effective manner.
 - **Poultry:** The raising of domesticated birds such chickens, ducks, turkeys and geese for meat or eggs.
 - **Vegetable farming:** The cultivation of vegetables like tomatoes, onions, garden eggs, cabbages, among many others for food.
- b. Session Structure, Scheduling & Grouping:** While majority of expected participants had chosen more than one specialization/focus area; the training structure was done with that in mind. The scheduling was done to ensure that participants who had chosen or actively involved into more than one of the focus areas can participate in the training of all their chosen field to acquire knowledge, improve their farming practices and ultimately increase their yield.
- c. Duration:** The entire training programme was slated to last for 4 days and so did it. The programme commenced on Friday 20th May through to Tuesday 24th May with 2 sessions per day. There was however no session on Sunday 22nd May 2022.
- d. Sessions:** The programme was planned to have two sessions per day to manage the expected he numbers over the 4-day period while considering the capacity of the training facility (Conference hall). The conference hall had a capacity of 150 persons with a workshop sitting arrangement and so the sessions were allotted with the space capacity in mind.
- e. Session Duration:** Each session was allotted 4-hours duration. Morning sessions were started on 8:30am and closed at 12:30pm while afternoon sessions were from 1:00 pm to 5pm
- f. Time-table**

DAY /DATE	SPECIALISATION	TIME
FRIDAY, 20th May 2022	Maize-1	8:30AM-12:30PM
	Maize-2	1:00PMPM-5:00PM
SATURDAY, 21st May 2022	Poultry	8:30AM-12:30NOON
	Livestock (Piggery)	1:00PMPM-5:00PM
MONDAY, 23rd May 2022	Agro-Processing-1	8:30AM-12:30NOON
	Agro-Processing-2	1:00PMPM-5:00PM
TUESDAY, 24th May 2022	Vegetables	8:30AM-12:30NOON
	Tubers (Yam/Cassava)	1:00PMPM-5:00PM

7.0 TRAINING CENTRE AND DATA OF PARTICIPANTS

- a. **Choice of location:** The programme took place at a 150 capacity conference hall at Windy Lodge in Winneba in the Central Region. The choice of Winneba was appropriate taking into consideration the district distribution of participants. Majority of participants came from Awutu Senya East & West, Agona East & West, Gomoa East, West & Central and Efutu Municipality.

This distribution required an appropriate choice of location central to all so as to maximize attendance and reduce travel stress. The choice of Winneba was therefore appropriate as it is central and easily accessible from all the districts indicated above.

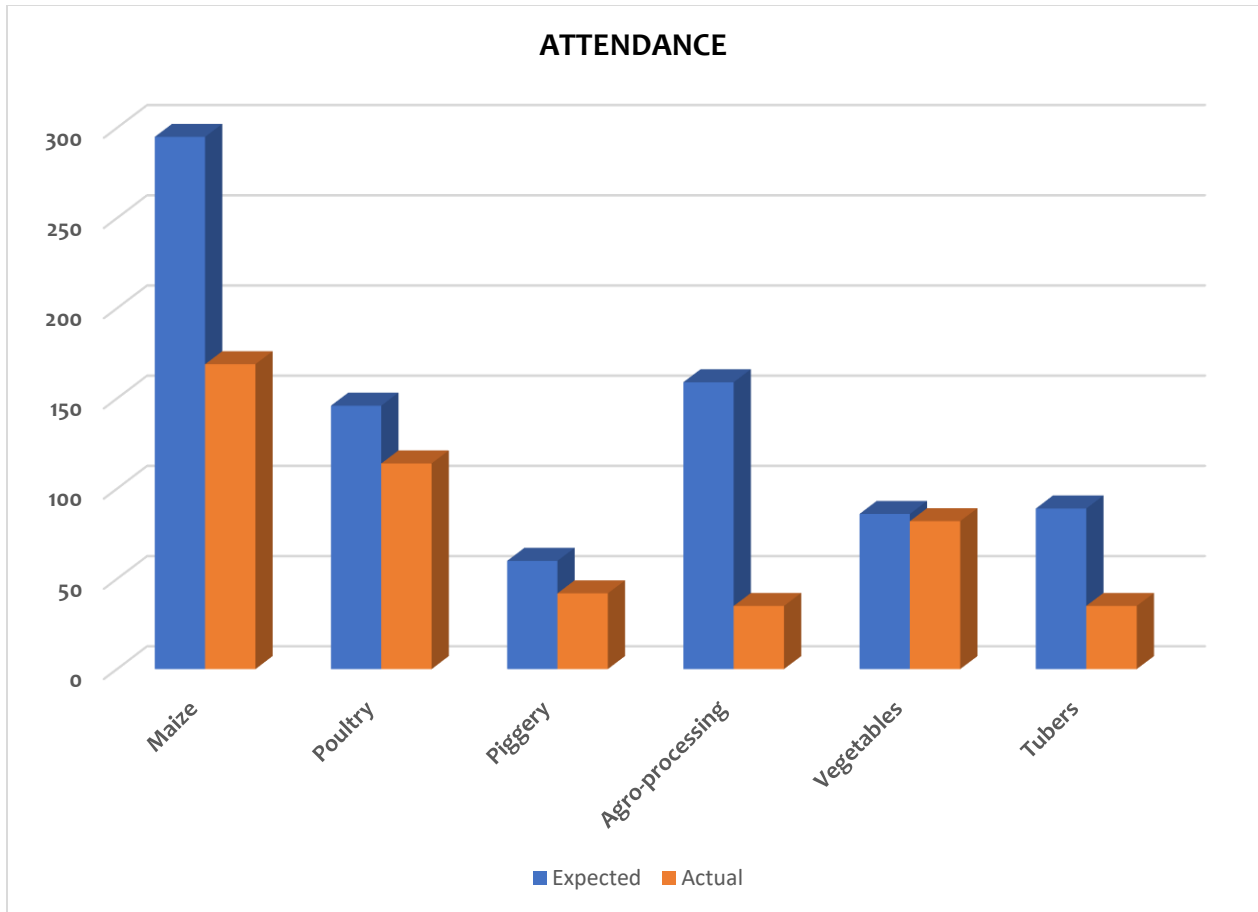
The choice of Windy Lodge to host the 4-day programme was also very appropriate due to the capacity of the conference hall and the hotel location. The hotel is located on the main Winneba Junction-Winneba town road and so makes it easily accessible to participants while it is also one of the few hotels to offer 150 sitting capacity conference in Winneba. The Hotel is considered the biggest and Winneba and affords very exciting conference facilities.

- b. **Expected Participants data:** The training programme had expected participants of Six hundred and fourteen (610) from all 22 MMDA's in the Central Region. While the total number of participants was 610, the scheduling was done taking into consideration the choices made by participants during the application process. The unique way of the scheduling ensured that there was adequate participation per each session. The expected participants per each session is therefore indicated below.

DAY /DATE	SPECIALISATION	Expected Participants
FRIDAY, 20th May 2022	Maize-1	152
	Maize-2	143
SATURDAY, 21st May 2022	Poultry	146
	Livestock (Piggery)	60
MONDAY, 23rd May 2022	Agro-Processing-1	84
	Agro-Processing-2	75
TUESDAY, 24th May 2022	Vegetables	86
	Tubers (Yam/Cassava)	89

- c. **Actual participant's attendance:** The actual attendance to the programme is presented below

DAY /DATE	SPECIALISATION	EXPECTED PARTICIPANTS	ACTUAL ATTENDANCE
FRIDAY, 20th May 2022	Maize-1	152	169
	Maize-2	143	
SATURDAY, 21st May 2022	Poultry	146	114
	Livestock (Piggery)	60	
MONDAY, 23rd May 2022	Agro-Processing-1	84	35
	Agro-Processing-2	75	
TUESDAY, 24th May 2022	Vegetables	86	82
	Tubers (Yam/Cassava)	89	



8.0 TRAINING CONTENT

8.1 MAIZE FARMING

Maize farming was the focus area for day 1 and participants were taken through the following;

- a. **The Crop “MAIZE”:** This section discussed thoroughly the importance, uses, nutritional benefits as well as the general types of maize in Ghanaian. The following importance and uses of maize were advanced including;
 - Maize as a principal staple crop, produced and consumed by most households in Ghana but produced predominantly by smallholder resource poor farmers under rain-fed conditions.
 - Maize is used as food, feed for animals and as a source of industrial raw material and contributes to about 65% of daily per capita cereal consumption.
 - Maize accounts for more than 20% of the total agricultural production and 25% of agricultural employment in the country. 85% of the maize is grown by small-holder farmers and 15% by large-scale farmers across all agro-ecologies

Generally, there are 2 main types of maize cultivated in Ghana. (Dent and Flint maize)

- b. **Various Stages of Maize Plant:** The Key four (4) stages of the maize plants were discussed with participants. The stages as discussed are;

- **Seedling stage:** The initial stage of maize plant with 2-4 leaves after the emergence. takes 1-2 weeks after the seed plantation.
- **Growth Stage:** This stages witnesses major growth stage of maize with a plant height equal to knee-length. takes 30-35 days' period depending on the variety.
- **Tasseling stage:** At this stage the tassel is formed after 14th or 15th leaves in the maize plant.
- **Silking stage:** This is the cob formation stage. This is a stage where the cob start appearing and enough rain is required to ensure better cob formation and yield.
- **Milking stage:** The development of kernels starts after completion of pollination and silk emerges at the upper end of the cob ear. The outer husk is also green and the kernel appears to be milky



Seedling & Growth Stages

c. Phases of Maize Farming: The following were discussed under this section of the maize farming training

- **Site Selection:** The discussion centered on the type of soil good for maize cultivation. For great yield participants were advised to avoid water-logged, sandy soil but opt for deep, fine-structured, well-aerated, well-drained loamy soils that are rich in organic matter. For better yield participants were additionally admonished not to go for shady areas but grow maize where the crops can get direct sun-light to aid photosynthesis.
- **Land Preparation:** Because maize need a soil that is warm, moist, well supplied with air, and fine enough to give good contact between seed and soil, participants were advised to avoid soil profile that contains hardpans and compacted layers from over cultivation which turn to reduce moisture penetration and root growth

Participants were told to avoid burning because the decaying weeds and crop residues act as mulch for the crop. The mulch keeps the soil cooler, reduce soil surface crusting, conserve moisture, increase water infiltration, reduce erosion as well as weed emergence

- **Varietal Choice:** The choice of appropriate maize variety for a given location/soil is very important, as it makes a significant contribution to yield improvement. Varieties are selected according to factors such as soil fertility, climatic conditions, yield potential, resistance to infections, maturity period among many others. Wrong variety selection can

lead to a poor harvest or total crop failure. Some of the popular varieties with their corresponding attributes were shared with participants.

VARIETY	FEATURES	GRAIN COLOUR/TEXTURE	MATURITY DAYS	AVERAGE YIELD	
				TONNES/ HECTARE	BAGS/ ACRE
Wang-Dataa	Drought and Striga tolerant	White/flint-dent	90	4.7	19
Bihilifa	Drought tolerant	Yellow/flint-dent	90	4.6	19
Sanzal-Sima	Drought tolerant	White/flint-dent	110	5.4	22
Ewul-Boyu	Drought tolerant	White/flint-dent	110	5.6	23
Tigli	Drought tolerant	Yellow/flint-dent	120	5.2	21
Aburohema	QPM drought and Striga tolerant	White/flint	95	4.5	18
Omankwa	QPM drought and Striga tolerant	White/flint	95	4.5	18
Abontem	QPM drought and Striga tolerant	yellow/flint	80	4	15
Obatanpa	QPM OPV	White/dent	105	4.6	19
Golden Jubilee	OPV	Yellow/dent	110	5	20
OpeEburu	Normal/Hybrid	White/Flint-dent	110	7.5	30
Tintim	Normal/Hybrid	White/Flint-dent	110	7.5	30
Aseda	Normal/Hybrid	White/Flint-dent	110	6.5	26

- Planting: The discussion focused primarily on which seed to plant, when and how to plant for ultimate yield. A seed is a living organism and so participants were advised to handle it with care to keep alive its embryo from which the new plant will develop. For commercial maize production, the seeds should be purchased from registered seed producers and seed companies and local licensed agro-input shops.

Participants were advised to conduct seed germination test upon the purchase of seeds to estimate the germination rate. The three (3) ways of conducting the test were discussed. A germination test percentage of between 85%-100% is considered good for the maize crop.

Recommended seeding rate after germination test	
Number of plants counted	Number of seeds to be planted
85 or more	2 seeds per hole
70- 84	3 seeds per hole
50-70	Get better seeds
Less than 50	Do not attempt planting, get better seed

Participants were advised to preferably plant maize at the start of the rainy season to enable good seed germination and proper plant establishment. Delayed planting will affect yields, as the young plants will not receive enough rain for proper growth and development.



Recommended plant spacing

The appropriate planting depth varies from 2 to 10 cm, depending on the weather conditions and the moisture status of the field. Participants were also advised to plant in rows and ensure adequate plant spacing (preferably, 40cm between plants and 70cm between rows) to ensure good plant management, air flow and good weeds management

Recommended planting seasons	
Agro-ecological zone	Which month to plant
Major Season	
Sudan savannah	End-May to early-July
Transition	Mid-March to end-April
Forest	Early-March to end-April
Coastal savannah	End-March to End-April
Minor season	
Transition	Mid-July to early-September
Forest	Mid-July to Early-September

- **Proper Water Management:** Maize is highly susceptible to water stress. Lack of sufficient soil moisture will affect maize yields significantly, there is therefore the need to properly manage the farm water supply to ensure the crops get adequate water and improve yield. Since most maize production in is rain-fed, there is a need to improve water use efficiency.

In improving efficient use of rainwater, participants were advised to practice the following

- Early planting at the start of the rains to ensure that the plants get enough moisture, especially around flowering.
- Proper weed control to reduce competition for water.

- Using organic materials such as compost, mulch and organic manures to improve the soil's capacity to absorb and store rainwater.
 - Mulching with crop residues can be used as trash-lines to reduce evaporation losses.
 - Water harvesting structures, for example, by diverting runoff from other areas (uphill or road runoff) onto a field.
 - Reducing maize plant population
 - Irrigation if possible
- **Weed Management:** Weeds can reduce maize yields by competing for light, nutrients, moisture, soil water and space, resulting in yield losses, lower grain quality and increased production costs. They also harbour insects and diseases that affect the maize plant. Maize is most sensitive to weed competition during its early growth period. The most critical stage of weed competition in the life of a maize plant is during the first four to six weeks after emergence of the crop.

Participants were advised to properly manage weed especially during the first four to six weeks after emergence of the crop. If maize is heavily infested with weeds, it may never fully recover, even if weeds are controlled afterwards. Proper weeds management as per the discussion is a successful combination of measures including;

- Manual or mechanical weeding to remove the weeds especially during the 10 weeks of growth.
 - Improved fallowing by using a dense covering legume that covers the soil well will suppress weed growth and multiplication
 - Prevention of introduction and spread of weed seeds, for example by using clean seeds and equipment.
 - Use of herbicides, either pre-emergence or post-emergence
- **Pests & Disease Control:** Pest and diseases greatly affect maize yield and this was the centre of the discussion with participants. Major pests of maize in Ghana include *stem borers, armyworms, cutworms, grasshoppers, weevil's termites and larger grain borer*, while major diseases of maize include *maize streak, smuts, rust and bacteria blight*.

In managing pest and disease in maize farming, participants were advised to engage in several activities including,

- Been aware of the pest and diseases common farm area and planting varieties that are resistance or tolerance to them.
- Scouting farm for pest infestation immediately after emergence of seeds and monitor their levels regularly to determine whether they are causing economic damage to warrant their control.
- Planting early to avoid the high pest pressure that are experienced with late plantings.
- Maize rotation with legumes can help with reducing weed, insect and disease pressure, enhance soil fertility and improve yields.
- Under severe pest infestation, use pesticide judiciously.



- **Harvesting:** Timely harvesting of maize is very important and this was thoroughly discussed with participants. Maize that is to be eaten green is ready for harvest when the grain hardens or when the silky flowering at the top of the maize cob turns black or dark brown. However, maize to be dried is left to partly dry in the field until all the leaves of the plants have turned brown.

Delayed harvesting leads to lodging and damage by birds, storage pests and diseases. Poor harvesting and handling can lead to high post-harvest losses. The two methods of harvesting were also discussed thus;

- Manually- Done using human labour to dethatch maize cob from maize stalk
- Mechanically- Done using machinery to harvest maize from the field

Proper post-harvest handling of the crops was also interrogated. This included transportation, drying, shelling, and packaging. At each stage of these loses can incur if not managed well.

- **Transportation:** Transportation from farm to homes should be done properly to reduce loses. Often huge grain losses occur during this period
- **Drying:** Drying maize well is a necessity to get good quality grains. Participants were advised not to resort to drying on the bare floor but on raised platforms to avoid contamination and should conduct drying test.

- Shelling: Shelling should also be done properly and meticulously to reduce grain breakages which can easily be infested.
- **Storage:** The storage of grains is as important as the planting of the crop itself. Poor/improper grain storage can result in huge losses as the grains could be infested and destroyed. The primary aim of grain storage is for quality maintenance, food and nutrition security, seed and better prices. The forms of storage were discussed included hermetic bags/ Storage in local barns and storage in controlled warehouses



- d. Reducing Post-Harvest Losses:** Grains can be wasted during and after harvesting due to inconsistent harvesting methods, damage caused by storage pests and diseases or inappropriate storage. To reduce post-harvest losses and maximize gains, participants were advised to take seriously the following;
- **Timely harvesting:** Harvesting at the right time because delayed harvesting can lead to rotting of the cobs, and attacks by rodents, birds and weevils. It also allows fungal pathogens such as aflatoxins to spread, especially if the drying crop is rained on.
 - **Proper drying:** The cobs should be properly dried under the sun before being shelled. If the grains are not well-dried, they will attract insect, pests and mildew. Drying should not be carried out on the bare ground, but on a cemented floor, mats or tarpaulins on a raised structure to avoid the grains picking up moisture, dirt and insects
 - **Proper storage:** Maize should be stored metallic silos or packed in sacks (with perforations) and stored well on pallets in clean and well ventilated stores. separating old from new grain stocks.
- e. Major Limiting Factors to Maize Production:** The major limiting factors to maize production in Ghana was introduced and discussed with participants. This factors included but unlimited to the following;
- Drought during critical early stages of crop growth
 - Low soil nutrient level/Poor soil fertility (particularly nitrogen and phosphorus)
 - Poor crop husbandry practices

- Pest and diseases infestations
- low or excess plant populations
- Inadequate control of weeds and Striga
- Inappropriate planting time
- Limited use of inputs (especially fertilizer and improved seeds) as well as untimely application of adequate quantities of fertilizers
- Improper and Inadequate drying and storage facilities leading to post-harvest losses
- The use of low quality seeds
- Lack of credit facilities to boost farming
- Poor market access (in some areas)

f. **Improving Soil Fertility:** Ways of improving soil fertility were also discussed with trainees. Maize grows well in fertile lands and this shows in the yield. Nitrogen and phosphorus are the most deficient nutrients in maize production. In improving soil fertility, trainees were advised to practice the following

- **Crop rotation:** Repeated planting of maize in the same field year after year leads to a decrease in the available nutrients necessary for plant growth and lowers yields. To avoid this, farmers were advised to grow maize in rotation with *legumes like groundnut, cowpea, pigeon peas and soybeans.*
- **Improved fallowing:** Restore soil fertility after a period of cultivation by leaving the land uncultivated for up to 5 years in order for fertility to buildup, while new and more fertile land is cultivated for food production.
- **Application of organic materials:** Avoid burning or removing maize stovers and other crop residues from the field. Maize plants will benefit from the valuable manure from cattle, sheep, goats, pigs or chickens
- **Application of phosphate fertilizers.** Phosphorus is essential not only for crop production directly, but also to improve supply of nitrogen from the legumes.

8.2 PIG FARMING

The raising and breeding of domestic pigs as livestock principally for food. In the training programme focus on the following;

- **The animal called “PIG”:** Under this topic the animal (Pig) was thoroughly discussed, several attributes of the animal were brought to the fore including but unlimited to the following.
 - *Pigs are very clean animals:* Are clean animals. Are one of the cleanest animals and refuse to defecate where they sleep and eat given the choice. Even new born piglets will leave sleeping places to relieve themselves
 - *Pigs are smarter than dogs:* Intelligent and are ranked the fifth most intelligent animal in the world. Intelligent and more trainable than any breed of dog.
 - *Pigs have an excellent sense of direction:* They are excellent navigators. Can find their way home over large distances. Can trot long distances and can reach up to 11 m/ph running.

- *Pigs dream and like contact:* Sleep nose-to nose and they love to stay connected with each other by sleeping close together often making sure to touch others.
 - *Excellent memory:* Pigs have excellent memories especially when it comes to object location
 - *Pigs have individual personality traits:* Just like human being, pigs have individual personal traits that makes them very unique.
 - *Pigs don't sweat:* They just love to bathing and swimming
 - *Pigs love to play:* Pigs are playful and want to have fun all the time
 - *Pigs love and enjoy belly rubs:* They have to be rubbed especially around their bellies
- **Pig farming & why is it a good business:** The importance of pig farming was discussed with trainees. What makes the raising and breeding of domestic pigs as livestock were very much elaborated upon for participants to know so as to deeply look at the business end that farming. Per the discussion, the importance of pig farming is seen in several areas including the following;
- Higher Consumption: 38% of all the meat consumption in the world goes to pork. (FAO)
 - Productivity: Pregnancy lasts for only four months and each sow can give birth to 6-12 piglets in each litter. This gives you up to 12-24 piglets a year should a gets pregnant twice.
 - Relatively inexpensive to manage: Can be fed with almost everything including grains, forage, fruits, vegetables, damaged food, garbage, sugarcane, carrots, potatoes, etc. Sometimes pigs can even eat grasses and other green plants or roots.
 - Pig meat is one of the tastiest and nutritious meat. It is higher in fat and energy.
 - Low mortality rate compared to other animals: Are more rugged and easier to raise and can survive days without food or water. The immune system of pigs is higher than other animals. As long as you give them the needed vaccines regularly, they would not fall sick.
 - Theft: Theft of pigs is lower compared to poultry particularly because of the size
 - Waste still useful: Pig manure is a great fertilizer and widely used in crop production
 - Quick Growth & Early Maturity: Most pigs become ready for selling earlier than other animals. As compared to other livestock animals, pigs generally grow faster. They have higher feed to meat conversion efficiency.
 - Low cost set-up: Setting up a small scale pig production business is relatively easy
- This and many other factors makes pig farming very attractive business to venture into provided the animals are managed well
- **Major issues or considerations in Pig farming:** The following issues were discussed with participants.
- Site location: Participants in choosing a site for the pig farming should do that properly to ensure that the business grows without any hindrance. Participants were advised to select a site that is aaccessible to food source, clean water and close to the market. Also, ensure

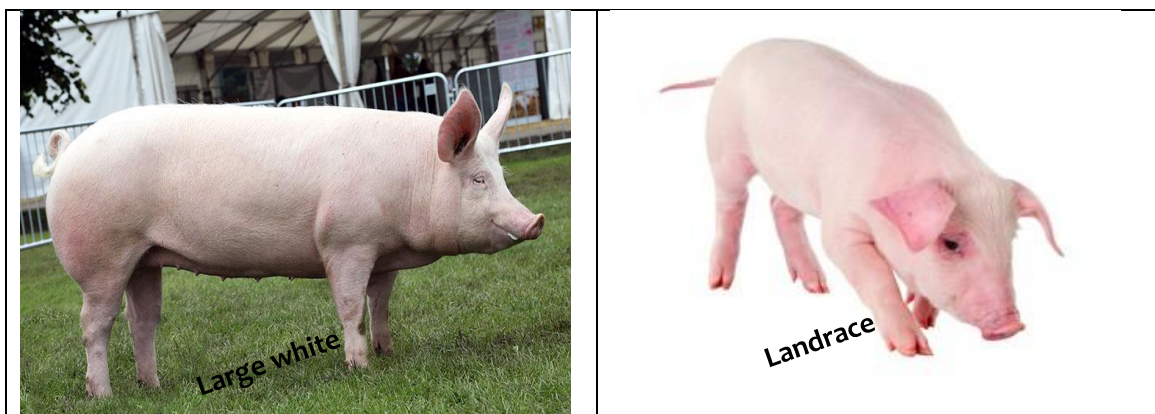
that the location of the farm would not contribute to environmental problems because pigs could ooze off unpleasant odours in the neighbourhood.

- Pigpen construction: Several issues were discussed under this including;
 - *Building Materials*: Recommended materials are concrete or iron, depending on your preference and budget.
 - *Ventilation*: The pen should be well ventilated to enhance proper circulation of fresh air and also shade during high temperatures.
 - *Drainage System*: The pen should have good drainage system. Otherwise, the whole thing will smell absolutely terrible.
 - *Easy Cleaning*: The structure of the pen should make for good cleaning to avoid excessive stink and contamination.
 - *Water system*: A water system for the pigs. There should be a water pool, which should be cleaned often, as they like to swim in it.
 - *Separate Spaces*: Create a separate space where you will keep piglets. It's advisable to separate piglets from their mother so that they can grow and mature faster.

d. Breed Selection: There are many breed of pigs that can be used for commercial pig farming however choosing the right breed is important as it will determine many aspect of the production process such as size of the litter, feed efficiency and meat quality.

Some pig breads are poor feed convertors, have poor carcass quality, produce little waste and attain maturity late. Trainees were advised to pick breeds that are highly productive to earn maximum profits. The best breeds recommended to participants and good for commercial farming are *Large white, Landrace and Duroc*

Participants were however advised to conduct thorough research about the pig before purchasing. Recommended to always check piglet's health, vaccination history and take a look at the conditions they have been kept in.



e. Feeding: Whiles pigs can be feed on so many things, good feed is necessary for growth, body maintenance and the production of meat. The nutritional needs of pigs can be divided into six categories thus water, carbohydrates, fats, proteins, vitamins and minerals.

The best meals for domesticated pigs' commercial purposes are usually grains and meat. To ensure the pigs grow fast and healthy, it is preferable that they feed on vitamins, rich supplements, and heavy protein meals. Participants were advised to reserve larger part of the protein feed should be for the mature pigs since they consume more meals than the smaller pigs and provide clean water.

- f. **Breeding:** Pigs are very fertile animals as such it's very easy to breed them. They have a shorter gestation period. To ensure they breed easily, participants were advised to keep a good ratio of sows and boars.

The three types of breeding were also discussed (Pure breeding, In-breed and cross breeding) while the methods of breeding were explained extensively. This includes pen mating (boar run with the female), hand mating (supervised natural mating) and AI (Artificial insemination) where the semen from a boar is artificially collected, evaluated for quality and deposited into the cervix of a receptive sow during estrus period.

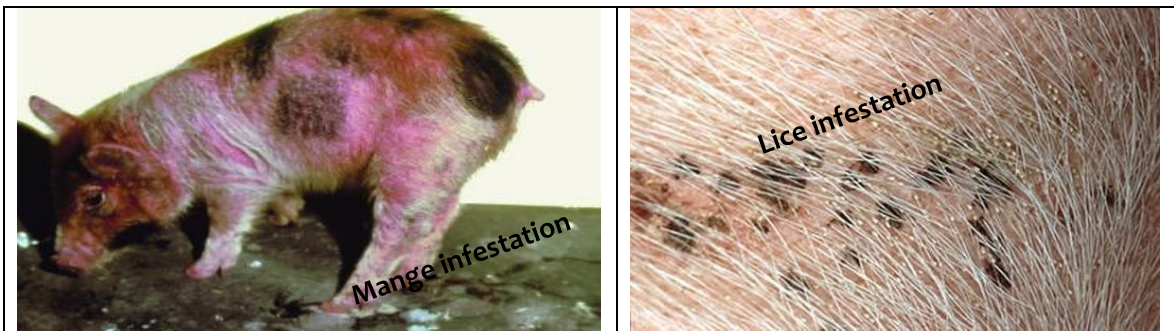
- g. **Caring:** Taking good care of pigs is very important for getting good production from the business. In taking care of the animals, participants were advised to do the following;

- Ensuring hygiene system inside the pen. This will help the animals to stay free from all types of health hazard and diseases.
- Keeping the boars and sows separated from each other.
- Avoiding contaminated feeds and polluted water for good health of the pigs.
- Taking extra care of the pregnant and lactating sows.
- Vaccinating them regularly to keep them safe from swine diseases.
- Keeping the pigs in a calm and quiet place will be good.
- Not allowing visitors inside your farm

- h. **Diseases and Parasites:** Disease and parasites in pigs was discussed with participants and we admonished to ensure they take pragmatic measures to ensure that farms are free from disease/parasites to enable them reap the benefits of the endeavour. The following were elaborated upon.

- **Internal parasites (Worms):** Worms are one of the most serious threats to pig keeping. There are more than 30 types affecting the intestines of pigs. The most important two are the intestinal roundworm and the tape worm. Their symptoms were discussed with videos and images. The preventive measures recommended to participants included the following;
 - Providing clean and dry pens
 - Controlling with medicine in the food
 - Rotational grazing and periodic disinfection of pastures.
 - Separation of young ones from adults.
 - Washing sows before farrowing.
 - Periodic deworming
 - Herbal treatment: Herbs such as moringa are considered is able to kill intestinal worms

- **External parasites:** External parasites like mange, lice and myiasis were also discussed. While all three have different symptoms they are all too visible to be seen on the body of the animals. These symptoms ranges from simple body scar to extreme body damage, hair loss, itchy skin, thick skin and rough hair coat, anaemia, behavioural change. These like any other disease can lead to death. In preventing such diseases in farms, participants were advised to do the following;
 - Avoid overcrowding to reduce fighting.
 - General cleanliness
 - Treating piglets before putting them in fattening house.
 - Treating gilts before first service and boars twice a year
 - Treating new stock on arrival and seven days later and
 - Piglets below three weeks should not be treated



- i. **Deworming:** Deworming of the animals is a very important part of pig farming. If taken for granted the business will be frustrated. Several recommended dewormers were introduced to participants including **ivermectin (Ivomec®)**, **fenbendazole (Safe-Guard®)**, **levamisole (Tramisol® , Levasole®)**, **pyrantel (Banminth®)**, **dichlorvos (Atgard®)** and **piperazine**.

Participants were also advised to recommend their animals per the schedule below to improve their productivity

- Boars - every 6 months
- Sows - 2 weeks before farrowing and after weaning
- Piglets - 1 week after weaning
- Fatteners - 1 week after weaning and 3months latter
- Gilts - 1 week after weaning, 3 months and at 7months of age at least 2 weeks before service

8.3 TUBERS (CASSAVA)

The training programme focused mainly on cassava as no participants was into the cultivation of Yam. The following were discussed during the training;

- a. **The crop called 'Cassava':** This discussion on this focused on the history of the crop, its uses and importance to the Ghanaian economy amongst many others. Been the second most important staple crop after maize for which an estimated 92% of total production is utilized as human food.

The cassava plant gives the third-highest yield of carbohydrates per cultivated area among crop plants, after sugarcane and sugar beets. In Ghana, cassava and yam occupy an

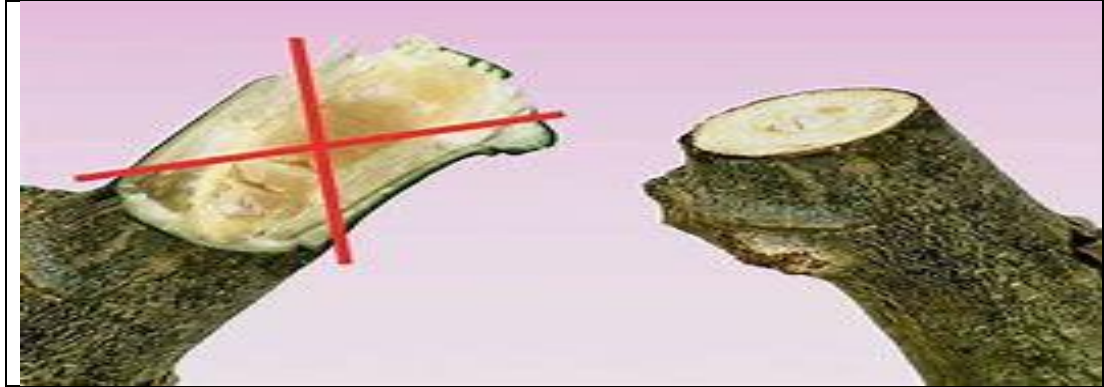
important position in the agricultural economy and contribute about 46% of the agricultural gross domestic product. It accounts for a daily caloric intake of 30% and is grown by nearly every farming family. Cassava is used as food, animal feed, laundry starch, biofuel and alcoholic beverages

- b. Varieties of Cassava:** While there are over 18 improved cassava varieties for diverse use such as for starch, flour, ethanol and chips, ten (10) were introduced to participants including Afisiafi, Abasafitaa, Tekbankye, Agbelifia, Sikabankye, Capevarsbankye, Bankyebotan, Fufuhemaa, Ampesihene and Tettehbankye. The choice of variety is therefore dependent on the purpose for the cultivation.
- c. Stem Handling:** Cassava is propagated by stem cuttings and the main sources of the planting materials are the farmers' own fields, neighbours and sometimes rural markets.

For higher yield, participants were advised to plant high quality cassava cuttings and in doing so the cuttings must be handled properly for good sprouting, establishment, and vegetative growth. Participants were advised to do the following to ensure they get good cassava cuttings for planting;

- Obtaining stems for planting from mature plants 10–12 months old.
- Storing under the shade for 2–5 days (never more than 2 weeks) before cutting and planting. This makes the stems sprout faster than when they are planted freshly cut from the field.
- Storing stems vertically on the soil under a shade. The distal end of the stems touching the soil, which is moistened regularly, with the surroundings kept free from weeds.
- Handling the stems with care not to destroy the nodes that may result in losses.
- Not making jagged cut surfaces or keep stems in the open (leading to drying)
- Cutting stems, with sharp tools, preferably secateurs or cutlasses, into 25-cm cuttings with 5–7 nodes
- Using the middle portions of the stem, the middle portions establish better than the tips and basal parts





d. **Planting:** During planting, trainees were advised on the following;

- Ensuring that the buds point upwards.
- Planting at a spacing of 1 m × 1 m on the crest of ridges or mounds, giving a plant population of 10,000 stands/hectare.

The three methods of planting cassava were also discussed with participants, thus

- Horizontal method: Planting in horizontal position in which the cuttings are completely buried in the soil to a depth of 5 cm.
- Slanting method: Cassava cuttings planted in a slanting or angular orientation.
- Vertical method: Planting vertically upright with two-thirds of the cutting inserted deep in the ground.



- e. **Zero input cassava production:** Growing Cassava with zero input technology means there is no use of chemicals (fertilizers, herbicides, or organic compost). This method encourages biological activity in the soil and provides natural protection from diseases. In deploying zero input cassava production, participants were advised to practice the following;
- Choosing a field that has good soil fertility and good drainage and well maintained.
 - Avoiding stony, clayey, or water-logged soils.
 - Practicing minimum tillage in sandy soils to conserve organic matter and moisture
 - In shallow or hard soils, making ridges or mounds to increase the topsoil volume per plant for a better establishment
 - Choosing improved varieties with the highest and most stable yield performance.
 - Selecting stems from healthy cassava plants (9-15 months) without damage from pests
 - Handling stems carefully to avoid bruising or damaging the nodes and to improve sprouting.
 - Cutting the middle of the stems into 25 cm lengths with 5–7 nodes.
 - Planting at the right time to ensure healthy sprouting and good crop establishment.
 - Planting at the correct spacing to optimize plant growth. The recommended planting space is 1m × 1m for branching types and 1m × 0.8m for non-branching types
- f. **Controlling Weeds:** Weeds can cause serious competition for cassava for space, light, water, and nutrients if left unattended to. Inadequate weed control can result in low yields. Keeping a field weed free is a requirement to avoid yield loss. Participants were advised to control weeds so that cassava grows and develops well by doing the following;
- Cultural method: Using machine or hand weeding
 - Chemical method: The use of herbicides to kill or damage weeds.
 - Biological Method: Biological weed control techniques to suppress weed growth which includes practices like
 - *Mulching in the form of a cover crop is an effective method of weed suppression.*
 - *Appropriate intercrops (such as legumes, melons and pumpkin) can significantly reduce weeding frequency, intensity and has additional benefit of soil improvement.*
- g. **Harvesting and Field Handling:** Knowing when the roots are ready for harvest is an important step in ensuring cassava roots with good eating and processing qualities are harvested. Cassava has to be harvested at an appropriate age, size and tenderness in order to meet the quality of its intended use. If cassava harvesting is delayed, the roots tend to become fibrous and lose good qualities for the fresh market. Trainees were advised to harvest cassava roots 10-12 months after planting when the yield of starch is highest.
- Both the manual and mechanical mode of harvesting were discussed with participants. In either manual or mechanical harvesting methods, once the cassava has been uprooted, the root clusters should be carefully separated into individual roots by cutting above the swollen storage roots leaving a piece of woody tissue attached to each root.
- After harvesting, participants were advised to properly sort cassava roots in the field because some amount of damage is expected during harvesting operations. Damaged or roots showing visible symptoms of rotting should be removed from undamaged ones.

- h. Post-Harvest Handling & Storage:** Postharvest losses can be reduced by harvesting when the soil is wet or by growing the crop in loose soil. Cassava tubers attached to the main stem can remain safely in the ground for several months. However, after harvest the roots start deteriorating within 2–3 days, and rapidly become of little value for consumption or industrial use. Because of the above, participants were advised on the following to ensure the following;
- Cassava must be transported home, market or processing plant immediately after harvesting.
 - Injured roots should be separated from uninjured ones
 - Only uninjured roots must be selected for storage for more than one week
 - Storage could be enhanced by treating unpeeled roots with a fungicide before storage.

Fresh cassava roots are traditionally stored in the following ways

- Piecemeal harvesting: Cassava roots once mature are left in the ground and harvested when needed. Good for food security but unsuitable for commercial production
 - Fresh cassava roots are heaped under shade and watered daily
 - Fresh cassava roots are coated with clay or mud
 - Submerging in water: Harvested or peeled cassava roots are stored for 1–2 days.
 - Pitting/trenches: Undamaged fresh roots are stored in pits or trenches dug in well drained soils, sloppy and shaded area.
 - Storage in polyethylene bags
- i. Managing Pests and Diseases:** Insect/ pests reduce crop yield causing food and income losses by damaging planting materials, leaves, roots and acting as vectors of major cassava diseases. Pests of importance include **cassava mealybug**, **termites** and **green mite** while diseases of importance include **cassava mosaic** and cassava **bacterial blight**.

In managing pest and diseases in cassava, participants were advised to engage in the following;

- Using resistant or tolerant varieties
- Burying the diseased plant residues
- Planting cassava in rotation with other crops.
- Selecting and get cuttings only from plants that are not showing presence of pests
- Planting cassava early in the rainy season to allow the crop to establish well before the dry season, as a strong plant is more likely to withstand pest attack.
- Avoid burning cassava plantations at harvest as the burning indiscriminately kills insects including the natural enemies.
- Planting only cuttings from healthy plants and regularly inspect fields to remove any plant showing disease symptoms

8.4 AGRO-PROCESSING

Participants opting for agro-processing were taken through some key areas that was intended to help improve their current processes and make them more efficient. Agriculture is expected to lead

the transformation of the economy through improvements in the sector's productivity and most importantly by adding value to raw materials.

Agro-processing is the only means of adding value to agricultural produce. The FAO describes agro-processing as the transformation of products originating from agriculture, forestry, and fisheries. Trainees were taken through the two main classifications of agro-processing thus domestic processing and factory processing;

- *Domestic processing activities:* Where the agro-processing activities takes place at homes often led by women who have no formal training. Skills acquired mostly through apprenticeship and a large amount of family labour is employed.
- *Factory processing;* Either foreign-owned (e.g. Nestle and Cadbury), state-owned (e.g. Fan Milk) or individual owned (This way). These factories process large quantities of raw materials and can contribute significantly to the economy through export activities.

Adequate time was apportioned to also discuss the importance of agro-processing with participants to very much appreciate the need to perfect the act of processing agricultural output. The key importance discussed included the following;

- Help in the reduction in post-harvest losses.
 - Promote food security, through a reduction in food spoilage and wastage.
 - Agro-processing has the potential to increase nutritional value
 - Processed foods also enjoy greater price stability on the world market and may therefore increase market opportunities for exports
 - Contributing to income securities particularly in rural communities, which are mostly engaged in farming.
 - Promote employment generation, contribute to enterprise development
 - Diversification of rural economies
 - Import substitution and to enhance their shelf life
- a. Major agro-processing subsectors:** Participants were taken through the four (4) major sectors of agro-processing in Ghana. These sector are nuts and oils, grains, roots and tubers, and fruits and fruit juices.
- *Nuts and Oils:* Major nuts produced and processed in Ghana include palm nut, shea nut, ground nut, cashew and coconut. Palm oil and shea butter/oil are the predominantly processed nuts;
 - *Grains:* Main grains cultivated in Ghana are maize, millet, sorghum and rice. Maize is the most important cereal crop produced and the most processed.
 - *Roots and tubers:* Comprising of cassava, yam, cocoyam, and sweet potato contributes about 50% of Ghana's agricultural GDP. Cassava is the most processed due to its quick perishability.
 - *Fruits and Fruit Juice Processing:* The processing of fruits like oranges, pineapples, mango, sugarcane, banana, water melons and many others into juices
- b. Segments of processing & processing technologies:** Trainees were taken through the 3 segments of agro-processing which includes;

- *Primary level of processing of food:* The first level of food processing which includes activities like sorting, grading, washing, drying, packaging and a few other simple non-mechanical activities.
- *Secondary level of food processing:* Comprising activities of re-shaping of food for ease of consumption. Examples include converting cassava into cassava flour, corn into corn dough, corn into kenkey and many others.
- *Tertiary/Value added level of food processing:* Comprising of high value-added ready-to eat food often achieved through the deployment of technology in the conversion process. This includes converting agricultural produce into drinks, biscuits, chips etc. which are ready to eat.

In respect of processing technologies: The 3 main forms of processing technologies were also discussed. These three forms as discussed were the traditional/Manual method, Semi-mechanized and the fully-mechanised methods of processing agricultural raw materials.



c. Opportunities & Challenges in Agro-Processing: The opportunities and challenges in agro-processing in Ghana also took a centre stage during the training programme. The factors identified below provides huge opportunities for agro-processing business in the country.

- AFCFTA: This has opened up other countries to export goods to easily
- Changing taste and preference of consumers for organic products
- Year-round availability of certain raw materials
- Growing health consciousness
- Increasing urbanization and retail facilities
- Growing working class

Despite the opportunities identified above, there are several other challenges confronting the sector. Notable amongst them include the following;

- Low productivity and high cost of production
- Raw materials issues
- Transaction costs, transport, and infrastructure
- Failure of contract farming and vertical integration as an alternative to imports
- Lack of certain skills
- Lack of access to industry information
- Unrestricted importation thereby increasing competition
- Poor packaging quality
- Unavailability of machinery
- Customers prefer for foreign goods
- High cost of credit

d. Factors to consider in agro-processing business

In venturing into the addition of value to agricultural produce, businessmen and women would be expected to take into consideration certain factors. Many of these factors were discussed with participants including but not limited to the following;

- Choosing the sub-sector: Choosing the right area to invest in, and it is upon this foundation that every other activity and effort is built.
- Capital: The source of capital may be from your personal investment, sales of assets, loans, grants from government amongst many others.
- Factory siting: there are issues that ought to be considered here before choosing a site for a factory. (Nearness to raw materials, transportation infrastructure, nearness to customers, capital)
- Inputs (Raw materials)
- Off-takers: Persons who buy the finished goods
- Customer/Target Market: Demands, taste and preferences
- Competition
- Regulatory landscape: Applicable legislation and regulations

e. Marketing: The need to properly market the business and its products/services was discussed during the training. The discussion centered on the deployment of the 7ps. Upon a thorough discussion the following were the recommendations made to participants.



Product	Venturing into the production of products that people want/need, are in high demand and make sure it is of good quality.
Price	Pricing competitively yet profitably. Setting a price that covers costs, gives profit and which customers are prepared to pay
Place	Focusing on a place where there will be many customers and few other sellers/producers with the same product
Promotion	Developing a good message targeting the right market and ensuring it is true and convincing.
People	Employing committed, experienced or people ready-to-learn and orient them well to deliver the best of service to the company and customers
Physical Environment	Keeping and maintaining a very neat and welcoming processing environment & products, upholding strict health consciousness in the production process
Process	Deploying simple and efficient production processes

8.5 POULTRY FARMING

The training on poultry production centre on some key areas including;

- a. **Establishing a successful poultry business:** Participants were thoroughly taken through how to establish and manage poultry business successfully. The discussion focused on areas like choosing the appropriate location for a poultry farm, engaging the right caliber of people, housing among many others.
- b. **Types of poultry birds:** The right type of birds for starting a poultry business was also discussed and this generated a lot of attention and contribution from participants.
- c. **Statistics on the importation of meat:** Statistics on the importation of meat into the country was also shared with participants and the conclusion per the delivery of the statistics showed a gradual decline in the local production of meat and poultry products. This there called for efforts to increase the local production of poultry and other livestock.
- d. **Rearing for food and jobs initiative:** The rearing for food and jobs initiative by the government was also touched on during the training programme. The facilitator took time to let participants understand the rationale and the importance of the programme to the country.
- e. **Importance and challenges in poultry production:** The importance and challenges in the poultry industry were also given due recognition during the training programme. Importance identified included the provision of food and jobs, reduction of importation and by extension save the country's currency, provision of manure for crop farming amongst many others. The challenges discussed also included the following;
 - Unimproved and lowly production birds
 - Government policies favourings crops more than livestock
 - High cost of feed
 - Inadequate extension and veterinary services
 - Inability for farmers to access market – proximity and bad road

- Consumer taste for foreign and imported livestock production
 - Lack of specialization in the poultry sector
 - Inadequate knowledge in the application of innovative technology in the livestock sector as a result of limited number of entrepreneurs
- f. **Biosecurity in poultry:** Biosecurity and its importance was also discussed with participants. Biosecurity is important in the poultry industry as an effective way of preventing the introduction and spread of diseases and proactively become aware of signs of diseases
- g. **Records keeping & Ration preparation:** The need to keep proper records in the business of poultry and the right ration preparation for birds was also discussed. While participants were advised to properly feed their builds they were however admonished to avoid over-feeding since it would not lead to better egg production
- h. **Vaccination & Vaccination schedule:** Vaccination and its importance was discussed while the vaccination schedule was shared with participants.

8.6 VEGETABLE FARMING

Vegetable farming was the last training model and participation was very satisfactory. The training focused on the following;

- a. **Planting for food and jobs initiative in Ghana:** Facilitators took time to explain the planting for food and jobs initiative to participants. All the five (5) models of the initiative were eloquently explain and present and future benefits also explained.
- b. **Importance of vegetables:** Importance of vegetables to the human and the Ghanaian economy were also discussed, which amongst other things includes for food locally (A rich source of nutrients) as a raw material for industry, for export amongst many others
- c. **Agronomy of the key vegetables:** This section was the crux of the training programme. The facilitator took participants through the agronomy (from start to finish) of eight (8) vegetables namely, Tomatoes, Pepper, Onion, Okra, Eggplant, Cabbage, Carrot and Lettuce
- d. **The green house technology:** Facilitator explain the concept and usefulness of the green house technology as introduced by government to participants. Participants additionally had an opportunity to watch videos and were very much enlightened on the greenhouse technology for vegetable production
- e. **Pest and disease management in vegetables:** Participants were educated on the various types of pests/diseases and their proper management in vegetable production.
- f. **Organic farming of vegetables:** Participants were educated on organic farming. and there was a group presentation on the benefits of organic farming.
- g. **Effects of pesticide used on vegetables:** Participants were educated on the merits and demerit of pesticides on vegetables.

8.7 GROWING AND SUSTAINING AGRO-BUSINESSES

In helping to grow and sustain their agro-businesses, participants were enlightened to adopt, adhered-to and practice some of the principles below;

- a. **Vision and vision sharing:** Every business endeavour ought to start with a vision, without it there would be no future. Participants were advised to first of all have a vision for their businesses. Business vision serves as a road-map for any business growth. Participants were not only advised to have a vision but also share them with their employees to get their buy-in.
- b. **Short-term goals:** Despite having a broad vision, participants were advised to break them down into measurable goals. This according to the discussion will help to take stock of the progress been made yearly to achieve the company's vision within the set timelines set.
- c. **Good Customer Service & Management:** Participants were admonished that good customer service is the lifeblood of any business. Businesses can offer promotions and slash prices to bring in as many new customers, but unless you can get some of those customers to come back, the business won't be profitable in the long run. Participants were urged to treat their customers as kings and queens and accept their feedbacks positively in order to ensure repeat businesses and their lifetime loyalty.
- d. **Promotion:** To help in sustaining their businesses, participants were told to find cheaper ways of promoting their businesses, products and services. Promotion is very fundamental to business success and so to be successful means businessmen and women should tell the world about their products and services. Participants were advised to use cheaper promotional tools like WhatsApp, Instagram and Facebook to promote their businesses, products and services.
- e. **Focus:** Participants were advised to focus in their line of agri-business especially for the start-ups. This according to the discussion is to help them be good at one or two things which will later serve as a springboard to launch into other areas in agriculture. Being a jack of all trade and a start-up does not help matters.
- f. **Engage in environmentally friendly practices:** Participants were advised to engage only in environmentally friendly activities in their agricultural endeavor. Bush burning and pollution of the environment should be strongly avoided to save the environment. Issues like the disposal of waste should be properly handled too.



- g. Being different from competition:** Participants were told to find ways to be different from competition and not necessarily follow what competitors do. The trick to selling people on your brand is to be different in a way that is highly relevant to your audience. Different in a way that creates competitive advantage
- h. Managing Family and friends in Business:** Participants were also advised on how to manage family members and friends to help sustain their businesses. Participants were advised to only employ/engage friends and family members only when they are sure of their competencies and can also control them in the business.
- i. Managing Unprofitable/ problem customers:** There was also discussions on how to manage unprofitable and problem customers. While participants were admonished to treat customers properly and serve them as kings, they were equally advised to be very bold to dismiss some difficult and problem customers from their business. This will eliminate the problems such customers will pose while helping the business to focus on good and profitable customers.
- j. Outsourcing:** In ensuring sustainability and managing cost, participants were advised to outsource some portions of their work to outsider supplies were necessary rather than doing everything on their own.
- k. Business networking:** Networking is a really valuable way to expand your knowledge, learn from the success of others, get new clients and tell others about the business. A strong and active business network has advantages that can make business grow and flourish. Participants were therefore advised to network for business benefits.
- l. Honesty:** To help grow and sustain businesses, participants were told the need to show high honesty/ integrity in their business dealings. Honesty is the life blood of business. Without honesty a business will likely collapse along the line.

**HONESTY IS THE
SOUL OF
BUSINESS.**

QUOTEHD.COM

Dutch Proverb

- m. Trust and Control:** The existence of both trust and control in any business environment is very paramount for the building of the right culture and high performance. While participants were advised to build a trust culture in their businesses, there should be the existence of control measures to control all employees to ensure that the elimination of behavioural excesses. A business with both trust and control often has empowered staff

9.0 TRAINING DELIVERY METHODOLOGY

- a. **Registration:** A registration desk was set up to register participants during each session. Each participant had to fill both the attendance sheet and the applicant's assessment form. While participants had to fill the attendance sheet per session, they had to fill only one applicant's assessment form for the entire programme.
- b. **Sitting Arrangement:** The training programme adopted the 'workshop sitting' set-up. Thus a set-up with tables and chairs. This afforded participants the additional advantage of taking notes.
- c. **Tools:** The facilitators deployed the use of a projector and PowerPoint presentations during each session. Videos and images were used to ensure better understanding, appreciation of the subject area, utmost attention and interest from participants.
- d. **Delivery Approach:** Facilitators deployed an interactive approach in delivering the training which made the programme more exciting and participative.
- e. **Language:** English, Fanti and Twi were the languages used as medium of communication. Consultants deliberately used over 70% of the local languages to ensure better understanding by participants since most of them were not too comfortable with the English language. This strategy ensured that there was optimal understanding by all the participants.
- f. **Prayer Session:** The programme always commenced and closed with a Christian prayer from participants.
- g. **Time Spent:** The time allotted for each session was 4 hours. Thus 8:30-12:30pm for the morning session and 1pm -5pm for the afternoon session.

10.0 EXPECTED BENEFITS OF THE TRAINING PROGRAMME

The institution of the training programme as part of the youth in agricultural programme is fantastic and it is hoped that the training will help participants in several ways. Some of the potential benefits of the training as facilitated by Agri-Hub Consortium Ltd would include but not be limited to the following;

- a. **Improvement in general work quality:** Participants would be expected to exhibit behaviours and adopt practices that are likely to improve the general quality of work and output.
- b. **Increase yield:** Learning how to properly utilize inputs can drastically improve a farmer's productivity throughout the season.
- c. **Build their skill in farm management:** Participants have learnt the required skills in better managing their farms and their entities as businesses.
- d. **Reduce post-harvest losses:** With the training, participants are likely to engage in activities that will reduce post-harvest losses which will ultimately increase their income.
- e. **Diseases control and management:** The training afforded participants better understanding of effects of diseases and pests in both crops and livestock farming. This knowledge is likely to help

them put in place solid disease prevention measures as well as adopt better treatment regimes in the event their crops or livestock is affected.

- f. **Cost savings:** The training will help trainees and farmers to save cost in their farming operations. Post the training, participants are expected to take a preventive approach on issues like biosecurity in poultry, weed management in crop farming, proper feeding in pig farming which will in-turn reduce the long-run cost of farm management.
- g. **Earn more income from agriculture:** With significant yield increases, participants can earn more at harvest or get better prices for their livestock.
- h. **Increased networking:** Beyond what was learnt at the training, the opportunity for farmers and would-be framers to congregate at one venue is likely to generate into beneficial networks along the farming value chain. Farmers had opportunity to meet colleague farmers and others in agro-processing who may require certain raw materials amongst many others.
- i. **Business consciousness:** Participants were taken through a section called ‘Sustaining Agro-businesses’ and this was intended to give them a business orientation in their farming practice, Participants business consciousness has therefore been sharpened and so will see what they are doing not as farming for just food but a business that can be as profitable as any other if taken seriously with the right decision making.

11.0 PROFILE OF CONSULTING FIRM AND FACILITATORS

11.1 PROFILE OF CONSULTING FIRM

Agri-Hub Business Consortium Ltd is a company limited by shares, owned by Ghanaians and duly registered by the Registrar Generals Department to undertake the business of General Farming, Smart Farming, Farming Research & Education, Agriculture Policy Development and Advocacy, Agric. Training and Capacity Development, Agric-Innovation and Technology Design.

With its vision of becoming a modern agricultural hub where innovative technology is designed, developed and deployed via an innovative approach and modern integrated agricultural technology through competent human resource in our defined areas of operations”.

As SPEED represents the company’s core values, the company approaches every endeavour with flair and faculty and this is evident in every aspect of its business. The company is endowed with high calibre staff with a myriad of academic and practical experiences and expertise in the field of farming and agriculture, banking, entrepreneurship, environmental management, human resources and general business development.

The company objective is focused around;

- Making agriculture exciting and attractive to the youth
- Employing relevant technology to transform agriculture
- Contributing to the reduction of post-harvest losses
- Imparting practical knowledge through modern agriculture
- Wealth creation through modern agricultural practices

Agri-Hub Business Consortium is engaged in both crop and animal farming. In crops farming, it has its own farms in the Central Region of Ghana and into the commercial cultivation of Cassava,

maize, fruits and vegetables. In respect of animal farming the company is mainly into pig farming. Agri-Hub Business Consortium is on the verge of venturing into agro-processing to add value to its own farm produce.

Aside the practical farming, Agri-Hub Business Consortium is into training of existing and potential farmers in sectors like maize farming, Cassava, farming, Vegetable farming, Poultry farming, Pig farming and other related farming business. Additionally, the company presently consult for some agri-business entities in and outside the country.

11.2 PROFILE OF CONSULTANT

a. Nana Barima Amankwah: Professional Marketer, Banker, Microfinance expert and Certified Credit Professional with many years of continuous working experiences in some reputable and blue-chip organizations in several sectors including but unlimited to banking, microfinance, manufacturing industries; and has occupied numerous top-level management positions like Chief Operating Officer, Head of Banking Operations, Retail Banking Manager, Product Development Manager, Marketing manager, Branch Manager and many others.

Nana holds a double master's degree in Marketing and Microfinance (MBA in Marketing and MSc. in Microfinance), a bachelor's degree in Management Studies all from very reputable educational institutions. Additionally, possesses a Professional Diploma from Chartered Institute of Marketing (CIM-UK) and other international certifications in Strategic Management and Operations Management.

Has attended several training programs locally and internationally on Business Management, Credit Management, banking practices and operations, Workplace Development and Reviews, Corporate Governance; and has conducted differentiated set of orientation and training workshops for numerous financial and non-financial institutions on Strategy, Operations Management, Process Design and Reviews, Organizational Restructuring, Product Development, Credit Management, among many others. His research interest covers marketing and sales management, product development, market/marketing research and reporting, customer satisfaction, business ethics, business process reengineering, frontline management, marketing communication, Presentation and facilitation Skills for many microfinance players.

Nana is a farmer and has learnt the intricacies of crop and animal farming from both the practical and theoretical streams. An avid trainer for existing/potential commercial farmers in both the crop and animal sectors. For his love for farming he now consults for several commercial farming business entities.

b. Clement Abaidoo: A business consultant with immense experiences in economic studies, Social Management and Policy, Youth and Community Development. He is also vested in Resource Development, Project Evaluation, and Intervention studies. Clement also has over 10 years' experience in organizational research, training, and capacity building.

His interests in multiple disciplines including Poverty, Governance and Politics, Human Resource Management, Sustainable Development and Innovation Management explains his versatility and resourcefulness. Clement is a good writer and communicator with a deep sense of learning and sharing. He is excellent at data and information management and the use of ICT.

Clement is affable, receptive, observant, and result oriented. He represents a reliable and efficient human resource within the Environmental and Planning services of WSP Golder.

- c. **Christina Avenvor:** An astute, smart and diligent agriculturist with several years' experience in crop, soil science and entomology, and who combines academic ability and skills to making effective contribution to the agricultural sector in Ghana. A farmer and an assured trainer in various aspects of crop and animal farming with special interest in vegetable and poultry production.

She holds academic qualifications in agriculture, agronomy and soil science from the University of Ghana and KNUST. Aside these academic qualifications, Christiana is an ardent lover of agriculture and spends all her time in the business of farming and other agric-related business.

Christiana has over the years done several works in different aspects of agriculture including but unlimited to the management of Insect pests using biological control methods, organic farming and extension works, animal production, agro processing, Fruits and vegetable production, ploughing, harrowing & cultivating using tractor and planter

A farmer who is actively engaged in both crops and animal farming and provides extension and consulting services to several commercial farmers across the country. Her key interest revolves around pest and diseases management, livestock & crop farming and soil science particularly around soil fertility management)

12.0 CHALLENGES

Despite the free flow of the programme, there were two (2) key challenges worth mentioning. These were;

- a. **Participants distribution:** The scattered nature of the participants' locations made the siting of the training venue a bit challenging. Participants came from all 22 districts in the Central Region and so looking for a convenient location that will appeal to a greater majority was somewhat difficult.
- b. **Travel distances:** Most participants travelled long distances to the programme venue and this affected their participation in all their chosen fields. Most participants who had chosen more than one sector could not be present in all the trainings because of the long distances.
- c. **Budget for Lunch:** The budget for lunch was woefully inadequate under the present economic circumstance. The programme had an amount of GH¢10 for lunch for participants and this made it difficult during the organisation.

13.0 RECOMMENDATIONS

Based on the challenges identified above, below are the recommendations;

- a. **Distribution of participants:** It is recommended that participants for subsequent programmes are properly grouped and given to the hubs taking into the consideration their locations. For instance, districts like Awutu Senya East & West, Gomoa East, West and Central, Efutu, Agona East and West, and others very close to the above are grouped and assigned to one

hub/consulting firm while Cape Coast, KEEA and others nearby are also put into another group and assigned to another hub.

This will by extension reduce the distances that participants would be required to cover to and from training venues.

- b. **Budget for lunch:** In the present economic circumstance, GH¢10 would not be able to afford a decent lunch and so it is recommended that a relatively higher amount is considered next time.

14.0 CONCLUSION

Despite the challenges indicated above, the training programme was a success. Facilitation was great coupled with above average attendance. Participants contributed immensely by way of feedback and sharing of practical, hands-one experiences. The programme is expected to have two (2) key benefits to participants, thus improving their farming practices and revolutionizing their weak business orientation.

The observation however was that a substantial percentage of participants are not presently and actively engaged in farming but filled the application form anyway when it was advertised. The hope of the consultants would be that those responsible would undertake proper due diligence in subsequent phases of the programme to ensure financial support goes to people who really need and will utilize to the betterment of their local economies and Ghana as a whole in our drive to achieve Ghana beyond aid.