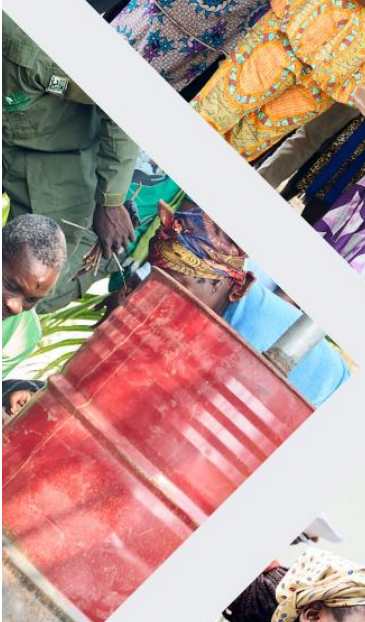
CONSERVATION AND SUSTAINABLE MANAGEMENT AT THE KETA LAGOON RAMSAR SITE, GHANA, FOR BIRDS AND COMMUNITY CLIMATE RESILIENCE

TRAINING IN ORGANIC AND CLIMATE ADAPTATION/ MITIGATION FARMING TECHNIQUES

ACTIVITY REPORT





CONSERVATION AND SUSTAINABLE MANAGEMENT AT THE KETA LAGOON RAMSAR SITE, GHANA, FOR BIRDS AND COMMUNITY CLIMATE RESILIENCE

Activity Report on
Training in organic and climate adaptation/mitigation farming techniques

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1. Introduction

The Keta Lagoon Complex Ramsar Site, located along the southeastern coast of Ghana, is one of the most important wetlands in West Africa. It supports diverse ecosystems, including mangroves and lagoons, which serve as habitats for numerous species of flora and fauna. Beyond its ecological significance, the site is home to communities whose livelihoods largely depend in agriculture and fishing. Vegetable farming, in particular is one of the major sources of food and income for many smallholder farmers within the area.

In recent years, however, the landscape has come under increasing pressure from unsustainable agriculture practices, soil degradation, and the growing impacts of climate change. Unpredictable rainfall patterns, declining soil fertility and salinization have reduced agricultural productivity and increased farmers' vulnerability. This is further compounded by limited knowledge of sustainable farming techniques among local farmers.

Due to these challenges, it is imperative to build the capacity of farmers to adopt climate-smart and agro-ecological farming practices. Such practices not only improve soil health and crop productivity but also contribute to the long-term sustainability of the ecosystem. The training implemented under this project sought to address these gaps by introducing practical, locally adaptable solutions that enhance both environmental conservation and livelihood resilience.

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1.1.General objective

The main objective of the two-day activity was to provide training and practice to capacitate farmers in the Keta Lagoon Complex Ramsar site in Climate-Resilient and Agro-Ecological farming techniques, as well as train these farmers on best practices that improve soil health, crop production and enhance their economic livelihoods.

1.2. The process

The training material was prepared based on: (a) baseline action research products by the project team comprising of A Rocha Ghana, the Wildlife Division of the Forestry Commission

and the Keta and Anloga District Assemblies, (b) national and international experience related to agro-ecology, and (c) target audience consultation.

1.3. Target Audience

The training was designed for vegetable farmers within Afiadenyingba. A total of 30 farmers were engaged, cutting across the different age groups and gender (Table 1). Youth refer to those under 35 years.

Table 1. Demographics of participants for the training

Category	Number Represented
Youth Male	7
Youth Female	7
Adult Male	7
Adult Female	9
Total	**30**

1.4. The structure

The training comprised of four modules areas. The first module presented the methods of land preparation and selection of planting materials. This module highlighted the current changes in methodology and the factors to consider, especially in the light of the various changes as a result of climate change. The second module highlighted the importance of soil amendments, and the practical way of producing and applying biochar. The third module discussed the formulation and application of bio-pesticides. It also highlighted the proper use of farm equipment such as the knapsack sprayer and the use of the various types of knapsack nozzles. The fourth module presented on the various livelihood strategies for marketing. This included proper planning and budgeting, market analysis, consumer preference and market assessment.

1.5. The training tools

The training was conducted using a participatory and experiential learning approach. Central to this was the Farmer Field School (FFS) methodology which emphasizes “learning by doing”.

Module One: Land Preparation and Selection of Planting Materials

A. Site and Seed Selection

Participants were trained on how to select the most suitable farming sites for crop production. This included understanding soil health, sunlight exposure, water availability, and other site-specific conditions that affect crop growth. The session then allowed farmers to develop the choice of vegetable crop they wanted to produce, the type of crop and the reason for their selection (Table 2).

Table 2. Prioritized crops in the community

Crop	Relevance (or why the crops were selected)
Okra	Production is easier and requires irrigation which is readily available. There is a ready market for the crop.
Pepper	Is easier to store in the absence of a ready market, hence making it ideal for business.
Carrot	Does not easily get affected by pests and diseases, thus, less capital intensive. Also, there is a ready market for the crop within the landscape.

B. Nursery Establishment and Management

This session of the training focused on all aspects of establishing and managing a healthy nursery, including good nursery practices, types of bed, watering regimes and seedling protection. The farmers were also taught the best practices for transplanting seedlings, focusing on timing and handling techniques to ensure minimal damage to the young plants. Proper transplanting timing is vital to match seasonal weather conditions and optimize plant growth. Proper nursery establishment, management and seedling transplanting is importance because it:

(i) Saves seeds and money since fewer seeds will be wasted as compared to planting directly on the field

(ii) Improves survivability after transplanting even when field conditions are harsher

(iii) Leads to higher yields and income since most of the seedlings transplanted will be healthy, and

(iv) Helps plants adjust to harsh conditions due to climate change.

Module 2: Biochar Production and Application

Farmers were trained in the production of biochar, a carbon-rich material derived from organic waste (including dry maize cobs, coconut husk, dry maize husk, twigs) that enhances soil fertility and helps retain moisture. The training focused on the practical steps of biochar production, including selecting organic materials, and the correct methods of creating biochar using simple, locally available resources. For the training, biochar was prepared using coconut husk, which was the commonest raw material in the landscape. A locally manufactured reactor was developed to aid with the process of pyrolysis.

This session also educated farmers on the practical application of biochar to improve soil structure, increase nutrient retention, and boost crop yields. Biochar does not need to be applied in large quantities, as that may be detrimental to plant growth. Instead, a standard metric of one bottle cap full of biochar per plant was used as a metric for the farmers in the landscape.

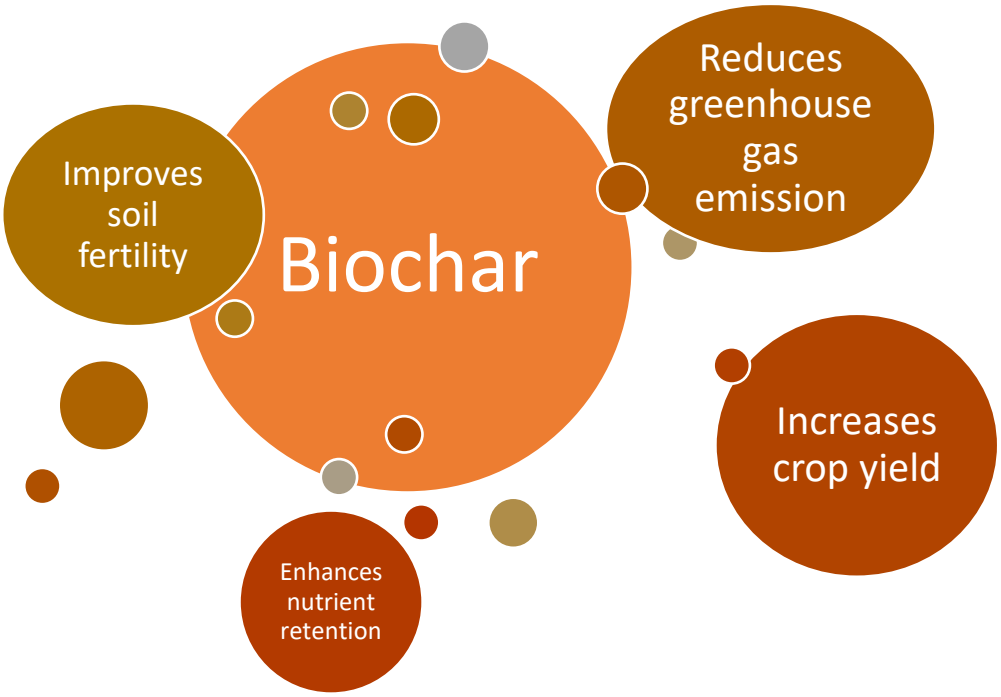

Figure 1: Importance of Biochar Application (Adapted)

Module 3: Bio-Pesticides Formulation and Application

Participants participated in the formulation of bio-pesticides with common raw materials in their community. The means was to prepare bio-pesticides using Neem Tree (seeds and leaves), which has strong natural insecticidal properties. The process also involved extracting neem oil and preparing it for use as a safe, organic pest control method. The adoption of the use of bio-pesticides will not only reduce the cost of production and negative effect on the soil organisms, but will enhance sustainability and resilience in the face of change.

During this facilitation period, video screening was used to increase participation and improve understanding on the various practicums and steps of bio-pesticides and fertilizer preparation and application.

Module 4: Livelihood Strategies for Marketing and Market Assessment

Participants discussed the seasonal trends and market demands of the landscape. This was to aid them make informed decisions about the best times to plant, harvest and sell specific vegetable crops. There was the resolution to create a corporative to foster unity and collaboration among the farmers as through that, they can pool resources, negotiate better prices for inputs and collectively market their produce to buyers, thereby increasing their bargaining power and profitability.

Logistics and Supplies

A highlight of the training was the giving out of farming support equipment; 30 quality safety boots and 40 cutlasses, and a variety of vegetable seeds to support the application of their new skills on their farms. These tools are essential for their fieldwork, ensuring safety as they implement the new skills they have acquired in vegetable crop production, biochar use, and bio-pesticide and bio-fertilizer application.

A total of 545 seedlings comprising 445 coconut seedlings were procured and distributed to 25 farmers. 50 coconut seedlings and 50 Royal palm seedlings to a community school planted on their school compound.

The project also procured and distributed 450bags of compost to the 30 farmers. Each farmer received 15 bags of compost to be applied on their farms.

Key Outcomes

The two-day training was significant as it yielded significant results in terms of knowledge transfer, skill acquisition and behavioural change among farmers. Some of the key outcomes include:

i. Improved knowledge and practices on sustainable land management. Participants demonstrated a better understanding of the principles of site selection, land preparation and nursery management. This included the ability to assess soil fertility and drainage, as well as use the appropriate seed spacing, shading and transplanting, which have enhanced seedling survival rates in the field.

ii. Adoption of biochar production and application. The demonstration of a simple, locally fabricated reactor for pyrolysis was particularly effective for farmers in producing biochar without sophisticated equipment.

iii. Use of bio-pesticides and reduction in chemical inputs. This has led to reduced dependency on costly synthetic agrochemicals which has lowered the cost of production, while improving profitability. Furthermore, the practical approach enhanced confidence among the farmers in using bio-pesticides as a viable alternative to conventional chemicals

iv. Strengthened farmer collaboration and market access. This enabled the farmers to form a cooperative group, thereby taking the first step in achieving better market outcomes. The discussions on seasonal market trends and demands equipped them with the knowledge to make informed decisions about when to plant, harvest and sell produced to maximize profit.

v. Empowerment through equipment and resource support which reinforced the learning process and motivated the participants to apply the training outcomes immediately in their individual farms.

Conclusions

Training on agroecology practices and climate change adaptation and mitigation measures is becoming increasingly important to address the current and future challenges of mangrove degradation and habitat loss in the Keta Lagoon Complex Ramsar Site. To this end,

understanding and adopting the different practices and methodology in agriculture will go a long way to contribute to the reduced habitat loss, while ensuring increase in yield and profitability for farmers. As part of addressing these issues, this participatory training cannot be as timely as ever as this.

Appendix- Photos from Training Session

Plate 1: Introduction of the session by Mr. Prosper Antwi of A Rocha Ghana (left) and Mr. Lawrence Ocloo Kissi Tetteh of the Forestry Commission (right)

Plate 2: Participants taken through the concept of soil amendments and the need to add it to their soils


Plate 3: Picture of participants preparing the neem biopesticides


Plate 4: Participants preparing biochar using the locally manufactured biochar reactor

Plate 5: Handing over of farmer support materials by Dr. Mary Otiwaa Osei Asante

Plate 6: Group picture with the entire team