
SUSTAINABLE AGRICULTURE AND FOODS WASTE MANAGEMENT TRAINING

Training Objectives:

1. To help participants understand the meaning and benefits of sustainable agriculture.
2. To enable participants understand food waste, sources and its effects on people and environment
3. To educate the participants on how to reduce and manage food waste in their farms

Course Description

Sustainable Agriculture

- General understanding of sustainability as a concept
- Meaning of sustainable agricultural production
- An over view of farming practices and technologies under sustainable agriculture.

Food Waste Management

- General understanding of food waste
- Negative effects of food waste
- Possible sources/ causes of food waste
- Mitigating mechanisms against food waste

Target Group: Farmers.

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Venue: Trans-Nzoia, Kenya

Lead Facilitator:

Trainer: Mr. Domnic Mang'ula(Msc. Agric Extension- Egerton University, Njoro, Bsc. Horticulture-JKUAT)

1. SUSTAINABLE AGRICULTURAL PRODUCTION

Sustainable agricultural production is simply the agricultural activities carried out to meet the society's food and textile requirements without compromising the ability of future generation to meet their future needs. The principle here is to carry out agricultural activities without affecting the ecosystem for future agricultural productivity. Sustainable agricultural production has to fulfill three main objectives such as healthy environment, economic profitability and social economic equity.

Adopting sustainable agricultural production is important so that the environment is given utmost care so that it can be able to sustain future requirements. Ways in which the farmers can ensure that the environment is healthy are;

- Soil health promotion
- Proper use of water
- Low pollution levels in the environment

As we work on our lands we need to protect and improve on our land so that it can still be safe, and fertile for future crop activities. Some of the common practices that can make our lands unproductive include;

- Brick making- leaving very big holes that may not only be unproductive after the excavation of the soil but can also be dangerous during floods.
- Murram harvesting for road construction-that leaves very big holes that cannot be used for agricultural activities before a thorough rehabilitation is done.
- Deforestation for wood fuel.
- Poor farming practices.

Farmers need to adopt farming practices that can mitigate the effects from such practices on our lands and environment in general. One such practice that has been proved to be use full is conservation agriculture.

Conservation agriculture (CA) is simply a set of soil management practices that minimize the disruption of the soil structure and composition. It has been found to to improve crop yields, while at the same time improve the long term environmental and financial sustainability of farming activities. It has three main principles;

- Minimum tillage
- Proper management of top soils
- Practicing of crop rotation.

Minimum Tillage

This practice ensures that there is little disturbance to the soil structure, thus saving the soil microorganisms and reduces soil erosion. Too much tillage destroys the organic matter of the soil. This practice has been found to improve crop yields and reduce the cost of production, since the conventional tillage requires more money for labor and fuel for the farm machinery. With minimum tillage farmers can save about 30-40 percent in the cost of production.

Proper Management of Top Soil

Proper management of top soils is important to create a permanent organic soil cover to allow for the growth of organisms within the soil structure. This can be done through mulching that once broken will act as fertilizer to the soil. The mulch will also help to reduce erosion of soils through run off. Farmers are also encouraged to grow crops such as potatoes which are vegetative to add organic matter in the soil and also to protect the soil from erosion.

Crop Rotation

Crop rotation will always ensure that not a particular group of nutrients are exhausted from the soil. Some crops may also add nutrients to the soil, examples are legumes which are known to enrich the soils and can be put in the rotational programme after some time. Crop rotation will also help to reduce the build-up of diseases and pests that may arise from doing one crop for a longer period.

Practices that can Protect and Maintain Soils

The following are some of the common land maintenance practices that can be used to realize sustainable agricultural production;

- Planting of agro forestry trees and river bank protection
- Refilling of excavated sites for brick making and murrum harvesting
- Control of soil erosion.
- Soil testing and application of the correct fertilizer type
- Application of animal manure and crop rotation.

2. WASTE MANAGEMENT

Waste management is all about how to minimize waste and how to safely dispose off all the things which are not immediately useful in the farm. Food waste may simply refer to the food that is not used by human beings due to various reasons such as expiry, contamination, infestation/infection, spoilt etc. general farm wastes may come from several sources and may mean the following but not limited to;

- Animal manure
- Farm bi products
- Drugs/ chemicals
- Spoilt products/ foods
- Synthetic products such as plastics
- Used containers

Wastes whether from food products or from farm used assets must be managed well, wastes may have the following negative effects on farms such as;

- Economic loss
- Environmental effects
- Toxological effects on human beings and livestock
- Side effects on consumers
- Rendering land unproductive for agricultural activities eg plastics.

Waste Food Management

Food can be considered a waste when it's no longer useful for human consumption due to several reasons. It's important to note that even if food has reached a point it is considered as a waste it does not mean that its totally useless since some food wastes can still be used in the farm as animal feeds or for improving soil organic matter in the farm. The following factors may lead to food waste in the farm;

- Poor post harvest handling

- Food Contamination
- Diseased food materials
- Unsafe food materials due to high Mrl
- Spoilt food products from bad weather conditions
- Food left over's after consumptions(common in institutions)
- Spoilt food materials arising from poor storage /or infestation

Ways of Minimizing Food Wastes

It is not easy in a farm to avoid food wastes but it is necessary to reduce food wastes where possible, the following mechanisms can be used to reduce incidences of food wastes;

Employing good post harvest practices; this will involve harvesting of farm products at the right time in terms of maturity e.g. for cereals, fruits and vegetables. Careful handling of farm products is also important to ensure that there are no bruises that will result into rejects hence food wastes.

Proper control of pests and diseases in the farms; most consumers are not able to consume diseased farm products. Such products whether animal of fruits, cereals or vegetables are always rejected and disposed as food waste. So its important to ensure that diseases and pests are controlled adequately.

Observation of hygiene standards while handling farm products; this will reduce cases of contamination of farm products that can lead to rejection of large volumes of food supply that can lead to a lot of wastes. Contaminations may be due to traces of bacteria or human faeces that can lead to communicable diseases. We have cases where some vegetables have been in contacts with sewage water which can render them unsuitable for human consumption.

Safe use of chemicals; this will ensure that the chemicals used on the farm are the correct ones and the instructions for their applications are followed properly. It's always important to follow the guidelines on safe use of chemicals to avoid cases of large supply being rejected due the MRL being above the accepted threshold leading a waste.

Proper planning and budgeting; this is important at the farm and family levels so that people only cook what is enough for consumption. Excess food always leads to wastage.

Over budgeting may lead to the supply of excess food that will always lead also may lead to some products remaining in the store rendering them stale

Good storage practices; it is important to store food well so that it does not get spoilt rendering it a waste. This is very important in the case of cereals, which can be affected as a result of poor storage. Storage can be enhanced with the help of refrigeration or use of chemicals/ drugs (cereals) or by use fumigants.

In conclusion, it's difficult to get rid of any waste in a farming set up but it's important to minimize them and create ways of managing the wastes through disposal or recycling for further use. There are standard procedures for disposing of wastes that may not be harmful to the animals and to the environment in general that must be followed.

Training Pictorials on Sustainability



Domnic undertaking training to farmers



Farmers listening to the training

