REPUBLIC OF KENYA

KALRO
Kenya Agricultural & Livestock Research Organization

NAVCDP
NATIONAL AGRICULTURAL VALUE CHAIN DEVELOPMENT PROJECT

GOOD AGRICULTURAL PRACTICES (GAP) IN AVOCADO

Introduction

Good Agricultural Practices (GAPs) are recognised by agriculturalists globally as necessary for achieving sustainable production by applying methods that ensure environmental preservation, the safety and welfare of workers, and food safety for consumers. GAP encompass a wide range of aspects of food biosafety and are generally about the responsible and ethical production and marketing of agricultural produce. GAP and food safety are the keys to accessing regulated markets and are expected to be the drivers in the actualisation of Vision 2030, especially for the horticulture sub-sector. GAP refers to a collection of principles to apply for on-farm production and post-production processes under the four pillars of food safety, food quality, sustainable farm practices, and environmental sustainability.

GAP can be structured into four major components: all farm-based (AF), crop-based (CB), livestock-based (LB), and aquaculture-based (AB). These scopes of GAP cover all production aspects of agriculture. For avocado and other export crops, compliance with GAP in the production systems involves consideration and implementation of requirements under the following topics: record keeping, site history, crop nutrition and soil management, irrigation and fertiliser use, crop protection and postharvest handling, worker health, safety, and welfare, waste and pollution management, risk assessment, quality management systems, and traceability.

Record Keeping

- All documents and records shall be maintained as per the GAP guidelines and shall be legible, unambiguous, and in English (or local language where need be). They shall be well detailed to allow their correct application and shall be accessible to exclusively include all relevant staff.

- All documents and records shall have reference numbers at the footer, and each document shall have a unique name.

- Types of records include an inventory of chemical records, pesticide application records, personnel records, training activities, and trainee records, among others.
- Types of documents include procedures/policies, any physical guide or direction, whether written, videos, physical samples, sample drawings, computer programs among others.

Soil management and conservation

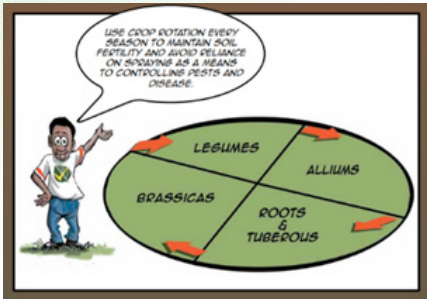
- Soil, air, and water are usually regarded as the most valuable resources on the farm. Their conservation and improvement for sustainable utilisation in crop production is of great importance in GAP to enable both the economic production of crops and to minimise pollution of the environment.
- The soil type, location, climatic conditions of a particular place, and topography are all relatively determined for us; hence, we cannot change them. However, we can manage the soil within the given constraints.

- These dictate the cultivation methods that are appropriate for the site. The farmer should target crops that conserve the soils and crops that conserve water and the soils.

Crop nutrition and soil fertility management

For proper growth and development, crops require adequate nutrition. This requires a fertilisation plan that enables the maintenance of an adequate nutritional state of the crop. This is done through a process of:

- Regular soil sampling and testing
- Guidelines on fertilizer use
- Informed fertilizer application rates
- Targeted use of cover crops and green manure
- Manure management
- Use of compost and other soil amendments
- Knowledge of soil organic matter



Water Management and Conservation

The demand for water keeps on increasing day by day. Hence, it is important to safeguard supplies and protect natural water sources. This can be done through:

- Avoidance of pollution
- Reduction of water use and costs
- Re-use of water where possible
- Water storage

One needs to predict the water requirement through scientifically accepted methods and consideration of expected rainfall and evaporation.

Quality issues of concern in the avocado value chain

These include the presence of pest control products, quality of water used to grow the crop hygiene issues leading to the presence of pathogens, variety, nutrition, organic versus non-organic, local versus exotic and others.

On-farm causes of quality loss

The way the crop (avocado and other crops) is grown and handled on the farm affects its quality status. Some of the most common issues include:

i. Poor crop husbandry

This leads to plants with low vigour and poor health making them susceptible to stresses and having short shelf lives. Produce that did not receive adequate water, poor quality water, poor nutrition and other needs tends to be fragile and non-attractive.

ii. Incorrect use of crop protection products

Products used for the control of pests and diseases of avocado must be approved for avocados. The product label on directions on use must be adhered to strictly. Where banned products are used, this leads to fruits being rendered unfit for human consumption, hence rejection. Where produce is also harvested too early after the use of crop protection products, it leads to the same situation where maximum residue levels are exceeded.

iii. Incorrect time of harvesting

Harvesting too early leads to produce that deteriorates too fast without ripening as the fruits are not physiologically mature. Over-mature fruits lead to having produce that has already started senensis hence leading to rapid aging and ripening before arrival in the market.

iv. Poor harvesting procedures

Harvesting of produce at the wrong position for mature fruit leads to rapid deterioration. In fruits, it is necessary to leave a stalk to prevent rapid desiccation. These also become points of entry for pathogens and microbial contaminants.

Harvesting with the wrong tools also leads to mechanical injury of the produce leading to loss of quality. The use of correct tools and procedures is very important.

v. Produce handling

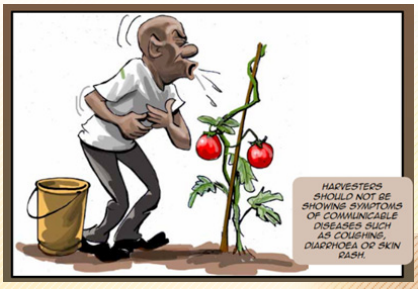
During harvesting and after, produce must be handled with appropriate containers and stored, whether for long term or short period, under shade or refrigerated containers to minimize loss. Some harvesting or transportation containers also injure the produce leading to rapid deterioration.

Always use appropriate clean sanitized produce handling containers

The time between harvesting to the consumer must be as short as possible particularly where refrigeration is impossible.

vi. Hygiene

Keeping the produce free from contaminants helps maintain quality and eliminates risks of food poisoning. Workers handling produce must observe all the prescribed hygiene procedures and must be in a good state of health.



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