



# **PEST AND DISEASES MANAGEMENT IN HORTICULTURE ENTERPRISES IN THE CONTEXT OF GLOBAL AGRICULTURE PRACTICES**

**BY BUSINESS EXECUTIVE, LEA  
GLEN VALLEY HORTICULTURE  
INCUBATOR**

**ISAAC BOK**

**20 MARCH 2025**

LEA HEAD OFFICE

Fairscape Precinct Lot 70667 Building 1,  
Ground floor Unit 2A, Private Bag 191,  
Gaborone Botswana

## Presentation Outline

- ❖ INTRODUCTION
- ❖ WHY GLOBAL G.A.P
- ❖ IMPORTANCE OF IPM
- ❖ GLOBAL G.A.P REQUIREMENTS
- ❖ STEPS IN IPM IMPLEMENTATION
- ❖ CONCLUSION



# INTRODUCTION

Global G.A.P. (Good Agricultural Practices) refers to an internationally accepted set of farm standards and is recognised in more than 100 countries and by the Global Food Safety Initiative (GFSI). The standard offers guidance on sustainable production practices, animal welfare, and worker health and safety as well as customers' health. It advocates for SAFE and SUSTAINABLE agriculture. Unlike with other commodity or service standards, **Global G.A.P is not just about the quality of the final product, but also considers production processes that went into coming up with the product.** This scheme can be implemented by a single farmer growing a single crop to a group of farmers. Employee **training** on the requirements of G.A.P and **Record keeping** are critical to achieving compliance / certification.

Although these standards are voluntary, many buyers, fresh produce distributors and risk-adverse institutions such as schools and hospitals, etc. are now beginning to independently require growers to be G.A.P certified.

# INTRODUCTION

**Pests** are unwanted organisms, including plants (weeds), animals (insects, rodents, etc.), and microorganisms (bacteria, viruses, fungi), that negatively impact crops, while **diseases** are disorders that disrupt normal biological functions.

Pests and diseases although being a nuisance, are an important part of the agriculture-ecosystem. These have been known to cause damages to crops resulting in reduced yields and quality of produce and economic losses to arable farming enterprises in general. The management of these is, therefore, critical for sustainable horticultural operations.

# IMPORTANCE OF GLOBAL G.A.P

The Standard takes into account not only the quality and quantity of the produce obtained from a production facility but also the care and attention gone into integrating pre-harvest practices such as soil & water management, nutrient management and pest management, harvesting, post harvest handling and other logistics.

The objective of G.A.P standards and regulations include;

- Ensuring safety and quality of produce in the food chain
- Optimizing resources use, improving workers' health and working conditions
- Creating / accessing new market opportunities for farmers and exporters in developing countries. This is facilitated by the GGN given to certified growers

The entire operation is intended to make farming practices environment friendly.



# IMPORTANCE OF GLOBAL G.A.P

Enables producers to make their systems more sustainable through improved system implementation.

1. Gives buyers a strong sense of trust based on the assurance of having a certified system in place.
2. Visibility of the certified producers on the global database giving an access to local and global customers, markets, suppliers and retailers.
3. Development of basic infrastructure at the Farm level
4. Uniform approach to farm operations across farms regardless of their sizes.
5. Traceability of food chain - the produce must be traceable for its origin including all inputs
6. Worker safety and welfare.

# GLOBAL G.A.P

Four Pillars of G.A.P;

- Economic Viability
- Environmental sustainability
- Social acceptability
- Food Quality and safety

# G.A.P Certification Requirements

1. Sustainable farm management operations to ensure safe produce from harvest to post-harvest stage

- Use of clean, uncontaminated water for irrigation from safe source
- Testing of irrigation water, soils, etc.
- Produce to be tested for pesticide residues

2. Environmental Sustainability

- Minimizing the environmental impact of farming practices, including responsible use of water, pesticides, and fertilizers.
- Requires that produce be tested for pesticide residues

# G.A.P Certification Requirements

## 3. Maintenance of Worker Health, Safety, and Welfare:

- Ensuring a safe and healthy working environment for all employees, including providing appropriate training and resources.
- Provision of ablution facilities within farm
- Provision of PPE to workers
- Maintain worker hygiene by following good hygiene practices such as
  - hand washing
  - personal hygiene
- Farm workers must be aware of microbial food safety risk

# G.A.P Certification Requirements

## 4. Traceability

- Implementing systems to track and trace products throughout the supply chain, allowing for easy identification of the product and its origin.
- Record keeping, particularly on crop management and agro-chemical use

## 5. Minimizing Pesticide Use

- Encouraging the use of integrated pest management (IPM) strategies to reduce reliance on synthetic pesticides.

# IPM APPROACH

The use of Integrated Pest Management (IPM) as an approach to managing crop pests and diseases is critical in achieving quality produce while at the same time ensuring the environment is protected. IPM involves the use of different approaches as a strategy to maintain pest population, diseases and weeds below a **reasonable damage threshold level**.

In the past, pest and disease control measures were aimed at **eliminating these organisms** with little regard to the environment and the safety of consumers. This concept is central to the management of pests and diseases in crops using the Global G. A. P approach.

IPM Programs (set of tools) strives to replace broad spectrum practices with sustainable ones.

## WHY IPM



Previous paradigm relied on blanket spraying of harmful chemicals to eliminate pests. Many of what were considered the most effective pesticides were persistent and broad spectrum. The use of these substances, therefore, brought about other problems;

- Accumulation of pollution as the active ingredient moves up the food chain (persistent)
- Terrestrial and Aquatic environments affected as chemical 'drifted' and/or dissolved in water bodies.
  - DDT, Curator
- Resistance to pesticides due to repeated use

# IPM IMPLEMENTATION PHASES

There are three (3) main phases in the implementation of IPM

## 1. Planning and planting

This involves measures dealing with the prevention of the introduction and/or spread of pests and disease-causing agents. Example of these interventions include;

- healthy seedlings/certified seeds
- Tolerant / resistant crop cultivars
- Good husbandry practices
- Crop rotation
- Restrict access to production area by visitors
- Construction of Foot bath
- Testing of irrigation water, soils and produce, for contamination or residue levels
- Etc



## 2. MONITORING

The objective of this measure is to establish the presence and intensity of pests / disease in the production space. This will inform the farmer on the most appropriate control measure to adopt, if necessary. This will ensure timely action to prevent or address problem before the situation gets out of hand. It entails;

- Scouting - Inspection of crop and surroundings
- Sticky traps and pheromones (lures)





## 3. EXECUTION OF CONTROL MEASURES

Based on the monitoring observations, decide whether the number/infestation level of pests warrant their control. The type of control method chosen will depend on type of pest(s)/disease, level of infestation and environmental conditions. IPM adopts the use of various approaches in managing pests and diseases.

### 3 (a). Mechanical control

- This involves physical removal of the pest (s), affected plant part or weeds
- **Using traps**
- Barriers

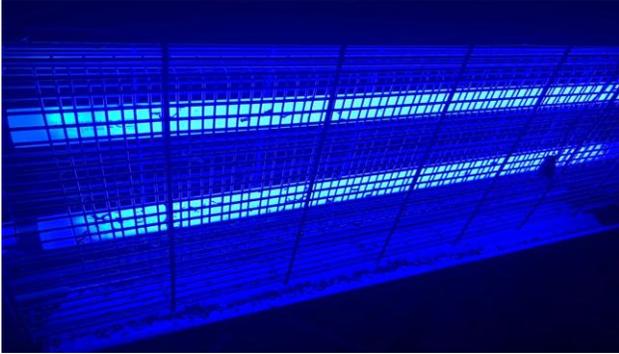


# CONTROL MEASURES cont...

## 3 (b). Biological control

Refers to the use of living organisms to reduce the number of pests. Example include the use of;

- natural enemies/predators



# CONTROL MEASURES contd...

## 3(c). Cultural control

- Removal and disposal of crop debris
- Sterilization of tools e.g. secateurs
- Use of insect exterminators / lights
- Weeding
- Crop rotation
- Grafting – using pest resistant root-stocks
- Restrict farm access by visitors



# CONTROL MEASURES cont...

## 3 (d) Chemical control

This intervention is normally recommended as a last option considering factors such as costs, possible risk they pose to users, consumers and environment as well as possibility for development of insect resistance, etc.

- Adopt an anti-resistance management programme by alternating chemicals blocking of applications of a chemical from a specific mode of action (MoA – referring to specific IRAC codes)



## CONTROL MEASURES cont...

- Eco-friendly chemicals that don't kill beneficial insects should be preferred to the older, harsher alternatives
- Only use registered chemicals and adhere to the relevant label dosages to prevent under- or overdosing of a chemical.
- Use adjuvants (wetting agents, buffers, etc.) to improve application efficacy
- Observe withholding period to eliminate chances of poisoning

# CONCLUSION

- Global G.A.P. is an internationally recognized standard for food safety, traceability, and environmental protection on farms, and its requirements for farmers include adhering to principles of sustainable production, animal welfare, and worker health and safety
- The adoption of IPM approach in combating pests and diseases is an integral part of Global G.A.P
- Record keeping on production activities facilitates traceability through an integration of the food chain
- Global G.A.P certification can be acquired by an individual farmer or a group of farmers to ensure uniformity in approaches across farming operations for improved reputation in both local and international markets as producer of good quality and safe produce

**Thank you.**

