

Chapter 2 PLANT PESTS & ITS MANAGEMENT

Summary

- Know the main groups of common plant pests and their damages.
- Understand various types of pest management measures.

WHAT IS A PLANT PEST?

According to the International Plant Protection Convention, the definition of a plant pest is “*any species, strain or biotype of plant, animal or pathogenic agent injurious to plants or plant products.*”

Main Groups of Plant Pest

The four main groups of plant pests are weeds (undesirable plants), invertebrates (insects, mites, ticks, spiders, nematodes, snails and slugs), disease causing agents or pathogens (bacteria, fungi, viruses, phytoplasmas, viroids) and vertebrates (birds, reptiles, amphibians, fishes, rodents and other mammals). Only pesticides for control of the first three groups will be covered under this guidelines.

Before using any pesticide, know the plant pest that you want to target.

DAMAGES CAUSED BY PLANT PEST

Some of the common symptoms caused by insects are stem or leaf galls, bronzing, leaf mining, chewed , leaf curling or rolling



On the other hand plant pathogens cause disease symptoms such as leaf spots, leaf blight, powdery mildew, downy mildew, die-back, rot, damping-off, anthracnose or frog eye's spot, mottling, wilt etc.



PEST MANAGEMENT

Once a pest problem is identified, we have to select methods that are the most effective and the least harmful to human beings and the environment. Whenever possible, we should try to combine the use of several compatible methods into an **Integrated Pest Management (IPM)** program, and target the pest at the most susceptible stage for control.

Various Pest Management Methods

Biological Control

- Using naturally occurring predators, parasites and pathogens as biological control agents to regulate pest population.

Cultural Control

- To alter the environment, the condition of the host plant or the site or the behaviour of the pest to prevent or suppress an infestation or infection.

Mechanical Control

- Use of traps, screens, barriers, fences and nets to prevent pest activity or remove pests from an area.

Chemical Control

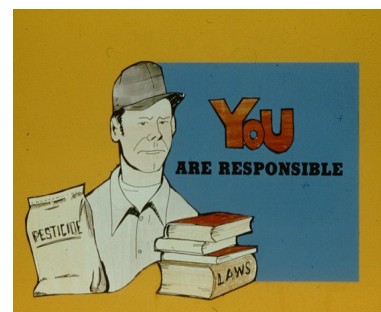
- Pesticides often play a key role in pest management programme and frequently may be the only control method available.



Chapter 3 PESTICIDE REGULATIONS

Summary

- Know the local laws and regulations related to the use of pesticides and the related penalties.
- Know the duties of a pesticide operator.
- Know the requirements for storage and disposal of pesticides.



Usage of pesticides in Singapore are governed by the Agri-Food & Veterinary Authority, the National Environment Agency and the Public Utilities Board. The Agri-Food & Veterinary Authority of Singapore (AVA) controls agricultural pesticides used only in the commercial cultivation of plants in Singapore under the Control of Plants Acts and the Control of Plants (Registration of Pesticides) Rules. Non-agricultural pesticides do not come under the purview of AVA.

The Pollution Control Department (PCD) of the National Environment Agency (NEA) controls pesticides listed as hazardous substances under The Environmental Protection and Management Act (EPMA). A Hazardous Substances Licence is required for any person who wishes to import, sell or export, any hazardous substance controlled under the EPMA. A Hazardous Substances Permit is required for any person who wishes to purchase, store and/or use any hazardous substance controlled under The Environmental Protection and Management (Hazardous Substances) Regulations. NEA can be contacted at Tel: 1800 2255 632, email: contact_nea@nea.gov.sg for details on the import licence and permit.

PUB regulates the use of pesticides near the water catchment areas. PUB can be contacted at Tel: 62358888, email: pubone@singnet.com.sg for enquiry on the use of pesticides near the water catchment areas.

THE CONTROL OF PLANTS ACT

Under the Control of Plants Act (Chapter 57A) Part III Section 11, the use of pesticides is controlled. The purpose of the Act and Rules is to regulate the sale and distribution, storage, transportation, application and disposal of pesticides in the best interest of the public.

No person shall use any pesticide in the cultivation of any plants unless

- the pesticide is registered with the Director-General of AVA.
- he is a certified pesticide operator by AVA or the use is supervised by such certified pesticide operator.

Any person who uses any pesticide shall ensure that

- The pesticide is properly stored in the prescribed manner.
- The pesticide container is disposed off in the prescribed manner and
- The pesticide residue on any plant cultivated does not exceed the prescribed level.

PENALTY

Any person who is guilty of an offence under the Control of Plants Act and Rules shall be liable on conviction to a fine not exceeding S\$10,000 or to imprisonment for a term not exceeding 3 years or to both.

- Any person who applies or uses any pesticide under his supervision is given sufficient information, instruction and guidance as to the application or use of the pesticide.

DUTIES OF AN AVA CERTIFIED PESTICIDE OPERATOR

The duties of every pesticide operator is to ensure that

- Any pesticide applied or used by him or by any person under his supervision is registered with the Director-General of AVA.
- The application or use of any pesticide by him or by any person under his supervision is carried out in accordance with the instructions specified by the manufacturer of the pesticide.
- A record relating to the application of any pesticide on the farm is made and kept in such manner as the Director-General may require and produce any such record to the authorised officer for inspection.

LEGISLATIVE REQUIREMENTS

*** Requirements for Storage of Pesticide**

Any pesticide used in the cultivation of plants shall be stored

- In a dry and well-ventilated place away from direct sunlight or any dwelling house or watercourse or any food, animal feed or other combustible material;
- Under lock and key and out of reach of children;
- In its original container and with its original label intact;
- With a clear and conspicuous signage indicating that it is a place for storage of pesticides.

*** Requirements for the Disposal of Pesticide**

- No pesticide, including unused or unfinished concentrates or spray solutions, shall be discharged directly into any watercourse, water source or drain, or in a manner that may contaminate the environment or pose a hazard to livestock, wildlife or human health.
- The disposal of any pesticides shall be carried out by a chemical disposal company approved by the Director-General.

*** Requirements for the Cleaning and Disposal of Pesticide Container**

- Any container which has been used to contain any pesticide shall be emptied and rinsed at least 3 times before being disposed off.
- The water used to rinse the container shall not be discharged directly into any watercourse, drain or water source.
- The container shall not be used to contain water for human or animal use, food or animal feed and shall be rendered unusable before disposal.
- The disposal of any container used to contain any pesticide shall be carried out by a chemical disposal company approved by the Director-General.

For more information, please refer to the Control of Plants Act (Chapter 57A) and the Subsidiary Legislation available at www.ava.gov.sg -> Legislation.