CHAPTER THIRTY ONE

Crop Protection:

INTRODUCTION:

- This is the study of the living and non living things that cause damage to our crops, and how to control them.
- These therefore include pests and diseases.
- A pest is anything that cause economic damage to our crops.
- Disease is anything that causes deviation from the normal growth or in any of the structures or organs of the plant.

Groups of pests:

- Crop pests can be put into four groups and these are:

(1) Rodents. (3)Nematodes.
(2) Birds. (4) Insects.

Rodents:

- These are small animals which move on four limbs and have strong teeth.
- They gnaw and chew stored cereals, nuts, tubers and so on.
- Rodents that cause damage to agricultural crops include rats, grasscutters, mice and squirrels.

Control of rodents:

- Rodents can be controlled on a farm by:
  (a) setting traps to catch and destroy them.
  (b) creating a barrier such as a fence to keep them off the farm.
  (c)poisoning them

Birds:

- This group of pests feed mainly on grains or cereals and fruits.
- They also eat seeds which are germinating.

Control of birds:

- They can be controlled on the farm by:
  (1) Creating noise to frighten them away.
  (3) Using scarecrow to drive them away.

Nematodes:

- They are also called eelworms and they live in the soil.
- They cause damage by feeding on the roots of plants and their feeding habits cause swellings.
- They also transmit soil-borne diseases to crops.
- They attack crops such as pineapple, cowpea and tomato.
- Nematodes can be controlled by:
  (1) Using chemicals.
  (2) Soil sterilization.
  (3) Crop rotation.
  (4) Allow fallow periods or fallowing the land.
  (5) Growing marigold plants, which are plants which release substances which are poisonous to the nematodes into the soil.

Insects:

- They form the largest group of pests.
- Despite the fact that many insects are pests, there are some which are of benefit to man.
- Some of these benefits are that some of them pollinate crops, and produce useful products such as honey and silk.
- Apart from that, some insects are used for sciencetific experiment.
- Insects are grouped into three and these are:
  (a)Chewing and biting insects.
  (b) Sucking and piercing insects.
  (c) Boring insects.

Biting and chewing insects:

- This group of insects has strong mouthparts called mandibles and maxillae.

- These strong mouthparts are used in biting and chewing leaves and so on.
- Examples are caterpillar, grasshopper and cockroach.

Boring insects:

- They have special mouthparts called proboscis, which is used to pierce into fruits, leaves and tender stems.
- Examples are capsids, whiteflies and aphids.

Boring insects:

- This group of insects creates holes (burrow) in stems or fruits of plants.
- They have strong mouthparts which they use in boring into growing plants, fruits and stored grains.
- Examples are weevils and beetles.

Storage pests:

- These are those pests that are found in the place, where harvested crop produce are stored.
- They include mice, maize weevil, cockroach, rat and rice weevil.

Effects of pests on crop production:

- This is also referred to as the economic importance of pests.
- Some of these effects or economic importance are as follows:

(1) They reduce crop yield.

(2) They render crops unwholesome which affects their market value.

(3) They cause an increase in the cost of production of crops, since the farmer has to buy chemicals to control them.

(4) Chemicals used to control pests, can have an adverse effect on both crops and the soil.

(5) They can destroy the whole crop farm.

(6) They can transmit disease causing organisms such as bacteria and viruses.

General control of crop pests:

- This include:

(1) Quarantine control:

- In this there is a law which bans the movement of plant parts from one area to another.

(2) Cultural method:

- These are farming techniques which control pests and these includes:
  (a)Crop rotation which breaks the life cycle of pests.
  (b) Planting resistant varieties of crops.
  (c) Practicing good sanitation such as the draining of stagnant water in the farm, to avoid the breeding of insect pest.
  (d) Ploughing farmlands in order to destroy the eggs and certain earth burrowing creatures such as the millipede.

(3) Mechanical method:

- This does not involve the application of chemicals and includes:
  (a)Hand picking or collecting and crushing pests when they are a few on the farm.

Insects	**Crops attacked.**	**Damage caused.**
Weevils.	Cereals	Bore into seeds of cereals.
Mealy-bugs.	Mangoes/ oranges	Render fruits unwholesome.
Grasshopper, caterpillar and crickets.	Okro leaves, garden eggs leaves,, maize plant, e.t.c.	They mine leaves i.e. they eat the soft parts of leaves, leaving the skeleton or veins. They also cut down tomato seedlings and terminal buds.

Butterfly/ moth	Fruits and flowers of plants	They pierce into crops or fruits which makes them rot.
Beetles	Tubers and okro	They spoil tubers and chew leaves
Millipedes	Tubers /roots	They eat tubers and roots.