

(especially potatoes) in a cold storage to avoid the attack of insect pests. The temperature of cold storage is about 4°C - 0°C or below, insects do not attack the stored products.

2) Humidity:

There is an optimum level of humidity at which insects can carry out their growth and development. At very high or very low humidity level, the insects cannot carry out their normal activities and may be killed. High humidity can be obtained by heavy irrigations and low humidity can be obtained by P₂O₅ application or sun drying etc.

3) Light:

Light had been used for the control of many insect pests in the form of light traps. If we hang a bulb or a lamp in the field at night time, most of the insects like moths, will be attracted towards this light. A container of kerosene oil is placed below the source of light. When the insects are attracted towards this light, they first strike the source of light and then fall down in the container. Thus they are killed and the crop is saved from these insects. Light is also being used in the form of radiation energy or nuclear energy to kill or sterile the insects. When the insects are treated, they become sterile and are not capable of further reproduction.

2.5.2.3 MECHANICAL CONTROL

It is the control of insect pests by special devices, machinery and manual operations. The following practices are used to control the insects:

1. Hand Picking:

It is the picking of insects by hand and then killing them. In this case the eggs, sluggish larvae and adults of certain insects are picked up and then destroyed. For example egg pods and adults of mango mealy bug which are laid in the soil under the mango trees are collected by hands and destroyed. Large sized larvae (e.g. lemon butter fly) can be successfully controlled by this method.

2. Netting or Bagging:

Some insect pests are collected with aerial hand nets or with very large field bags e.g. rice

grasshoppers, rice bugs, etc.

3. Trapping:

The turnips are chopped and heaped in the fields. At night, cutworms come out to damage the crop and at day time, they hide in those chopped potatoes or turnips. During day time, the cut-worms can be collected from these hiding places and may be killed.

4. Physical Barriers:

Physical barriers likes constructing of mud walls, digging of deep trenches around the fields and filling them with water or use of tin sheets or iron sheets around the field, may be used to check the entry of army-worms, locust, hoppers etc.

5. Physical beating:

In old times, some insects were killed by physical beating e.g. locust, flies are killed by this method.

6. Rope dragging:

Some insects are killed by rope dragging. In cotton crop, two persons drag a rope over the crop. The infested bolls fell down on the ground. Later on, the field is irrigated and the boll worms present in the bolls on the ground are drown in the irrigation water and then removed from the field.

7. Drum beating:

High intensity sounds are used to save the crops from the damage of certain insect pests. Drums are beaten to avoid the sitting of locusts on the plants.

8. Use of Bands:

There are many types of bands which are used for the control of the insects. Out of these bands, the following two are worth mentioning:

(i) **Sticky Band:** Any sticky material can be used around the tree trunks in fruit orchards to prevent the insects from climbing up the tree. At present, sticky materials on polythene sheet are being used against the mango mealy bug.

(ii) **Slippery Band:** In this case, slippery polythene sheet is used around the tree trunks which stop the upward climbing of the pests.

2.5.2.4 BIOLOGICAL CONTROL

It is the control of insect pest by encouraging and utilizing their natural enemies (predators/parasitoids/parasites). There are four methods of biological control:

1. By importing natural enemies from abroad and then releasing them locally against a particular insect pest.
2. By collecting natural enemies from one part of the country and releasing them in another part of the country.
3. By rearing natural enemies in large numbers in the laboratory and then releasing them outside in the field against a particular pest.
4. By collecting parasitized stages of the particular pest (egg, larva and pupa) for emergency of parasitoids in the laboratory and then releasing them in the field against that particular pest.

The biological control can be done with the natural enemies or many other living organism such as birds, snakes, lizards, toads, fungi, viruses, bacteria, protozoa etc.

Entomophagous insects

The insects which feed upon other insects are called entomophagous insects. These are of three types:

- Parasites
- Predators
- Parasitoids

Parasites: The insects which feed in or on the body of other insects are called