

# **SELECTIVE USE AND APPLICATION OF CHEMICAL PESTICIDES IN PEST MANAGEMENT**

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## **INTRODUCTION**

### **Advantages**

1. They are usually rapid in effect so that action can be taken quickly against pest problems which threaten a grower's crops.
2. Application of pesticides can provide a very low level of pest control and thus enable high quality blemish free produce to be grown.

### **Disadvantages**

1. Pesticides for the most part are not very selective for the pest to be controlled and to some extent also affect other living organisms.
2. Pesticides may also eliminate natural enemies of potential pests so that they are raised to pest status.
3. Many are toxic to higher animals resulting in harmful effects on wildlife and man.
4. Widespread ability of pest species to develop resistant strains.
5. Rapidly increasing costs of pesticides are drastically making them unprofitable to use.
6. Need for re-application of pesticides every growing season.

## **TYPES OF PESTICIDES**

1. Chlorinated hydrocarbon (organochlorines) e.g. DDT, Aldrin, Dieldrin, Edrin, Toxaphene.

2. Organophosphates e.g. Malathion, Diazinon, Metasystox.
3. Carbamates e.g. Sevin (carbaryl), Furadan, Baygon.
4. Synthetic pyrethroids e.g. Sumicidin, Ambush, Decis, Cymbush.
5. Insect Growth Regulators (IGRs) e.g. Dimilin.
6. Insect attractants e.g. Geraniol and Eugenol, Pheromones (codalure, gossypure).
7. Microbial insecticides e.g. B.T (Bacillus Thuringiensis)

## **PESTICIDE FORMULATIONS**

### **Insecticides**

1. Sprays (insecticides, herbicides, fungicides)
  - (a) Emulsifiable concentrates (E.C)
  - (b) Wettable powder (W.P)
  - (c) Water miscible liquids
  - (d) Flow or granular suspension (F)
  - (e) Water soluble powders
  - (f) Oil solutions
  - (g) Ultra low volume concentrates (ULV)
2. Dusts (insecticides, fungicides)
3. Granular (insecticides, herbicides)
4. Aerosols (insecticides)
5. Fumigants (insecticides, nematicides)
6. Encapsulated insecticides
7. Insect repellants

8. Baits for grasshoppers, crickets, ants, slugs

**Choice of formulation should be determined by:-**

1. Convenience to the user
2. Availability of equipment, especially in developing countries
3. Reduction of drift
4. Phytotoxicity, as some plants or varieties are susceptible to certain solvents or mainly by impurities
5. Persistence of formulation which is improved by “stickers”.
6. Use of formulations of low concentration reduces the toxic hazards.
7. Availability and price.
8. Whichever formulation is chosen, user must read the instructions with great care before opening the container.

A formulation should be chosen mainly for effective application, for safety to the applicator and the environment.

**Role of pesticides in Integrated Pest Management:**

Sole reliance on pesticides for control of pests may lead to the following problems:-

1. Selection of resistance to chemicals in pest populations.
2. Resurgence of treated populations.
3. Outbreak of secondary pests.
4. Destruction of beneficial predators, parasites, pollinators and other microorganisms.
5. Hazards to applicators, domestic animals, fish and wildlife.
6. Expense of pesticides, involving recurrent costs of equipment, labour and materials.

**When using chemical control, consider the following:-**

1. Use a pesticide that is intrinsically more active to the target species than to non-target species. Selective chemicals, rather than pesticides with broad spectrum, must be used e.g. systemic pesticides.
2. Improved timing of application to avoid fixed schedules of spraying, pest forecasting and pest assessment is required. Selective application and

placements should be done to avoid killing of natural enemies. A pesticide needs to be applied to particular "target" areas occupied by an insect pest, disease or weed.