ACQUAINTANCE OF INSECTICIDE FORMULATIONS

Objective:

To get familiarized with the different formulations of insecticides.

It is essential that the toxicant must be amenable to application in an effective manner so as to come into direct contact with the pest or leave an uniform and persistent deposit upon the plant surface. The toxicant is to be made available in a diluted form or in a form easily distributed. Therefore the compound containing the toxicant must be formulated in a form suitable for use as a spray, dust or fumigant.

Common formulations of pesticides are:

- 1. **Dusts:** In a dust formulation, the toxicant is diluted e ither by mixing with or b y impregnation on a suitable finely divided carrier. The carrier may be an organic flour or pulverized mineral or clay.
- 2. **Granular:** In a granular formulation, the particle is composed of a base as an inert material or v egetable c arrier i mpregnated or f used with the t oxicant which is re leased from the formulation in its intact form or a s it disintegrates giving controlled release. Granules are prepared in three ways:
 - i) Impregnation technique
 - ii) Agglomeration technique
 - iii) Stick-on technique
- 3. Wettable p owders (W P) or w ater d ispersible p owders (WD P): It is a powder formulation w hich y ields a ra ther s table s uspension w hen diluted w ith w ater. I t i s formulated by blending the toxicant with a diluent such as attapulgite, an auxillary material and surfactant.
- 4. Water soluble powder (SP or WSP) : It is a powder formulation readily soluble in water. Addition of surfactants improves the wetting power of the spray fluid. This formulation usually contains a high concentration of active ingredient and therefore convenient to store and transport.
- 5. Emulsifiable c oncentrate (E C): The f ormulation c ontains the t oxicant, a s olvent, an emulsifying agent and other spray additives. It is a clear solution and yields an emulsion of oil-in-water type when diluted with water to spray. When sprayed the solvent evaporates quickly leaving a deposit of toxicant from which water also evaporates.
- 6. Suspension concentrate or Flowable (F): Tis formulation is developed when an active ingredient is insoluble in either water or org anic solvents. The active ingredient is milled with a solid carrier (e.g. inert clay) and subsequently dispersed in a small quantity of water.

- 7. Solution c oncentrate (S C): The l iquid f ormulation c ontains the a ctive ingredient in a water m iscible s olvent. When m ixed with water during s praying the s olvent dissolves in water leaving the active ingredient alone. Addition of a surfactant provides wetting power.
- 8. **Concentrated i nsecticide l iquids:** The t echnical g rade of t he t oxicant a t hi ghly concentrated level is dissolved in non-volatile solvents. A more volatile solvent is also added to enable solution and drop formation.
- 9. **Microencapsulation:** Particles of a pesticide, either liquid or dry, surrounded by a plastic coating are with water and applied as a spray, the toxicant is released slowly.
- 10. Aerosols: The toxicant is suspended as minute particles (of size from 0.1 to 50 microns) in air as a fog or mist. The toxicant is dissolved in a liquefied gas under pressure.
- 11. **Fumigants:** A c hemical c ompound w hich i s v olatile at ordi nary t emperatures a nd sufficiently toxic is known as a fumigant. Fumigants are mostly used against storage pests and in confined enclosures.

Record Work:

- 1. Observe and note down the different formulations of insecticides displayed in the laboratory. Also observe the toxicity level and other instructions on the cover.
- 2. Collect the information on recent and new formulations that are available in market along with the brochures.

Group of	Trade name	Common name	Formulation
Insecticide			