

EVALUATION OF TOXICITY OF INSECTICIDES

Higher concentration of all the insecticides are invariably toxic to most of the biological systems but such concentrations of insecticides can not be used. Therefore, it is necessary to find out a suitable dose which could bring about a desired effect. There are methods to find out these doses which are expressed in such a way that these indicate the rate of killing to the pests. A few commonly used expressions and terms are as follows:

- LD₅₀ - This value represents the lethal dose of the poison per unit weight which will kill 50 per cent population of test animals. It is expressed as milligrams per kilogram of body weight.
- LC₅₀ - In some cases for example in mosquito larvae, fishes etc. the exact dose given to animal can not be determined. Therefore, the lethal concentration of toxic compound mixed in external medium i.e. water that kills half of the population of test animals is used.
- LT₅₀ - This term represents the lethal time required to kill 50 per cent population of test animals at a certain dose or concentration.
- KD₅₀ - It represents the median knockdown dose sufficient to kill 50 per cent population of test animals
- KT₅₀ - It represents the median knockdown time required to kill 50 per cent of test animals for a given dose or concentration of toxic chemical.
- ED₅₀ - In such cases where death rate is not required but the effects are measured on the efficiency of vigour and reproduction of test animals then the expression ED₅₀ is used. For example, chemosterilants reduce the vigour and make the test animals sterile. The dose of such a chemical which brings sterility in 50 percent population in test animals will be the value of ED₅₀.

- EC₅₀ - It is the concentration of chemical resulting sterility in 50 per cent of test animals.
- Toxicity - Ability of a chemical to bring about changes in the biological system of the target animal.
- Acute toxicity - It is the acute stage of poisoning due to the application of a single dose.
- Chronic toxicity - It is the condition of toxicity which lasts for the entire life of the target animal and has the accumulating effect of small repeated doses.
- Hazard - It is the probability of being harmed due to the use / exposure / handling of the toxic substance.
- Risk - It is the degree of physical, biochemical and histochemical changes acceptable in terms of usefulness of a chemical and its possible effects on public health.