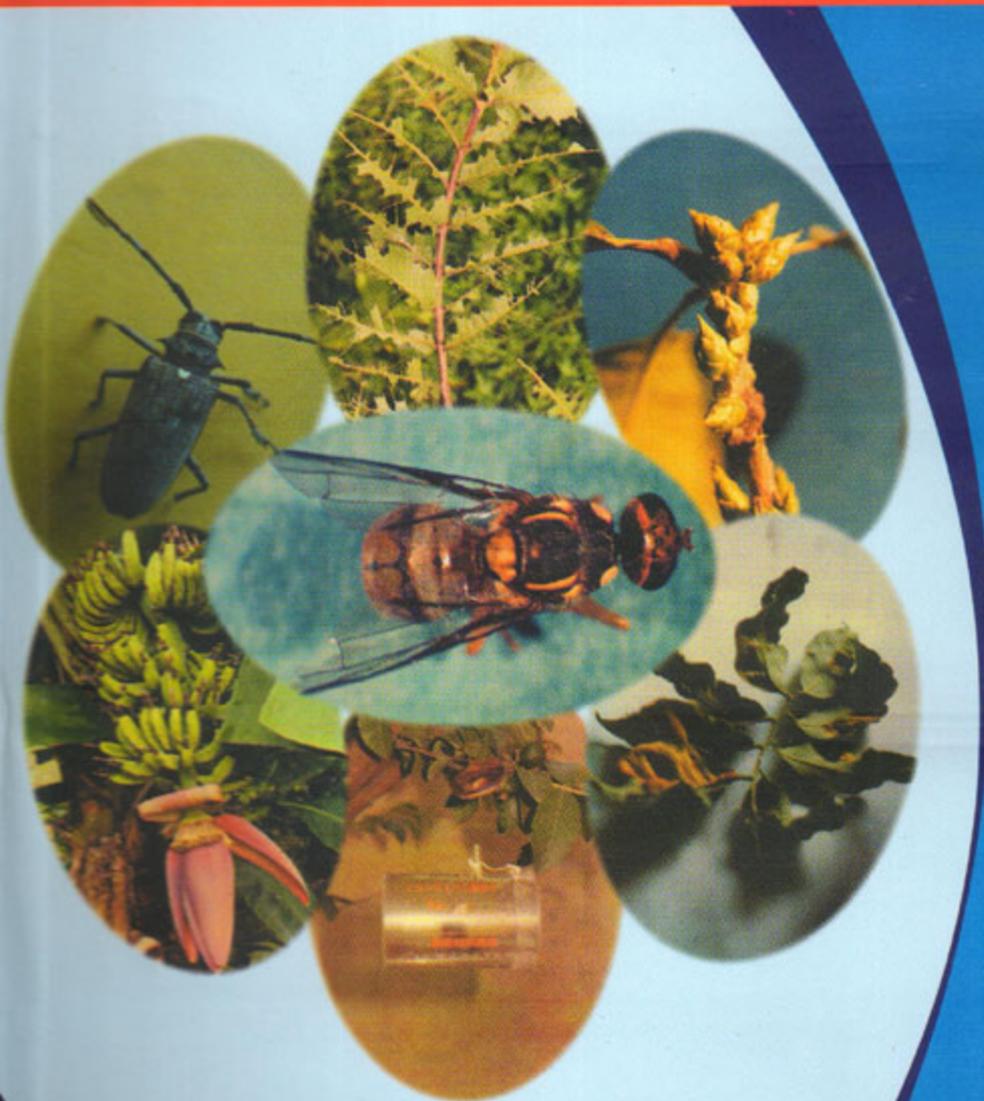


PEST MANAGEMENT



M. L. AGARWAL

PREFACE

Pests evolved prior to human on this earth, however the term came into existence when the interest of man clashed with them. An overview of the world of pest animals reveals their great diversity and constancy. Efforts made by man to cope the problems posed by pests also have a long history. Presently we are faced with acute problem of saving our crops, trees and many other items from the attack of pests. Further, with an increase in global population and development of new scientific innovations, there has been considerable advancement in the pest management practices. This had also resulted in the discoveries of many new pesticides. Consequently many new terms related with pest management were also evolved. The terms related with pest management, names of pests and pesticides are not available to the interested persons at a glance. An attempt has been made to bring all such terms in the present text.

Many publications and dictionaries/glossaries include the terms from all major subdivisions of entomology or zoology. The present compilation of terms is rather specific and includes the terms pertaining to pests, pesticides and other terms related with pest management practices. This glossary has been written by using the term pest in its broadest sense (including insects, nematodes, acarines, birds and mammals).

This glossary contains about 4,680 terms. Some terms have more than one definition while some others differ depending upon the subdivisions of science in which the term has been used. Most terms are enumerated in context with pest management. The pests and natural enemies dealt in the text are mainly those, known from India. The status of pesticides cited in the text is as on 1st June, 2005 in India. It is hoped that the manner of presentation and conceptual paths followed in the glossary will be useful for the readers in searching any term. Some words from Hindi language have been included and cited

in italics. This glossary hopefully will prove an asset for the students, teachers, researchers, scientists and industrialists.

A few terms related with pest management may be missing or may not be defined as peers' thoughts. Suggestions received will certainly encourage me and help in improvement of future editions. I shall consider this effort successful and gratifying if the book serves the purpose for which it is intended.

Extensive survey of literature and publications was made while compiling the present text and the author is grateful to all those whose works were consulted for the purpose.

I am thankful to Dr K.R. Maurya, Dean, faculty of Agriculture, Rajendra Agricultural University, Pusa for inspiration and encouragement. I am also thankful to Dr S.K. Jain, Officer In-charge, Aris-Cell and Shri R. C. Sharma, Assistant Librarian (Selection Grade), Rajendra Agricultural University, Pusa (Samastipur) for their kind cooperation. I also extend my gratitude for the cooperation received from other colleagues.

Thanks are also due to Mrs. Geeta Somani and Dr. L.L. Somani of Agrotech Publishing Academy, Udaipur for their keen interest and publishing this glossary in a short time.

I cannot forget the wholehearted cooperation received from my family members during the course of writing the present text.

M.L. Agarwal

Dedicated to the memory of

Grandfather

Late Shri Harcharan Das Agarwal

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A

Abamectin. An avermectin isolated from fermentation of *Streptomyces avermitilis* (Fam. Streptomycetaceae) and has insecticidal and acaricidal properties. It acts as contact and stomach poison and used against motile stages of mites, leaf miners, suckers, Colorado beetles, etc.

Abiotic factors. These are non-living or climatic factors which exercise a dominating influence on development, longevity, reproduction, fecundity, etc. of the pest population; see biotic factors.

Abnormal. Deviating from the typical condition.

Abocide. A chemical used to kill woody trees or woody shrubs.

Aborted. Pertaining to the life terminated in early stages of development.

Abortion. The condition of arrested development of structure, organ or organism, such that development is imperfect, malformed or prematurely terminated.

Abrasiveness. It is the property of certain carriers and diluents to cause wear of processing equipment, metering devices and orifice of the pesticide application equipment. This significantly changes the flow characteristics of the nozzle and results into inaccurate applications.

Absolute. Free from contamination.

Absolute population estimate. An estimate of population size expressed as absolute number per ground-surface area or per unit of volume (e.g. number per hectare or number per litre of soil); see relative population estimate.

Absorb. To soak up or take in a liquid or powder.

Absorption. The movement of a chemical/pesticide into plants, animals (including humans) and microorganisms.

Absorptive clay. Special type of clay powder that can take up chemicals and hold them.

Acariasis. Any skin disease caused by infestation with acarines.

Acaricide. A pesticide that kills mites and ticks.

Acarina. An order of class Arachnida containing mites and ticks.

Acaroecidium. A gall formed by gall mites.

Acarologist. Specialist in acarines.

Acceptable daily intake (ADI). The level of a pesticide residue to which daily exposure over a lifetime is not enough to cause appreciable risk. It is set at a safe level as determined by the data obtained in animal feeding studies. A safety factor of 100 is used in translating animal data to human beings. It is expressed in milligrams of the pesticide per kilogram of body weight per day (mg/kg/day).

Acclimation. Physiological changes to a changed environment (like temperature) that allow tolerance of more extreme condition than prior to acclimation.

Acclimatization. Response of organisms to seasonal and climatic changes.

Accothion. A trade name; see Fenitrothion.

Accumulate. To increase in quantity within an area, such as the soil or tissues of a plant or animal.

Accumulation (of a toxicant). The total amount of a toxicant accumulated in body tissues following a regular intake.

Accumulative pesticide (Cumulative pesticides). The pesticide which tend to accumulate in tissues of living beings or in the environment (soil, water, etc.) to form residues.

Acephate. An organophosphate (thiophosphoric acid) compound {O,S-dimethyl acetylphosphoramidothioate} used as contact and systemic insecticide against a wide range of chewing and sucking insects. It is toxic to bees. It is registered on regular basis in India.

Acetamiprid. A nicotinoid compound {(E)-N1-[(6-chloro-3-pyridyl) methyl]-N2-cyano-N1-methylacetamidine} used as

insecticide. It is used as contact and stomach poison and also has strong systemic activity. It shows low toxicity to human, cattle and has little influence on fishes, bees and useful insects. The compound is used against aphids and leafhoppers on fruits, vegetables and other crops. It is registered on regular basis in India.

Acetylcholine (ACh). A neurotransmitter that perpetuates an action potential from one neuron to another by its release from a presynaptic neuron.

Acetylcholinesterase (AChE). An enzyme that catalyzes the breakdown of acetylcholine.

Achook. A neem-based pesticidal product.

Acidic. Acidic in reaction resulting from excess of hydrogen ions over hydroxyl (OH) ions in solution; pH of acidic materials is less than seven.

***Acrida exaltata* (Walker).** The grasshopper (Orthoptera: Acrididae) is an important pest in pasturage.

Acridophagous. Preying or feeding on grasshoppers.

***Acrocercops gemoniella* (Stainton).** It is (Lepidoptera: Gracillariidae) a pest of sapota.

***Acrocercops phaeospora* Meyrick.** It is (Lepidoptera: Gracillariidae) a pest of cowpea.

Actellic. A trade name; see Pirimiphos methyl.

Action level. The level of relative abundance of a pest population in an agricultural crop (commodity) at which some control measures should be administered to maintain profitability of agricultural operation.

Action threshold. See Economic threshold.

Activators. See Synergists.

Active ingredient (Active principle/AI). The component of a pesticide formulation responsible for its toxic effect.

Active principle. See Active ingredient.

Actual dose. The amount of active ingredient (not formulated product) that is applied to an area or other target.

Actual farm yield. The yield of a crop/variety on the farmer's field under optimum management practices.

- Actual losses.** These include the total value of losses, both direct and indirect, the cost of control measures along with the amount spent on researches for developing pest management strategy and also the expenditure incurred for pest control knowledge among the farmers; *see* indirect losses, direct losses, avoidable and unavoidable losses, equivalent area losses, potential losses, primary losses, secondary losses, post-production losses.
- Acute dermal toxicity.** Poisoning from a single dose of a pesticide absorbed through skin.
- Acute effects.** These effects appear immediately or within 24 hours of exposure. Often they are reversible if appropriate medical care is given promptly, but may be fatal if not treated. Such effects are classified according to the site of the exposure, e.g. oral, inhalation, dermal and eye exposure.
- Acute inhalation toxicity.** Poisoning from a single dose (or exposure) of a pesticide when breathed into the lungs.
- Acute oral LD₅₀.** The dose of a pesticide ingested by mouth that kills 50 per cent of a population of test animals; usually expressed in mg of pesticide/kg of body weight of the test animal.
- Acute oral toxicity.** Poisoning from a single dose of a pesticide taken by mouth.
- Acute poison.** A single dose poisonous substance that causes illness or death; *see* chronic poison.
- Acute poisoning.** Illness or death from a single dose of a toxicant. The toxicant manifests itself in upsetting of the vital activities of the organism with a possible lethal outcome; *see* chronic poisoning.
- Acute toxicity.** The toxicity after one exposure to a pesticide; *see* chronic toxicity.
- Adaptation.** The quality of any organism, population or species that increases its chance of leaving viable progeny or any feature of the organism or its parts, which is of definite significance in allowing that organism to exist under the conditions of its habitat is called adaptation.
- ADAS.** Agricultural Development and Advisory Service, U.K. (formerly NAAS- National Agricultural Advisory Committee).

ADB. Asian Development Bank, Manila, Philippines.

Additional declaration. A statement that is required by an importing country to be entered on phytosanitary certificate and which provides specific additional information pertinent to the phytosanitary condition of a consignment.

Additive. See Adjuvant.

Adelina tribolii. A beneficial Protozoa (Fam. Adeleidae) used against *Tribolium castaneum*, *T. confusum* and *Trogoderma* sp. in some countries.

Adjustable nozzle. This nozzle can form both cones (solid or broken) and jets; see flat cone nozzle, flood jet nozzle, cone nozzle, swivel nozzle, air-blast nozzle, anvil nozzle, centrifugal nozzle, electrodynamic nozzle, deflector nozzle.

Adjuvant (Additive/Supplement). An ingredient that improves the properties of a pesticide formulation or reduce its phytotoxicity or drift. These are commonly used in formulations designed for foliar application. They include adhesives, stickers, wetting-agents, spreaders, emulsifiers, dispersing agents, etc.

Adsorption. The adhesion of molecules to the surface of a solid. Pesticide binding to soil particles is an example.

Adult. Sexually mature or ready to reproduce.

Adult activity. Abundance of adult insects as indicated by light trap catches or other forms of monitoring.

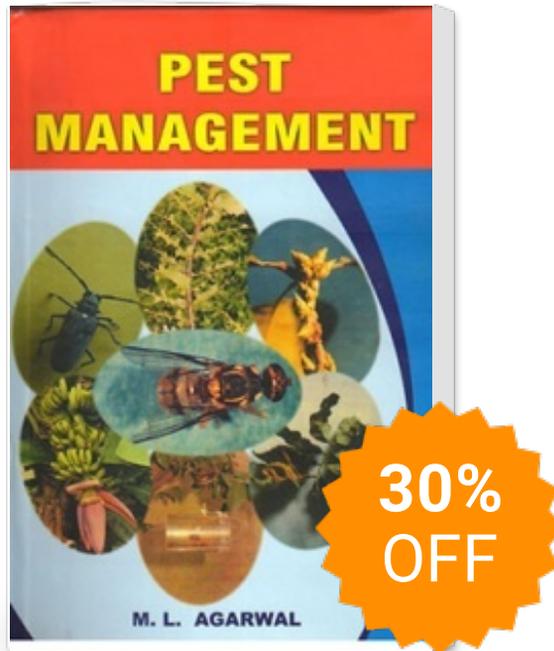
Adult plant resistance (Mature plant resistance). It is manifested in the older plants which may be susceptible at the seedling stage; see seedling resistance.

Adulticide. A chemical used to kill the adult stage of a pest.

Advantages of biological pest control agents. (i) Their high degree of specificity for pest control, (ii) no effect on non-target organisms and beneficial insects, (iii) absence of insect resistance (only a few insects have shown resistance against *Bt*), (iv) absence of residue build-up in the environment, (v) long term protection, (vi) no risk of environmental pollution, and (vii) impact from biotechnical research and development.

Adzuki bean weevil. See Pulse beetle.

Pest management



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