

GLOSSARY

Abcission: The natural process by which two parts of an organism separate; leaf fall

Abiotic: Non-living

Absolute abundance: The precise number of individuals of a taxon in a given area, volume, population or community

Absorption: The process by which one substance is taken into and incorporated in another substance

Abundance: The total number of individuals of a taxon in a given area, volume, population or community

Acaricide: A chemical (usually) or biological agent for killing mite pests or disease vectors

Acetylcholinesterase: Enzyme which breaks down acetylcholine – a chemical involved in nerve transmission

Active ingredient (a. i.) concentration: The amount of the actual pesticide in grams in a given amount (usually a volume) of the commercial product. This is usually expressed as a % wt/vol; e.g. 96% fenitrothion usually means 960 grams a.i. in 1 litre (1000 cc) of product

Acute: Severe (often lethal); of short duration

Adipose tissue: Fatty tissue

Adsorption: The adhesion of molecules as an ultra-thin layer on the surface of solids or fluids

Aerial spraying: Spraying (usually of agrochemicals) from aircraft, either fixed-wing or helicopter

Agamid: Member of the lizard family Agamidae, including such Old World genera as *Agama* and *Uromastyx*

Airblast: A blast of air created by a fan or exhaust gases

Air-shear nozzle: This is an atomizer which relies on an airblast to break up the spray liquid as it is emerging at low pressure from a nozzle

Aluminium extrusion: A container made of aluminium

Ammonification: The mineralization of organic nitrogen to NH_4^+ by the action of enzymes and micro-organisms

Anemometer: Device for measuring wind speed

Anti-feedant: Property of a spray product which prevents animals (usually pest insects) from feeding on it

Anuran: An animal within the taxonomic order comprising the frogs and toads

Artificial substrate: Media such as stones, bricks and tiles used for collecting organisms that settle on them

Atomization: The process of making spray; in other words, breaking up liquid into droplets

Aridisols, Ultisols: Orders (categories) of soil taxonomy that describe soils based on a range of common characteristics

Baiting: Mixing insecticide with a material which pests will eat and placing or scattering it in a place where they will locate it

Band or hopper band: A gregarious group of locust hoppers marching together, which can vary in size and density

Barrier: In relation to locust control – a strip of vegetation sprayed with pesticide. When persistent pesticides are used against hoppers, they are usually applied in barriers so that the hopper bands march through a barrier, feeding as they go, and are killed by the pesticide ingested with the vegetation

Baseline data: Data relating to a situation before an intervention: basic or elementary data sets

Bearing: A compass bearing is the number of degrees by which a direction differs from magnetic north. North is 0, east is 90, south is 180 and west is 270. Compass bearings can be any figure between 0 and 360 degrees

Benthic: Pertaining to the river bed or lake floor

Benthic organisms: Organisms whose life habit is to live on the bottom of a river or lake

Bioaccumulation: The increase in concentration of a chemical in organs and tissues of an organism by intake from food and water

Bioconcentration: The increase in pollutant concentration from water when passing directly into aquatic species

Biodiversity: The diversity of species, genetic variability within species and differences within and between ecosystems; the variety and variability of all animals, plants and micro-organisms on earth

Bioindicator: A species (or other taxonomic grouping) selected and used to reflect biological adjustments and habitat changes

Biomagnification: Increasing concentration of chemical pollutants in animal tissue in successive members of a food chain or through a food web

Biomass: A quantitative estimate of the total weight (mass) of organisms comprising all or part of a population; all or part of any other specified unit; within a given area at a given time. May be measured as volume, live/dead/dry or ash-free weight, energy (calories); standing crop or standing stock

Biometrician: A person skilled in the statistics of biology

Biome: A biogeographical region or formation; a major regional ecological community characterized by distinctive life forms and principal plants (terrestrial biomes) or animals (marine biomes)

Biopesticide: A micro-organism which can be sprayed to infect and kill a pest

Biotic: Living

Blanket spraying: Spraying the whole of a target surface (cf. barrier spraying)

Botanical insecticide: A plant extract which can be sprayed to kill or deter pests

Brand name (also called trade name): The brand name has the first letter in upper case, e.g. Sumithion

Broad-spectrum: The property of a pesticide which kills a wide range of different organisms

Buffer zone: Region close to an ecologically sensitive area or habitation where no spraying is carried out, to avoid them being affected by drift

Calibration: This means setting up the sprayer to apply the right dose of insecticide in the right sized droplets to the right place

Cannibalism: Organisms feeding on others of the same species

Canopy: The cover provided by leaves and branches of a shrub, tree or forest

Carbonate-bicarbonate equilibrium: A relationship between pH, carbon dioxide, carbonates, H^+ , Ca and Mg in water that resists change (buffer system) in pH

Carnivore: A flesh-eating organism

Catchment area: A drainage area that contains surface and sub-surface mechanisms for storage and removal of water

Census: Population counts; systematic observations to examine absolute or relative abundance

Chemical name: The chemical name has the first letter in lower case, e.g. fenitrothion

Chitin: A hard substance forming the surface (exoskeleton) of many arthropods

Cholinesterase: An enzyme involved in nervous responses being transmitted in the motor neurone system

Cline: A gradual ecological change over a distance

Closed habitats: Habitats dominated by trees, large bushes or other vegetation which (at least partially) exclude sunlight

Cocktails: This term is sometimes applied to pesticide formulations which contain a mixture of active ingredients

Community: An assemblage of organisms that live in a particular environment and interact with one another, forming a distinctive living system, with its own composition, structure, environmental relations, development and function

Conductivity: The ability of water to conduct electricity, which is dependent on dissolved salts

Confluence: The point where two rivers or streams meet

Confound(ed): In statistics – the state occurring where the effect of a particular treatment cannot be separated from that of an uncontrolled variable also influencing the ‘experiment’

Contact action: Pesticide toxicity from passage through cuticle or skin causing mortality. The efficacy may also be assisted by secondary contact action, e.g. where an organism touches insecticide drops on vegetation or other surfaces. This compares with stomach action products which have to be eaten to be effective

Contaminant: A substance in the environment, usually (within the context of this book) as a result of human activities, at above background concentrations

Controlled droplet application (CDA): This is the technique of applying droplets in a narrow size-range believed to be most effective for the particular target and conditions

Control method: This is the equipment, pesticide and technique used for killing a pest

Control (unsprayed): Another way of referring to an untreated area often called an ‘untreated control’

Convection: The phenomenon of air being heated up by the ground and rising

Cross wind: At 90 degrees to the wind direction

Cuticle: Outer layer, often with cilia or setae, in arthropods and other invertebrates

Dambos: Areas or gullies susceptible to flooding – often used for agriculture, e.g. rice culture

Degradation: The physical, chemical or biological breakdown of a pollutant chemical

Delimit: To determine the boundaries of a target area or pest infestation

Density: Often used to mean the number of organisms in a given area, e.g. number per m²

Deposition: The term used to describe a droplet hitting any surface, vertical or horizontal, by impaction or sedimentation

Deposition profile: The shape of the graph of deposition over distance downwind from a spray pass

Detergent: A chemical which lowers surface tension – often used as cleaning agents

Diazotrophes: Organisms capable of using atmospheric nitrogen as a nutrient

Direct effect: A chemical such as a pesticide having an acute or chronic effect on behaviour and physiology of a pest or non-target organism, with no need for any intermediary process

Discriminative spray applications: Methods of applying agrochemicals which involve some reduction or limitation of target area and/or timing of application intervals to limit the amount of chemical needed

Disease vector: A pest organism that transmits a disease

Dissipation: The dispersal and/or movement of a compound such that its concentration is reduced

Diversity: The condition of having differences with respect to a given character or trait

Dose: This is the amount of active ingredient (a. i.) in grams applied to a given unit of area (usually 1 ha)

Dose-response relationship: A graphical plot showing the effects of pesticide concentrations (or any toxic chemical) on test organisms

Downwind edge: The edge of a spray block which is furthest from the direction from which the wind is coming

Drift: In terms of pesticide spraying – the movement of pesticide droplets or dust on air currents or wind

Drift (aquatic): The movement of aquatic organisms downstream carried by the current – often behavioural or in response to spate and pesticides

Droplet size: Droplet size refers to the diameter of a droplet, i.e. the size across it. It is usually measured in micrometres (also called microns) – written μm . A micrometre is 1 millionth of a metre. A 100 μm diameter dot can be seen by the naked eye; smaller droplets are difficult to see

Droplet spectrum: The range of droplet sizes produced by a given type of spray equipment

Dusting: Mixing insecticide with an inert dust such as chalk or talcum powder and sprinkling it on to the pest species, its habitat or susceptible crops

Eckman Grab: A device with jaws for sampling sediment

Ecological niche: The concept of the space occupied by a given species (or other taxonomic grouping), which includes both the physical space as well as the functional role of the species

Ecologically sensitive area (ESA): Areas of significant value in their natural state

Ecology: The study of the interrelationships between organisms and their environment

Ecosystem: A community of different species interacting with each other and the surrounding abiotic environment

Ecotoxicology: The study of the effects of pollutants on ecosystems

Ectothermy: Body temperature dependent on warmth externally

Efficacy: Usually referring to the extent of a pest kill

Efficiency: The comparison of efficacy and cost, both in terms of money and effort

Emergence traps: A device for trapping adult insects emerging from water, soil or vegetation

Emergent vegetation: Vegetation rooted in the littoral zone that protrudes from the water

Emigration: The movement of organisms out of an area

Emission height: The height at which a given spray is released into the air

Emulsifiable concentrate (EC): This is a pesticide formulation which is diluted with water and applied as an emulsion

Environment: All of an individual organism's surroundings, both inanimate (air, soil, water, etc.) and animate (other organisms, including other members of its own species)

Environmental impact: Direct or indirect effects of interventions on the environment: in the context of pesticides, the negative (or sometimes positive) effect on non-target organisms and/or their functions

Environmental services: The benefits provided by ecosystems, through ecological functions, that are used to sustain human livelihoods

Enzyme system: A range of enzymes controlling behaviour and physiology of an organism (acetyl-cholinesterase is an example)

Euphotic zone: Of lakes and rivers – the depth to which plants can photosynthesize

Eutrophic: Having high primary productivity; pertaining to waters rich in the mineral nutrients required by green plants

Faunal assemblages: Groupings of animals found in a particular site, habitat or ecosystem

Feeding guild: A group of species living in the same habitat and eating the same or similar food

Ferry time: The time an aircraft spends flying backwards and forwards between the airstrip and the target for refuelling or refilling with insecticide

Flagman: Man using a flag to mark the end of the spray passes for a sprayer operator

Fledge: To develop to winged adult stage from a final instar nymph (in insects) or from down-covered baby to feathered adult (in birds)

Food chain: A hierarchy of organisms on successive trophic levels within a community, through which energy is transferred by feeding

Foraging success: The effectiveness of the search for food

Formation spraying: Two or more sprayer operators spraying at the same time, but in a way which avoids one contaminating the other

Formulation: This is the product supplied by the manufacturer, i.e. the active ingredient mixed with solvents, stabilizers, carriers and other inert materials which make up the rest of the volume

Fossorial: Adapted for digging, burrowing and/or living underground or below the soil surface

Fungicide: A chemical or biological agent used for killing pest species of fungi

Gecko: A member of the family of lizards, Gekkonidae

Global positioning system (GPS): An instrument which uses signals from satellites orbiting the earth to estimate the users' position (latitude and longitude)

Grab sampling: A way of sampling river and lake sediment using mechanically hinged equipment

Granivorous: Grain eating; an organism that eats plant seeds

Gregarious: The habit of individuals gathering together in large numbers

Groundwater: All the water that has percolated through the surface soil into the bedrock

Guild: A group of species having similar ecological resource requirements and foraging strategies

Habitat: The locality, site and particular type of local environment occupied by an organism

Haemocytometer: A device used to count blood cells but useful also to count plankton

Half-life: The time required to reduce by 50% the concentration of a material (e.g. chemical) in a medium such as water by transport, degradation, volatilization, etc.

Hand net: A hand-held net on a pole used for aquatic and terrestrial sampling

Hazard: A source of danger. Risk from pesticides is hazard x level of exposure to the product

Heel sampling: A method of sampling rivers that involves stirring up the substrate with boot heels

Hemimetabolous: Showing incomplete metamorphosis from nymph to adult

Herbicide: A chemical (usually) or biological agent for killing plant pests

Herbivorous: Plant eating

Herpetofauna: Term used to cover both amphibian and reptile species

Heterogeneity: Having a non-uniform structure or composition

Holometabolous: Showing complete metamorphosis from larva via pupa to adult or imago

Homogeneity: Similar throughout; of uniform structure or composition

Hydraulic nozzle: This is a simple device which atomizes liquid by forcing it out of a small hole under pressure

Hypothesis: An assertion or working explanation that leads to testable predictions; an assumption providing an explanation of observed facts, proposed in order to test its consequences

Imagines: The final, fully developed adult stage of insect development (imago)

Impaction: This occurs when a droplet carried sideways by the wind lands on a vertical surface such as a plant or insect. The droplet hits the surface because of the horizontal momentum it has been given by the wind

Incremental spraying: This means spraying in a cross wind so that deposit is built up from overlapping swaths

Indicator species: See bioindicator

Indirect effect: A chemical such as a pesticide indirectly affecting an organism through its impact (acute or chronic effect) on another organism upon which the first depends, usually as food

Infauna: The total animal life within a sediment

Insect growth regulators (IGRs): Products which interfere with the growth of an organism, usually by affecting the moulting process

Insect emergence: The emergence of an adult insect from water

Insecticide: A chemical or biological agent for killing insect pests

Insectivorous: Insect-eating; an organism which eats insects

Instars: The stages through which some insect nymphs pass before becoming adults

Invertebrate: An animal with no backbone

In vivo: Pertaining to biological measurements made in the field as opposed to the laboratory

Isomer: Serially differing structures of homologous chemical formulae

LC₅₀: Lethal concentration for 50%. This is the concentration of a chemical which will kill 50% of organisms in a test population

LD₅₀: Lethal dose for 50%. This is the dose which will kill 50% of a test population

Kick sampling: Same as heel sampling

Knock-down: The property of some insecticides, notably pyrethroids, to make insects drop very quickly after spraying. They may not be dead, and if the dose was not sufficient, in some circumstances can recover

Leaching: Movement of water-soluble chemicals from the soil surface downwards to lower layers or groundwater

Lentic: Pertaining to static, calm or slow-moving aquatic habitats

Lethal: Pertaining to or causing death by direct action

Lipid: Relating to fat

Lotic: Pertaining to fast running water habitats, such as rivers and streams

Mammalian toxicity: The measure of how poisonous a product is to mammals – usually tested in the laboratory on rats, and expressed as the LD₅₀

Mandibulate herbivores: A plant-eating organism (usually an insect) with bulky, chitinous mouthparts

Marching: In relation to locusts – the behaviour of locust hopper bands which are moving together

Mark: In relation to spray application technology – to place flags or other markers such as vehicles, people or smoky fires at the corners of a spray block

Maturity: The state reached by an adult organism when its sexual organs develop and it is ready to copulate successfully. Other features may identify a mature adult, e.g. mature desert locusts are either pale yellow (solitary) or bright yellow (gregarious)

Mechanical control: Using physical methods to control pests such as beating, burning or burying

Metabolism: Use of energy and materials to provide an organism's needs for growth and reproduction; the chemical reactions that take place in cells

Metabolites: The participating molecules in and products of metabolism; in pesticide chemistry – breakdown, degradation or reaction products resulting from a given agrochemical

Metamorphosis: A marked structural transformation during the development of an organism, often representing a change from larval stage to adult

Microbial epoxidation: A microbially mediated reaction where oxygen is joined to two carbon atoms to form a cyclic, three-membered ether or oxirane, e.g. ethylene oxide

Microbial insecticides: Pesticides using viruses or bacterial preparations to kill pests

Microhabitat: A small specialized habitat or more detailed part of an overall habitat, e.g. leaf litter in woodland

Milling: Locusts (or other insects) making short flights above a population which is mostly settled. This can occur in the evening when settling at the roost, or in the morning when preparing for swarm departure

Mineralization: Breakdown of soil organic compounds to component parts

Monitoring: The systematic measurement of variables and processes over time for a specific purpose (e.g. looking for a specific type of change in a given variable; ensuring a particular criterion or standard is being met)

Morphology: The study of form and structure of organisms, with special emphasis on external features

Morphospecies: A grouping of organisms based on morphological characters alone, without consideration of other biological characteristics (often identified by means of a letter, number or other notification)

Mortality: Death. Usually used to mean the percentage kill of target and non-target organisms

Moulting: The process by which an organism sheds its skin or exoskeleton and replaces it with a new one to enable growth (see also metamorphosis)

Nematocide: A chemical (usually) or biological agent for killing nematode pests

Neurotoxic: Products which interfere with an organism's nervous system

Nitrification: A chemical and microbiological process in water and soil whereby NH_4^+ is oxidized to NO_3^-

Nitrile rubber: A synthetic rubber which is more resistant to pesticides and solvents

Non-target organism: An organism which may be affected by, but is not the object of, a human intervention (for the purpose of this handbook, usually pesticide application)

Number median diameter (NMD): This is the diameter such that half the total number of droplets are smaller and half are larger

Nuptial pad: Small hard pads that develop on the thumbs of male anurans during the breeding season (used by males to remain attached to females during amplexus or coupling)

Nymphs: These are the young of hemimetabolous invertebrates before they have developed into adults

Odometer: Device on the speedometer of a vehicle which can be used to measure distances

Oligotrophic: Having low primary productivity; pertaining to waters having low levels of the mineral nutrients required by green plants; used of substrates low in nutrients

Omnivorous: Feeding on living or dead plant and animal material

Onchocerciasis: Vector-borne human disease caused by *Onchocerca* and transmitted by adult blackflies

Open habitat: Habitats with few or no trees, bushes or other tall, dense vegetation

Operator: The person using the equipment (for this handbook, the sprayer can be staff on foot, driver in a vehicle or pilot in an aircraft)

Organochlorines: A class of pesticides characterized by atoms of carbon, hydrogen and chlorine

Organophosphates: A class of pesticides characterized by atoms of carbon, hydrogen and phosphorus

Ornithology: The study of birds

Otoliths: Small calcareous particle in the inner ear of vertebrate animals, important as sensors of gravity and acceleration

Overdose/underdose: Where more/less than the recommended dose of an insecticide has been applied

Oxygen concentration: The amount of oxygen contained in water expressed as mg l⁻¹

Parasite: An organism which has a life strategy gained at the expense of another organism

Passive drift sprayer: A sprayer which releases spray droplets passively into the cross wind. This compares with airblast sprayers which give the droplets an initial throw in the jet of air

Percentage (%) saturation: Dissolved oxygen in water expressed as a percentage of its normal holding capacity

Persistence: A property of a pesticide which enables it to remain effective for a long time in the field

Petersen Grab: A device for sampling sediment

pH: The relative measure of acidity and alkalinity – giving a measure of acidity on a scale from 0 (acid) through 7 (neutral) to 14 (alkaline)

Pheromone: Chemical released by one insect which produces an effect in another insect of the same species

Photoperiod: The light phase of a light-dark cycle

Phytoplankton: Those forms of plant life (usually microscopic) which cannot maintain their position or distribution independently of the movement of water or air

Piscivorous: Fish eating

Ploceids: Members of the family Ploceidae – the weaverbirds and sparrows

Pollutant: A substance that occurs in the environment as a result of human activity, and which has a deleterious effect on living organisms

Pooter: Apparatus for sucking up invertebrates

Population: Those individuals within one species that occur within a defined area

Portable sprayer: A sprayer which is carried by a man during spraying

Precautionary principle: For this handbook – the principle that an agrochemical is dangerous until proven safe (rather than the principle that it is safe until proven dangerous)

Predation: Animals feeding on other animals

Protective clothing: Clothing worn by a sprayer operator to protect the body from pesticide contamination

Pseudoreplication: The use of repeated observations which do not allow either for statistically valid comparisons between treatment variability and the random variation within treatments, or, which allow detection of statistical differences between observations from different areas but CANNOT conclude a 'treatment' difference

Quadrat: A small sampling area often delimited by solid material of some form (metal, wood, string, etc.), in which the number of organisms is counted

Quantitative: Numerical; based on counts, measurements, ratios or other values

Ranking: Positioning of a hierarchy of classification

Recommended dose: The amount of insecticide active ingredient which has been found to kill a given pest reliably, but without waste

Regurgitation: The re-evacuation of ingested material through the mouth

Relative abundance: The total number of individuals of one taxon compared to the total number of individuals of all other taxa combined, per unit area, volume or community; non-absolute abundance

Residual spraying: Application of a large dose of insecticide used to prolong the effects on the target organism

Residues: In chemical terms – material remaining in the environment over a period of time following application or spillage or other means of introduction

Respiration (aerobic): A process in the cells of living organisms in which oxygen and organic molecules react to produce energy, water and carbon dioxide

Rhizome: An underground stem that grows horizontally and, through branching, acts as an agent of vegetative propagation

Rhizosphere: The area immediately surrounding the roots of plants

Riffle: A shallow area of stream bed over which water flows swiftly and is broken into waves by submerged obstructions

Risk: The scientific judgement of the probability of harm; for the purposes of this book – a statistical concept relating the frequency or probability of adverse effects from exposure of organisms to toxins

River blindness: See onchocerciasis

Rodenticide: Chemical (usually) or biological agent for killing pest species of rodent

Roosting: The resting behaviour of animals (usually by clinging to vegetation or within buildings or caves)

Rotary atomizer: A piece of equipment which spins at high speed and which throws liquid pesticide off its surface to make small droplets

Route of entry: For this handbook – the route by which an insecticide enters a living organism. This can be dermal, i.e. through the skin, oral, i.e. through the mouth and stomach or inhalation, i.e. being breathed in

rpm: Revolutions per minute – the standard measure of rotational speed of an atomizer, motor engine, etc.

Run-off: Chemicals dissolved in water or adsorbed to soil particles in suspension that flow with drainage water from areas of pesticide and other agrochemical usage after rain

Schistosomiasis: Water-borne human disease caused by the fluke, *Schistosoma*, requiring aquatic snails to host a stage in its life cycle

Sedentary: Staying in one place

Sedimentation: This occurs when a droplet falls downwards and lands on a horizontal surface. The droplet hits the surface because of the force of gravity

Sequester: To set aside or separate, e.g. separate placing of pesticide residues into body fat tissue of vertebrates

Sexual dimorphism: Gender-based differences in body shape, size, form or colour

Shelf-life: The length of time a stored pesticide remains effective

Sigmoid: S-shaped

Skink: A member of the family of lizards Scincidae, including such Old World genera as *Chalcides* and *Mabuya*

Soil horizon: Horizontal layers of mature soils with specific texture and composition

Spawn: Gelatinous mass containing eggs laid by female amphibians

Species: Groups of interbreeding natural populations that are reproductively isolated from other such groups

Species inventory: List of species present at a particular site (as against a checklist, which includes all known species of a particular taxon)

Species richness: The number of species within a defined area

Specificity: For this handbook – pesticide action that is limited in effect to a narrow range of organisms

Speed of action: How fast an insecticide kills the insect after exposure

Spray block: Any area designated to receive a spray treatment

Spray drift: Pesticide carried by wind or gravity away from the target to a non-target site

Spray pass: One passage of the sprayer along its spray track

Spraying: Breaking liquid into small droplets. For this handbook – for application of pesticides to pests or their food

Stomach action: A product has stomach action if it kills a pest when eaten, rather than being touched by it (contact action)

Stratification: Organization into horizontal layers; the vertical structuring of a community or habitat into superimposed horizontal layers; the grouping of individuals in a community or habitat into particular classes; in statistics – the grouping of samples to take account of particular shared characteristics

Stratum (strata): A layer (e.g. in rock or vegetation) possessing characters that serve to distinguish it from adjacent layers

Sub-adult: Nearly adult in size, but still sexually immature

Sub-lethal: Below the concentration that directly causes death. Sub-lethal concentrations can cause behavioural, biochemical and physiological impacts that are not obvious

Substrate: A medium on which organisms feed or which they frequent – soil, leaves, sediment, etc.

Surber sampler: A device for sampling benthic invertebrates in rivers

Surface-dwelling invertebrates: Neuston or organisms that live on the surface of water

Surveillance: A continued programme of surveys that provides a series of observations over time; systematic collection of a data series over time

Swarm: A large group of insects or other animals, which can fly large distances as a single mass of individuals

Swath width: This is the width of the strip at right angles to the sprayer's track where there is 'significant' deposit

Sweep net: Hand-held net used for sampling organisms from vegetation (either terrestrial, aquatic or emergent)

Symbiotic: An association between species that may be beneficial or not

Tailwind: A wind in the same direction as the flying direction of an aircraft

Taxon: Any group of organisms considered to be sufficiently different from other such groups to be treated as a separate unit

Taxonomy: The theory and practice of describing, naming and classifying organisms; systematics

Terrestrial: Pertaining to the earth, land or ground surface

Territory: An area within the home range, occupied more or less exclusively by an animal or group of animals of the same species, and held through advertisement, display or overt defence

Thermistor/thermocouple: Probes that measure temperature

Threshold number: In pest management – the number of pests per square metre (or per hectare or per km²) when it is judged that control operations become worthwhile. This number varies from crop to crop, season to season and country to country

Topography: A detailed study or map of physical features of an area

Toxicity: The potential of a material to cause adverse effects on living organisms

Toxin: A poison

Track spacing: This is the distance between the tracks or passes of the sprayer

Transect: A route of set distance and course which is used to count numbers of a particular faunal or floral group

Treatment area: In statistics – the area deliberately subjected to a particular effect, condition or other outside influence

Trypanosomiasis: Vector-borne disease of humans and cattle caused by a trypanosome and transmitted in Africa by tsetse flies

Turbulence: The mixing of air caused by the action of wind over rough ground, around objects or through meeting of air at different temperatures, etc., or the non-uniform flow of water caused by submerged objects, etc.

Uniform deposit: For pesticides – a deposit with equal amounts at different distances downwind from a spray pass – this cannot be achieved from a single pass of a ULV sprayer

Ultra-low-volume spraying (ULV): This is the application of small volumes (e.g. usually 0.5–1 l ha⁻¹ for locusts) of concentrated pesticide in very small droplets. ULV pesticides are sprayed undiluted; they are oil-based to reduce evaporation, so they cannot be diluted with water

Upwind edge: The edge of the block nearest to the direction from where the wind is coming

Vascular: In animals – containing many blood vessels; capillaries, veins and arteries make up the vascular system that transports oxygen, nutrients and chemicals around the body in vertebrates and certain invertebrate organisms. In plants – containing conducting tissue, usually with the dominant generation differential into roots, stems and leaves

Vector: See disease vector

Vehicle-mounted sprayer: A sprayer which is mounted on a four-wheel drive pickup vehicle

Volatile: Tending to evaporate

Volume application rate (VAR): This is the volume of liquid (with ULV, the volume of product) in litres or millilitres applied to a given unit of area (l ha)

Volume median diameter (VMD): This is the diameter of the droplet such that half the spray volume is in smaller droplets and half in larger ones

VMD:NMD ratio, called 'R': This is the value of the VMD divided by the value of the NMD and gives a measure of the width of the droplet spectrum. If R is larger than 2, the spectrum is wide, if it is less than 2, it is relatively narrow and more suitable for ULV spraying. A value of 1 would mean that all of the droplets were the same size, but no sprayer can produce such a spectrum

Water-based spraying: This means using an insecticide formulation which can be mixed with water – usually emulsifiable concentrate (EC) or wettable powder (WP). The mixture is usually applied in large volumes (100s or even 1000s of l ha⁻¹)

Whirling hygrometer: Device for measuring temperature and relative humidity

Work rate: This is the area which can be treated with an agrochemical in a given time, usually expressed as hectares per hour (ha h⁻¹)

Zooplankton: Those forms of animal life (usually microscopic) which cannot easily maintain their position or distribution independently of the movement of water or air

ABBREVIATIONS

a.i.	active ingredient
ANOVA	analysis of variance
BHC	benzene hexachloride
CF	constant frequency
CMR	capture – mark – recapture
CPUE	catch per unit effort
DO	dissolved oxygen
EC	emulsifiable concentrate
EIA	environmental impact assessment
ESA	ecologically sensitive area
FAO	Food and Agriculture Organization of the United Nations
FM	frequency modulated
GLC	gas liquid chromatography
GLM	general linear model
GPS	global positioning system
HCH	hexachlorocyclohexane
HPLC	high performance liquid chromatography
IGR	insect growth regulator
IUCN	International Union for the Conservation of Nature (World Conservation Union)
LoD	lower limit of determination
MNA	minimum number of animals
NGO	non-governmental organization
NMD	number median diameter
PAR	photosynthetically active radiation
ppb	parts per billion
ppm	parts per million
OC	organochlorine pesticide
OP	organophosphate pesticide
QRA	quantitative risk assessment
QS	Sorensen's Index
rpm	revolutions per minute
SD	standard deviation
SE	standard error
SED	standard error of the difference
SPE	solid phase extraction
SS	Sum of Squares
UNCED	United Nations Conference on Environment and Development
ULV	ultra-low-volume
VAR	volume application rate
VMD	volume median diameter
WDP	water dispersible powder
WHC	water-holding capacity
WP	wettable powder